

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## Programme Outcome, Programme Specific Outcome and Course Outcome

**(Session: 2018-19)**

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# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## JNU Institute of Medical Sciences and Research Center

### Programme Outcome, Programme Specific Outcome and Course Outcome

#### 1. MBBS

**MBBS**

## **Name of the Program: MBBS (Bachelor of Medicine and Bachelor of Surgery)**

### **Program Outcome:**

The undergraduate medical education program is designed with a **goal** to create an **“Indian Medical Graduate” (IMG)** possessing requisite knowledge, skills, attitudes, values and responsiveness, so that he or she may function appropriately and effectively *as a physician of first contact of the community* while being globally relevant.

### **Competency Based Training Programme of the Indian Medical Graduate**

The Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

#### ***Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion***

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.



- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes.
- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

### ***Leader and member of the health care team and system***

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

### ***Communicator with patients, families, colleagues and community***

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

### ***Lifelong learner committed to continuous improvement of skills and knowledge***

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

***Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession***

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

**JAIPUR NATIONAL UNIVERSITY, INSTITUTE FOR MEDICAL SCIENCES AND  
RESEARCH CENTER, JAIPUR**

**MBBS: Course Outcome**

**I MBBS course outcome**

**Student shall be able to learn.**

**Physiology:**

- Describe general and cell physiology, N-M physiology, Blood, Cardiovascular and Respiratory Physiology.
- Describe Reproductive, Endocrine and Exercise Physiology.
- Explain environmental physiology, Special senses, Autonomic and Central nervous system Physiology.

**Anatomy:**

- Describe general anatomy, histology, embryology, genetics and osteology of human.
- Describe gross anatomy of Upper limbs, Lower limbs, Thorax, Abdomen, Head, Neck, Brain and Face and its clinical correlation with the help of cadaveric dissection.

**Biochemistry:**

- Describe the biochemical concepts of Cell, Bio-molecules, Molecular biology, Enzymes, Genetics and Cancer.
- Describe chemistry and metabolism of carbohydrates, Proteins, Lipids and Nucleotides.
- Describe Free radicals, antioxidants, detoxification, acid base balance, Blood, Hemoglobin, Immunology, Organ function tests, Vitamins, Minerals, and Nutrition.

**II MBBS course outcome;**

**Student shall be able to learn.**

**Pathology**

- Describe General pathology, basic technique in pathology, systemic pathology and evaluate Basic diagnostic cytology.

**Microbiology**

- Describe Sterilization, Disinfection, Culture Media, Culture Methods, Morphology of bacteria, Bacterial Genetics.
- Explain concepts of Immunology, medical bacteriology, virology, mycology and parasitology.

**Pharmacology**

- Describe General Pharmacological Principles and Drugs Acting on Autonomic Nervous System, autocoids, Respiratory System Cardiovascular system Gastrointestinal system and kidney.
- Explain Chemotherapy of Neoplastic Diseases and Antimicrobial Drugs.
- Describe drugs Acting on Peripheral (Somatic) Nervous System Acting, Central Nervous System Acting and explain drugs affecting Blood and Blood Formation.

  
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Principal & Controller  
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### III MBBS (Part I) course outcome;

**Student shall be able to learn.**

#### **Forensic Medicine**

- Describe Legal Procedure, Medical Law, Ethics and Medico legal aspects of Identification, Autopsy and death.
- Explain Postmortem Changes in Mechanical, Thermal and Regional Injuries.
- Describe Medico legal Aspects of Wounds, Starvation, Operative Deaths, Impotence, Sterility, Virginity, Pregnancy, Abortion, Sexual Offences and Infant Deaths.
- Evaluate concepts in Forensic Science Laboratory, Forensic Psychiatry and Toxicology.

#### **Community Medicine**

- Describe Concept of Health, Disease and Screening for Disease. Explain concepts of Epidemiology, Epidemiology of Communicable and Non-Communicable Diseases.
- Explain Health Programmes in India, Demography, Family Planning. Describe Preventive Medicine in Obstetrics, Paediatrics, Geriatrics, Nutrition, Genetics and Mental Health.
- Describe Hospital Waste Management, Environment, Health Disaster Management, Occupational Health, Medicine and Social Sciences.
- Evaluate Information and Basic Medical Statistics, Communication for Health, Education Health Planning & Management, Health Care of the Community, International Health, Essential Medicines and Counterfit Medicines.

#### **Ophthalmology**

- Describe anatomy, physiology of eye, optics & refraction.
- Explain diseases of eye, ocular therapeutics, Ophthalmic Instruments and Operative Ophthalmology.
- Perform Clinical Methods and Darkroom Procedures in ophthalmology.

#### **ENT**

- Describe diseases of ear, nose, paranasal sinuses, oral cavity, salivary glands pharynx, larynx, trachea, thyroid gland, oesophagus and operative procedures in ENT.
- Perform clinical methods in ENT.

### III MBBS (Part II) course outcome;

**Student shall be able to learn.**

#### **Surgery**

- Explain Surgical Principles of Metabolic response to injury, Shock, blood transfusion, Wounds, trauma, Surgical infection, Basic surgical skills, laparoscopic, robotic surgery, pediatric surgery, oncology Surgical audit, clinical research, ethics, law and Patient safety.
- Evaluate investigations, diagnosis and preoperative care in surgical practice.

  
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Principal & Controller  
National University  
Jaipur

- Describe surgical concepts in diseases of skin, subcutaneous tissues, head, neck, breast, endocrine, cardiothoracic, gastrointestinal, genitourinary system, orthopaedics and transplantation.

### **General Medicine**


- Describe diseases of Blood, Skin, Connective Tissues, Joints, Infections Respiratory, Immune, Nervous, Liver and Biliary, Cardiovascular, Gastrointestinal, Kidneys, Genitourinary System Systems.
- Explain principles in disturbances in Water, Electrolyte, Acid-Base Balance and Metabolic Diseases
- Evaluate medicinal principles in Acute Poisoning, Environmental diseases, Emergencies, Nutrition, Psychiatry, Oncology and Genetics.

### **Obstetrics**

- Describe maternal anatomy, maternal physiology, placentation, embryogenesis, fetal development, preconceptional and prenatal care.
- Explain the fetal patient, early pregnancy complications, labor, delivery, the new born, the puerperium, obstetrical complications and medical and surgical emergencies in obstetrics.

### **Gynecology**

- Describe embryology, anatomy and physiology of female genital organs.
- Explain pelvic infections, sexually transmitted diseases, disorders of menstruation, intersex, infertility, benign, premalignant and malignant lesions of female genitals.
- Evaluate genital fistulas, genital tract injuries, contraception, hormones in gynecology and therapies in gynecology.
- Perform examinations of gynecological patient and explain the surgical principles in gynecology.

  
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# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Agriculture Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Sc. (Hons.) Agriculture
2. B.Sc. (Hons.) Horticulture

# **B. Sc. (Hons.) Agriculture**

**Programme Outcomes: B. Sc.(Hons.) Agriculture:**

<b>School of Agriculture</b>	After successful completion of four year degree program in agriculture, a student should be able to;
<b>Programme Outcomes</b>	<p><b>PO1 -Agriculture knowledge:</b> Apply the fundamental as well as applied knowledge of agriculture and related specializations to the solution of complex agricultural problems by utilizing scientific, economic and environmental principles underpinning agricultural production and land use.</p> <p><b>PO2- Problem analysis:</b> Identify, formulate, research literature, and analyze complex agricultural problems reaching substantiated conclusions using knowledge of fundamental courses of agricultural science.</p> <p><b>PO3-Development of solutions:</b> Design solutions for complex agricultural problems and design system components or processes that meet the specified needs with appropriate consideration for the health of crop, livestock, etc. and safety to the cultural, societal, and environmental considerations</p> <p><b>PO4-Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.</p> <p><b>PO5-Environment and Sustainability:</b> Understand the impact of the professional agricultural solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</p> <p><b>PO6-Ethics:</b> Apply ethical principles and values and accept responsibility for them</p> <p><b>PO7 -Individual and Team Work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p><b>PO8- Communication :</b> Communicate effectively on complex agricultural activities with the Agrarian community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</p> <p><b>PO9- Project Management and Finance :</b> Demonstrate knowledge and understanding of the agricultural and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments</p> <p><b>PO10- Life-long learning :</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change in country farming by giving training about the most modern methods used in crop improvement like fertilizers, soil testing, plant tissue culture.</p> <p><b>PO11-Enterpreureship:</b> The course apart from training in scientific skills also trains in marketing skills of agriculture products by providing detailed knowledge of agriculture in India and Indian farmer's income generating enterprises.</p>



	<p><b>PO12-Final Outcome</b> Under this study the students are exposed to real life rural settings with the aim to develop a sense of awareness among the students so that they can understand the problems of farmers and rural people.</p>
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**Course Outcomes: B. Sc.(Hons.) Agriculture**

**Semester-I**

<b>SN</b>	<b>Course</b>	<b>Outcomes</b>
		completion of these courses students should be able to;
1.	<b>Fundamentals of Horticulture (BAG111)</b>	<p><b>CO 1.</b>Students will be know about the importance and scope of Horticulture and can easily identify the different horticultural crops like fruits, vegetable, flowering and ornamental plants etc.</p> <p><b>CO 2.</b>Students will be able to know about basic horticultural principles and practices</p> <p><b>CO 3.</b>Students will be able to know about the different vegetable gardening which is used in the world.</p> <p><b>CO 4.</b>Students will know about principles, planning, layout and management of orchard.</p> <p><b>CO 5.</b>Students will know about pruning and training of horticultural plants</p> <p><b>CO.6.</b> Students will be able to understand the importance of bio regulators in horticulture</p>
2.	<b>Fundamentals of Genetics (BAG112)</b>	<p><b>CO 1.</b>Students will be able to understand the fundamental concept in genetics and have depth knowledge about chromosome structure and genetic code.</p> <p><b>CO 2.</b>Students will be able to use punnet square to predict possible offspring variations.</p> <p><b>CO 3.</b>Students will be able to understand the knowledge of genetic testing and able to analyze as well as construct the family pedigree.</p> <p><b>CO 4.</b>Students will know the structure and function of genetic material.</p> <p><b>CO 5.</b>Students will be able to develop their analytical, quantitative and problem solving skills from classical to molecular skills.</p> <p><b>CO 6.</b>Students will be known about basics concept of the genes and their implementation in the development of new variety with distinct and desirable features.</p>
3.	<b>Fundamentals of Soil Science (BAG113)</b>	<p><b>CO-1</b> Students will be able to understand the soil genesis and how the rocks are forming in the soil. The students will able to understand about the availability of various minerals.</p> <p><b>CO-2</b> Students will be able to understand the soil structure and texture during forming with their porosity.</p> <p><b>CO- 3</b> Students will be able to understand about the</p>

		<p>different type of the soil in the different region of the country.</p> <p><b>CO-4</b> Students will be able to understand the soil reaction- pH, acidity and alkalinity, buffering, effect of pH on nutrient availability; soil colloids - inorganic and organic.</p> <p><b>CO-5</b> Students will be able to illustrate the macro and micro-organism availability in the soil and they are polluted the soils.</p> <p><b>CO-6</b> Students will be able to understand the determination of soil fertility and physico-chemical analysis viz. Organic carbon, pH, EC etc.</p>
4.	<b>Agricultural Microbiology (BAG114)</b>	<p><b>CO-1.</b> Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures</p> <p><b>CO-2.</b> Know various culture media and their applications and also understand various physical and chemical means of sterilization</p> <p><b>CO-3.</b> Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria</p> <p><b>CO-4.</b> Know about role of microbes in soil fertility and crop production</p> <p><b>CO-5.</b> Develop an understanding about the beneficial effect of soil microorganisms on plant community</p> <p><b>CO-6.</b> Understand the nutrient sources and cycles</p>
5.	<b>Comprehension &amp; Communication Skills in English (BAG115)</b>	<p><b>CO1:</b> Ability to design a language component or process to meet desired need within realistic, Constraints such as economic, environmental, social, political, ethical, scenario</p> <p><b>CO2:</b> Ability to use English practically in everyday life and professional life.</p> <p><b>CO3:</b> An understanding of academic writing skills to be used in the corporate field.</p> <p><b>CO4:</b> The ability to present oneself in the business, corporate and digital world.</p>
6.	<b>Fundamentals of Agronomy (BAG116)</b>	<p><b>CO 1.</b> Student will able to know the basic principles of agronomy practices and modern techniques of farming of agriculture crops.</p> <p><b>CO 2.</b> Students will be able to apply crop management suitable in local climate.</p> <p><b>CO 3.</b> Students will be able to use particular technique, equipment, plant requirements eg. Plant nutrient dose, irrigation, weed management and other practices which improves crop production and also crop quality.</p> <p><b>CO 4.</b> Students will able to identify the crops, their family, genus, species etc. that will be helpful to determine package and practices for a particular crop.</p>

		<p><b>CO 5.</b> Students will be known about basics of nutrient and water management which will reflect on the practical implementation of INM Programme.</p> <p><b>CO.6.</b> Students will be able to bring the innovative ideas in favor to the farmers for betterment and quality production which provide a good market value.</p>
7.	<b>Introductory Biology*/Elementary Mathematics* (BAG117)</b>	<p><b>CO 1.</b> Understand the characteristics of living organisms</p> <p><b>CO 2.</b> Understand the concept of origin of life</p> <p><b>CO 3.</b> Know the basis of evolution</p> <p><b>CO 4.</b> Learn the morphological features of plants</p> <p><b>CO 5.</b> Understand the distinguishing features of angiosperm families</p>
8.	<b>Agricultural Heritage* (BAG118)</b>	<p><b>CO-1.</b> Understand and learn definition, meaning, scope Agriculture Heritage</p> <p><b>CO-2</b> Know significance, introduction of, role of Indian Agriculture heritage.</p> <p><b>CO-3</b> Learn the ancient Agriculture practice, compel Present day agriculture.</p> <p><b>CO-4</b> Observation and learn past and present status.</p> <p><b>CO-5</b> Know about of journey of Indian agriculture and its ,Development from past to modern era.</p> <p><b>CO-6.</b> Develop and understand of plant production , Protection through indigenous traditional Knowledge.</p> <p><b>CO-7</b> Understand the role of crop voyage in India, And World.</p>
9.	<b>Rural Sociology &amp; Educational Psychology (BAG119)</b>	<p><b>CO 1.</b> Students will be able to evaluate and apply key concepts related to socio economic conditions of the rural people by utilizing the natural resources.</p> <p><b>CO 2.</b> Students will be able to critically assess that how the rural societies are living in the various community, culture and traditions.</p> <p><b>CO 3.</b> Students will be able to familiar with the back ground of the rural area and their institutions by applying critical analysis.</p> <p><b>CO 4.</b> Students will able to identify about rural family life, their folkways, culture and survival of people with the nature.</p> <p><b>CO 5.</b> Students will be known about the psychology of the people in rural area by adopting psychomotor method that will help to identify the basic needs of the people.</p> <p><b>CO.6.</b> Students will be able to implement their idea to promote the various policies and programme for betterment of the society in practically.</p>
10.	<b>Human Values &amp; Ethics (non credit) (BAGNC 111)</b>	<p><b>CO 1.</b> Understand the importance of value and ethics in life.</p> <p><b>CO 2.</b> Decide their own goal and mission of life.</p> <p><b>CO 3.</b> Analyses their own seed satisfaction, decision making, success and motivation in life.</p> <p><b>CO 4.</b> Read literature related to ethical lives of peoples and</p>

		get inspired. <b>CO 5.</b> Conduct their own lives ethically personally and professionally. <b>CO 6.</b> Appreciate the role of values and ethics in different domains of life.
11	<b>NSS/NCC/Physical Education &amp; Yoga Practices** (BAGNC 112)</b>	<b>CO 1.</b> Understand various streams of Yoga. <b>CO 2.</b> Know procedure and techniques of doing various Asanas. <b>CO 3.</b> Know the benefits of Asanas with various types of Pranayams. <b>CO 4.</b> Practice Asanas Pranayams and Meditation. <b>CO 5.</b> Understand relaxing Yogic Asanas and Exercises. <b>CO 6.</b> Know concept of Yogic food.

#### Semester-II

SN	Course	Outcomes completion of these courses students should be able to;
1.	<b>Fundamentals of Plant Biochemistry and Biotechnology (BAG121)</b>	<b>CO 1.</b> Understand the chemical aspects of life at molecular life <b>CO 2.</b> Learn the structure and functional aspects of important biomolecules <b>CO 3.</b> Understand the mechanism of different enzymatic reactions <b>CO 4.</b> Understand the physiological details of carbohydrate metabolism <b>CO 5.</b> Understand the biochemical nature of nucleic acids, their role in living systems
2.	<b>Introduction to Forestry (BAG122)</b>	<b>CO-1.</b> Student will able to identify major species of trees and their characteristics <b>CO-2.</b> Students will able to understand the importance of forests <b>CO-3.</b> Students will able to identify the components of forest ecosystems. <b>CO-4.</b> Students will able to understand about interrelationships between trees and environmental factors <b>CO-5.</b> Students will able to understand economic importance of forests

3.	<b>Soil and Water Conservation Engineering (BAG123)</b>	<p><b>CO 1</b> Students will be able to Knowledge gained about the analytical methods of soil, plant, water and seed testing.</p> <p><b>CO 2</b> Students will be able to know about basic principles of analytical instruments i.e. pH, EC, Spectrophotometer and Flame photometer etc.</p> <p><b>CO 3</b> Students will be able to interpretation with analytical values of soil, plant and water to standards.</p> <p><b>CO 4</b> Students will be able to learn about soil health quality and irrigation water quality parameters.</p> <p><b>CO 5</b> Students enabled in identifying seed structure and morphology, physical characteristics of seed and biochemical tests</p> <p><b>CO 6</b> Students capacitated in seed sampling, seed storage and methods of seed testing.</p>
4.	<b>Fundamentals of Crop Physiology (BAG124)</b>	<p><b>CO 1.</b> Learn and understand about mineral nutrition in plants.</p> <p><b>CO 2.</b> Know about mechanism of water movement in plants</p> <p><b>CO 3.</b> Understand the mechanism of transpiration</p> <p><b>CO 4.</b> Understand the process of translocation of solutes in plants</p> <p><b>CO 5.</b> Understand the physiological details of photosynthesis, photorespiration</p>
5.	<b>Fundamentals of Agricultural Economics (BAG125)</b>	<p><b>CO1.</b> Students would be able to know the basic terms of Economics</p> <p><b>CO2.</b> They will learn about law of diminishing marginal utility, law of equip-marginal utility</p> <p><b>CO3.</b> They will be acquainted about demand, supply, law of demand, law of supply, elasticity of demand and elasticity of supply</p> <p><b>CO4.</b> They will be familiarize about market ,classification of markets, market competition.</p> <p><b>CO5.</b> Students would be able to know national income, GDP, per capita income, Net National product, public finance etc.</p> <p><b>CO6.</b> Students will be acquainted in respect of inflation and taxation.</p>
6.	<b>Fundamentals of Plant Pathology (BAG126)</b>	<p><b>CO 1.</b> Understand and accurately apply terminology used in the field of plant pathology, and understand the fundamental differences between different types of microorganisms including bacteria, viruses, fungi, prions and protozoa.</p> <p><b>CO 2.</b> Identify major principles of plant pathology and recognize the etiological agents of disease</p> <p><b>CO 3.</b> Describe the concepts of what constitutes disease in plants</p> <p><b>CO 4.</b> Know about concept of disease, causal agents of plant diseases, identification methods and management of crop diseases.</p>

		<p><b>CO 5.</b> Employ methods to diagnose and manage a wide range of plant diseases</p> <p><b>CO.6</b> Understand the different factors disease spread, favorable environmental conditions and control of plant diseases</p>
7.	<b>Fundamentals of Entomology (BAG127)</b>	<p><b>CO -1.</b>Students will be able to evaluate and apply key concepts related to identify the importance of insects' role in the world to the functioning of the terrestrial ecosystems.</p> <p><b>CO- 2.</b>Students will be able to critically assess role that explain how insects deal with the world around them.</p> <p><b>CO- 3.</b>Students will be able to use insects as examples to apply concepts and comparisons with other organisms.</p> <p><b>CO- 4.</b>Students will know identification and nomenclature of insects.</p> <p><b>CO -5.</b>Students will be known about basics of insect pest management which will reflect on the practical implementation of IPM Programme.</p> <p><b>CO-6.</b> Students will be able to create something which will be helpful in explaining which order an insect belongs to and will be able to identify insects to the level order.</p>
8.	<b>Fundamentals of Agricultural Extension Education (BAG128)</b>	<p><b>CO-1</b> Students will learn about evaluate the effectiveness of the formulated programme in for the farmers. The students will decide the plan of work in advance for the farmers as per their need and interest. The students will identify the importance of the subjects and how the extension methodology will implement in the rural area.</p> <p><b>CO-2</b> Students will be able to understand how the programmes were implemented for the rural poor before independence and after independence. How these programmes were changed the socio-economic conditions of the rural poor after acquire the benefits of these programmes.</p> <p><b>CO-3</b> Students will be able to familiar with the new technologies which are helping to the farmers through the help of internet, mobile, marketing related information, farmers led extension. The students will able to communicate the idea in short period of time in masses.</p> <p><b>CO-4</b> Students will be able to identify the successfulness of the projects and if any failure is there that will be assess during monitoring and evaluation of the programme. Students will also identify the deficient area of the training programme.</p> <p><b>CO-5</b> Students will be known the basic objectives of the implementation of programme in rural context and how the programme can be transfer up to the famers by adopting the various technologies.</p> <p><b>CO-6</b> Students will be able to promote the government programmes among the farmers by using the various</p>

		communication methods and will be able to identify the barriers of the communication during transfer of technology.
9.	<b>Communication Skills and Personality Development (BAG129)</b>	<p><b>CO1:</b> Ability to design a language component or process to meet desired need within realistic, Constraints such as economic, environmental, social, political, ethical, scenario</p> <p><b>CO2:</b> Ability to use English practically in everyday life and professional life.</p> <p><b>CO3:</b> An understanding of academic writing skills to be used in the corporate field.</p> <p><b>CO4:</b> The ability to present oneself in the business, corporate and digital world.</p>

### Semester-III

SN	Course	Outcomes completion of these courses students should be able to;
1.	<b>Crop Production Technology – I (Kharif Crops) (BAG231)</b>	<p><b>CO-1.</b> Economic importance of kharif crops understood</p> <p><b>CO-2.</b> The student gains a thorough knowledge on basic production technology.</p> <p><b>CO-3.</b> Acquaintance on commercial oriented cultural practices.</p> <p><b>CO-4.</b> Basic management for kharif crops production learned</p> <p><b>CO-5.</b> Students will understand factors affecting the need to find sustainable practices for production of kharif crops and how to implement and evaluate them.</p> <p><b>CO-6.</b> Familiarize on modern production techniques</p>
2.	<b>Fundamentals of Plant Breeding (BAG232)</b>	<p><b>CO-1.</b> Students will be able to extend the mode of reproduction and genetic consequences.</p> <p><b>CO-2.</b> Students will be learning about the breeding procedures in self and cross pollinated crops.</p> <p><b>CO-3.</b> Students will be able to use enumerate exploitation of heterosis utilizing male sterility and other methods.</p> <p><b>CO-4.</b> Students will be learn about the discuss of fundamentals of mutation, polyploidy etc. in crop improvement</p> <p><b>CO-5.</b> Students will be learn about the associate role of biotechnology in crop improvement.</p> <p><b>CO-6.</b></p>
3.	<b>Agricultural Finance and Cooperation (BAG233)</b>	<p><b>CO 1.</b> Learn about sources of Agricultural Micro-Macro financing and credit systems.</p> <p><b>CO 2.</b> Understand History of financing agriculture in India</p> <p><b>CO 3.</b> Learn about Significance and limitations of Crop insurance.</p> <p><b>CO 4.</b> Significance of Farming Cooperatives.</p> <p><b>CO 5.</b> To acquire Knowledge of successful cooperative systems in India and newly launched crop insurance schemes.</p>

		<b>CO.6.</b> Estimation of Credit requirement of farm business
<b>4.</b>	<b>Agri- Informatics (BAG234)</b>	<p><b>CO-1.</b> Students will know about computer and got the knowledge about basic computer system and operating system available for computers.</p> <p><b>CO-2.</b> Students will know about available application software (MS-OFFICE). And use MS-DOC, MS-POWERPOINT, MS-Excel, MS-ACCESS in practical for data creation, editing, presenting, interpretation and graph creation.</p> <p><b>CO-3.</b> Students will able to use internet and connect by world through internet and use electronic mail for communication purpose.</p> <p><b>CO-4.</b> Students will know about how e-agriculture involves the conceptualization, design, development of innovative way to use ICTs in rural domain with primary focus on agriculture.</p> <p><b>CO-5.</b> Student will be able to use different Smartphone Apps for farm advises market price, management and different IT applications for computing of water and nutrient requirement of crops.</p> <p><b>CO-6.</b> Student will be known about how Geospatial technologies are contributing for generating valuable Agri-information.</p> <p><b>CO-7.</b> Student will know about how to use different IT tools for preparation of contingent crop planning.</p>
<b>5.</b>	<b>Farm Machinery and Power (BAG235)</b>	<p><b>CO-1.</b> The students will be able to learn about different sources of farm power, construction and functioning of CI and SI engines, IC engine fuels, Coolants, anti freeze and anti corrosion materials</p> <p><b>CO-2.</b> To identify the need of farm mechanization in India. Also equip the students with technical knowledge and skills required for the operation</p> <p><b>CO-3</b> The students will be able to learn about maintenance and evaluation of Tillage, Sowing and intercultural operational machinery needed for agricultural farms..</p> <p><b>CO-4.</b> To abreast the students with mathematical, experimental and computational skills for solving different field problems</p> <p><b>CO-5.</b> To develop skills in the students required to develop and modification of indigenous farm machines as per the requirements.</p> <p><b>CO-6.</b> Also to give a brief introductory idea of importance of testing of agricultural machines and tractors.</p>
<b>6.</b>	<b>Production Technology for Vegetables and Spices (BAG236)</b>	<p><b>CO 1.</b>Students will be known about the importance and scope of vegetable and spices.</p> <p><b>CO 2.</b>Students will be able to know about cultivation of different vegetable crops like tomato, brinjal, chilli etc.</p> <p><b>CO 3.</b>Students will be able to know about the different</p>



		<p>vegetable gardening which is used in the world.</p> <p><b>CO 4.</b>Students will know about cultivation of different seed spices like coriander, cumin, fenugreek etc</p> <p><b>CO 5.</b>Students will know about morphological characters of different vegetables and spices.</p> <p><b>CO.6.</b> Students will be able to understand about economics of vegetables and spices</p>
7.	<b>Environmental Studies and Disaster Management (BAG237)</b>	<p><b>CO-1.</b> Upon study of the subject the Students will be able to understand the importance of the environment</p> <p><b>CO-2</b> They will know the various resources of energy ,renewable and non renewable</p> <p><b>CO- 3</b> They will analyze the water resources and try to use them in judicial manner'</p> <p><b>CO 4</b> Upon study of the ecosystem students will analyze the eco system and implement use the basic requirements to preserve them,</p> <p><b>CO-5</b> Upon study of the ecology they will understand the characteristic to translate in real-world</p> <p><b>CO-6</b> Upon study the biodiversity they will analyze the, biogeographical regions in real life and try to implement it.</p> <p><b>CO 7-</b>Upon study of the environmental pollution, they will use in real life and try to find out the solution..</p> <p><b>CO-8</b> Upon study of the solid waste management ,they will use it in real life.</p> <p><b>CO-9</b> Upon study the social issues, students will be able to analyze the sustainable development in real life</p> <p><b>CO-10</b> To understand the concepts involved in environmental ethics students will analyze the nuclear accidents and other problems and try to use in practice to manage it.</p>
8.	<b>Statistical Methods (BAG238)</b>	<p><b>CO-1.</b> To understand the concepts involved in data presentation, analysis and interpretation, probability distributions, parameter estimation, tests of significance, regression and multivariate analytical techniques.</p> <p><b>CO-2.</b> Students will know sampling methods, collection of data and appropriate analysis for planning and management of field crops.</p> <p><b>CO-3.</b> To use practical applications of ratio and regression method of estimation.</p> <p><b>CO-4.</b> To apply various sampling methods for agricultural data.</p> <p><b>CO-5.</b> To draw a conclusion about the best sampling procedure.</p> <p><b>CO-6.</b> To apply various designs for agricultural data/agricultural field.</p>
9.	<b>Livestock and Poultry Management (BAG239)</b>	<p><b>CO 1:</b> Students will be able to evaluate the value and importance of livestock in Indian economy in view of distribution, identity, character of animal and poultry breeds</p>

		<p>and their end products including meat, milk, fiber and by-products.</p> <p><b>CO 2:</b> Students will be able to critically assess that how digestion system of farm animals are functioning, classified and Describe key aspects of the basic physiological processes of reproduction, nutrition, and breeding &amp; genetics needed for producing livestock and poultry.</p> <p><b>CO 3:</b> Students will be able to familiar with identify the basic nutrient groups; discuss nutrient requirement for growth, maintenance, reproduction and lactation. Identify feed additives and their use. Describe basic steps used for ration formulation.</p> <p><b>CO 4:</b> Students will able to identify about basic concepts related to herd health, vaccination in livestock and poultry production.</p> <p><b>CO 5.</b> Students will be known about the various diseases occurred in animals and poultry, their symptoms, reasons and how to control the disease which will be help to control the disease in rural area.</p> <p><b>CO.6.</b> Students will be able to implement their idea to establish the poultry and dairy farming as allied activities and can be promote the animal husbandry among rural poor.</p>
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#### Semester-IV

SN	Course	Outcomes completion of these courses students should be able to;
1.	<b>Crop Production Technology – II (Rabi Crops) (BAG241)</b>	<p><b>CO-1.</b> The student gains a thorough knowledge on basic production technology of Rabi crop production.</p> <p><b>CO-2.</b> To aquatint the students with modern technologies right from field preparation to marketing by allotting specific crop to each students.</p> <p><b>CO-3.</b> Familiarize on basic techniques of field production of Rabi crops.</p> <p><b>CO-4.</b> Students will be able to apply different field techniques for the production of Rabi crops.</p> <p><b>CO-5.</b> Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of Rabi crops</p> <p><b>CO-6.</b> Practical knowledge on management of Rabi crops.</p>
2.	<b>Production Technology for Ornamental Crops, MAP and Landscaping (BAG242)</b>	<p><b>CO-1.</b> Students will able to identify different ornamental plants, medicinal and aromatic plants</p> <p><b>CO-2.</b> Students will able to understand about different types of garden like formal and informal garden</p> <p><b>CO-3.</b> Students will able to know about production technology of different flowers, medicinal and aromatic plants</p>

		<p><b>CO-4.</b> Students have basic knowledge about the importance and production technology of cut flowers grown in India.</p> <p><b>CO-5.</b> Students will able know about the medicinal value of different medicinal and aromatic plants</p>
3.	<b>Renewable Energy and Green Technology (BAG243)</b>	<p><b>CO-1.</b> The course enables the student to outline the power generation potential from various renewable energy sources and performance evaluation of these devices.</p> <p><b>CO-2.</b> Benefits and advances in maintaining growth parameters for protected cultivation and of-season agriculture is highlighted through this course for entrepreneurship development</p> <p><b>CO-3.</b> After completion of the course, every student is exposed to various wastes recycling and renewable energy based efficient technologies.</p> <p><b>CO-4.</b> Practical exposure to analyze basic parameters of waste and waste management techniques is also provided.</p> <p><b>CO-5.</b> It is useful in creating confidence on reduced dependence of fossil fuel based economy.</p> <p><b>CO-6.</b> The course is designed to generate awareness on the use of renewable energy resources</p>
4.	<b>Problematic Soils and their Management (BAG244)</b>	<p><b>CO 1.</b> Students will be able to fundamental knowledge to identify problematic soils and associated problems.</p> <p><b>CO 2.</b> Students will be able to identify processes resulting in deterioration of soil physical and chemical properties, and to use the fundamentals of soil science disciplines for the reclamation of degraded soils.</p> <p><b>CO 3.</b> Students will be able to the efficient use of treated wastewater for prevention of soil degradation.</p> <p><b>CO 4.</b> Students will be able to use the concepts of soil chemistry to explain problematic soils and their restoration.</p> <p><b>CO 5.</b> Students will be able to identify hazards associated with irrigation water including salinity, sodicity and toxicity hazards.</p> <p><b>CO 6.</b> Students will be able to manage low quality irrigation water in a manner that ensure agricultural sustainability.</p>
5.	<b>Production Technology for Fruit and Plantation Crops (BAG245)</b>	<p><b>CO-1.</b> Students will able to identify the different fruits and plantation crops.</p> <p><b>CO-2.</b> Students will able to know about production technology of different fruits and plantation crops</p> <p><b>CO-3.</b> Students will know about the nutritional and economic value of fruits and plantation crops</p> <p><b>CO-4.</b> Students will able to understand about the cost of cultivation of different fruits and plantation crops</p>
6.	<b>Principles of Seed Technology (BAG246)</b>	<p><b>CO-1.</b> Apply knowledge for production of quality seeds.</p> <p><b>CO-2.</b> Analyzing different methods of seed production and processing.</p>

		<p><b>CO-3.</b> Examine quality seed by using different seed testing methods</p> <p><b>CO-4.</b> Observe present status of India for seed production.</p>
7.	<p><b>Farming System &amp; Sustainable Agriculture (BAG247)</b></p>	<p><b>CO-1.</b> To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.</p> <p><b>CO-2.</b> They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.</p> <p><b>CO-3.</b> To guide our development of positions, programs and standards</p> <p><b>CO-4.</b> The time concept relates to increasing the intensity of cropping under assured irrigated conditions.</p> <p><b>CO-5.</b> Space utilization pertains to building up of vertical dimension through multi-tier cropping and farming system approach.</p>
8.	<p><b>Agricultural Marketing Trade &amp; Prices (BAG248)</b></p>	<p><b>CO-1.</b> Students would be able to know the basic concepts &amp; terms of Agricultural Marketing</p> <p><b>CO-2.</b> Students will be acquainted about markets, classification of markets, marketable and marketed surplus of agricultural commodities</p> <p><b>CO-3.</b> They will be familiarize about marketing functions and channels</p> <p><b>CO-4.</b> Students would be able to learn market integration, efficiency, cost and price spread</p> <p><b>CO-5.</b> Students would be taught role of government in agricultural marketing, public sector institutions viz. CWC, SWC, FCI, CACP and DMI- their objectives and functions</p> <p><b>CO-6.</b> Students would be able to learn about agricultural price policy in India and its need.</p>
9.	<p><b>Introductory Agro-meteorology &amp; Climate Change (BAG249)</b></p>	<p><b>CO 1.</b> Students will be able to articulate and retain knowledge relevant to agro meteorology.</p> <p><b>CO 2.</b> Students will be able to gain the information of weather and climate which are considered as basic input in agriculture planning viz. land preparation, ploughing, harrowing etc.</p> <p><b>CO 3.</b> Students will be able to explain weather hazards, weather forecasting and impact of climate change on agriculture.</p> <p><b>CO 4.</b> Students will be able to acquaint with the meteorological instruments and recording the observation from the agro meteorological observatory.</p>
10.	<p><b>Elective courses- Protective Cultivation/Agribusiness Management/Weed Management (BAG250)</b></p>	<p><b>Protective Cultivation:</b></p> <p><b>CO-1.</b> Students will able to know about protected cultivation of different vegetables</p> <p><b>CO-2.</b> Students will able to understand about importance of green house cultivation in India</p> <p><b>CO-3.</b> Students will able to know to about the different</p>

		<p>irrigation system used in protected cultivation</p> <p><b>CO-4.</b> students will know about the material of construction for traditional and low cost green houses</p> <p><b>Agribusiness Management:</b></p> <p><b>CO-1.</b> To make the students aware about sectors of Agribusiness</p> <p><b>CO-2.</b> To acquaint students with the concept of good management and its functions</p> <p><b>CO-3.</b> To make the students develop the concept of planning process</p> <p><b>CO-4.</b> To understand the financial management concept of agribusiness</p> <p><b>CO-5.</b> To learn the marketing management and its concept</p> <p><b>CO-6.</b> To acquaint with the appraisal and evaluation techniques.</p> <p><b>Weed Management:</b></p> <p><b>CO-1.</b> To know weed definitions and their characteristics</p> <p><b>CO-2.</b> To study the harmful and beneficial effects of weeds.</p> <p><b>CO-3.</b> To discuss about different classifications of weeds.</p> <p><b>CO-4.</b> To study different methods of propagation and dissemination of weeds</p> <p><b>CO-5.</b> To study the biology and ecology of different weed species</p> <p><b>CO-6.</b> To study the weed competition with main crops for nutrients, moisture, light, space and losses caused by weeds</p> <p><b>CO-7.</b> To study the factors affecting crop weed competition/interference and allelopathic effects.</p>
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#### Semester-V

SN	Course	Outcomes completion of these courses students should be able to;
1.	<b>Principles of Integrated Pest and Disease Management (BAG351)</b>	<p><b>CO 1.</b> Students will familiarized with various categories of pest</p> <p><b>CO 2.</b> Students will know various field as well as laboratory methods of detection and diagnosis of arthropodan pests and plant pathogens</p> <p><b>CO 3.</b> Students will know principles and utilization of integrated pest management of field crops</p> <p><b>CO 4.</b> Students will know identification and nomenclature of pests of field crops and their management</p> <p><b>CO 5.</b> Students will be able apply knowledge gained to solve actual pest management problems</p> <p><b>CO-6.</b> Students will be able to explains the different methods of IPM with examples.</p> <p><b>CO-7.</b> Students will be able to define the concept of</p>

		Integrated Pest and Disease Management (IPDM) and enlists its components.
2.	<b>Manures, Fertilizers and Soil Fertility Management (BAG352)</b>	<p><b>CO-1:</b> Students will be able understand the importance of organic manures, green/leaf manuring and Integrated nutrient management (INM).</p> <p><b>CO-2:</b> Students will be able to study various chemical fertilizers and their classification which helps them to apply appropriate fertilizer dose to the field.</p> <p><b>CO-3:</b> Students will be able to understand history of soil fertility and plant nutrition and criteria of essentiality which helps them to understand the nutrient deficiency in soil.</p> <p><b>CO-4:</b> Students will be able to understand the chemistry of soil nutrient. They must be able to evaluate soil fertility for critical levels of different nutrients analysis</p> <p><b>CO-5:</b> Students will be able to understand use of indicator plants and various factors influencing nutrient use efficiency (NUE).</p>
3.	<b>Pests of Crops and Stored Grain and their Management (BAG353)</b>	<p><b>CO 1.</b> Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various field crops.</p> <p><b>CO 2.</b> Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various vegetable and ornamental crops.</p> <p><b>CO 3.</b> Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various fruit and plantation crops.</p> <p><b>CO 4.</b> Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various spice and condiments crops.</p> <p><b>CO 5.</b> Students will be able to identify the insect, mite, rodent , birds and microorganisms pests associated with store grain pests and their management.</p> <p><b>CO-6.</b> Students will be able to describe the concept of pest surveillance and its objectives.</p>
4.	<b>Diseases of Field and Horticultural Crops and their Management –I (BAG354)</b>	<p><b>CO-1.</b> Students will know pathogens, symptoms, etiology, disease cycle and management of major diseases of Kharif field crops.</p> <p><b>CO-2.</b> Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of Kharif vegetable crops</p> <p><b>CO-3.</b> Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit crops</p> <p><b>CO-4.</b> Student will know importance of sign and</p>

		<p>symptoms for detection of pathogens and disease.</p> <p><b>CO-5.</b> Students will know integrated methods of disease management, use of biological and chemicals in disease management.</p>
5.	<b>Crop Improvement-I (Kharif Crops) (BAG355)</b>	<p><b>CO 1.</b> Students will have knowledge on Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fibers; fodders and cash crops; vegetable and horticultural crops grown during kharif season.</p> <p><b>CO 2.</b> Students will be able to know about plant genetic resources, its utilization and conservation</p> <p><b>CO 3.</b> Students will be able to know important concepts of breeding self pollinated, cross pollinated and vegetatively propagated crops of kharif season.</p> <p><b>CO 4.</b> Students will know about major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids.</p> <p><b>CO 5.</b> Students will have adequate practical knowledge on emasculation and hybridization techniques in self &amp; cross pollinated crops of kharif season.</p>
6.	<b>Entrepreneurship Development and Business Communication (BAG356)</b>	<p><b>CO-1.</b> Understand theories of entrepreneurship and business development.</p> <p><b>CO-2.</b> Understand the key resources required to develop an existing business such as ideas and finance, launch a new venture, or initiate a business enterprise.</p> <p><b>CO-3.</b> Be able to state, understand and evaluate the key factors needed to develop a successful business.</p> <p><b>CO-4.</b> Understand the central role of opportunity recognition and marketing to business development.</p> <p><b>CO-5.</b> Understand the creation of business sustainability</p>
7.	<b>Geoinformatics and Nano-technology and Precision Farming (BAG357)</b>	<p><b>CO 1.</b> Detailed knowledge on precision agriculture concepts and techniques; their issues and concerns for Indian agriculture.</p> <p><b>CO 2.</b> Students will be able to know concepts, tool and techniques of geo-informatics and also their use in Precision Agriculture.</p> <p><b>CO 3.</b> Students will be able to know importance of remote sensing concepts and application in agriculture.</p> <p><b>CO 4.</b> Students will have knowledge about Global positioning system (GPS) components and its functions and use in agriculture.</p> <p><b>CO 5.</b> Students will have adequate practical knowledge on use of nanotechnology in tillage, seed, water, fertilizer, plant protection for scaling-up farm productivity.</p>
8.	<b>Practical Crop Production – I (Kharif crops) (BAG358)</b>	<p><b>CO-1.</b> The student gains a thorough knowledge on basic production technology of kharif crop production.</p> <p><b>CO-2.</b> To acquaint the students with modern technologies</p>

		<p>right from field preparation to marketing by allotting specific crop to each students.</p> <p><b>CO-3.</b> Familiarize on basic techniques of field production of kharif crops.</p> <p><b>CO-4.</b> Students will be able to apply different field techniques for the production of kharif crops.</p> <p><b>CO-5.</b> Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of kharif crops</p> <p><b>CO-6.</b> Practical knowledge on management of kharif crops.</p>
9.	<b>Intellectual Property Rights (BAG359)</b>	<p><b>CO 1.</b> Students will have brief knowledge on meaning of intellectual property, GATT, WTO, TRIPs and WIPO, Treaties for IPR protection.</p> <p><b>CO 2.</b> Students will be able to know Types of Intellectual Property and legislations covering IPR in India viz., Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets.</p> <p><b>CO 3.</b> Students will learn filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, compulsory licensing, Patent Cooperation Treaty, Patent search and patent database.</p> <p><b>CO 4.</b> Students will have brief knowledge on CBD, ITPGRFA and Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.</p>
10.	<b>Elective Courses- Soil, Plant, Water and Seed Testing/ Water Management/ Commercial Plant Breeding (BAG360)</b>	<p><b>Soil, Plant, Water and Seed Testing:</b></p> <p><b>CO-1.</b> To trained on professional skill, professional knowledge and Employability skill.</p> <p><b>CO-2.</b> In addition to this a candidate is entrusted to undertake project work and extracurricular activities to build up confidence.</p> <p><b>CO-3.</b> Gets the idea of trade tools, apparatus &amp; their standardization, calibration, identifies different types of Laboratory equipments.</p> <p><b>CO-4.</b> Preparation of standard solution and chemical reagents for soil Plant, Water and Seed testing</p> <p><b>CO-5.</b> Practice of different soil testing methods to determine various properties viz. soil texture, pH value, moisture content, Electric conductivity, hydraulic conductivity, organic carbon, Cation exchange capacity etc</p> <p><b>CO-6.</b> Apply knowledge for production of quality seeds.</p> <p><b>CO-7.</b> Examine quality seed by using different seed testing methods</p> <p><b>Water Management :</b></p> <p><b>CO-1.</b> Understand and learn definition, meaning, scope Importance of water in plants &amp; irrigation.</p> <p><b>CO-2</b> Know significance, introduction of, role of Indian</p>



		<p>Water resources and Rajasthan.</p> <p><b>CO-3</b> Learn the forms of soil water and Soil moisture constants.</p> <p><b>CO-4</b> Observation and learn the methods soil moisture Determination, crop water requirement.</p> <p><b>CO-5</b> Know about methods of evapo-transpiration,</p> <p><b>CO-6.</b>Develop and understand of irrigation, Water requirement.</p> <p><b>CO-7</b> Understand the role of crop vs. water requirement</p> <p><b>Commercial Plant Breeding:</b></p> <p><b>CO 1.</b>Student will get aware from the theoretical and practical skills of plant breeding</p> <p><b>CO 2.</b>Students will able to understand the development in plant breeding and the state of art of breeding practices</p> <p><b>CO 3.</b>Students will able to identify the plants with desirable characters with the purpose of crop improvement.</p> <p><b>CO 4.</b>Students will know principles and utilization of scientific approaches in the development of new varieties.</p> <p><b>CO 5.</b> Students will able to apply that e conventional and molecular breeding approaches with their innovative ideas in the distinct varieties</p> <p><b>CO 6.</b>Students will be able to apply their knowledge from variety development to their certification via full filling the requirements.</p>
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#### SEMESTER-VI

SN	Course	Outcomes completion of these courses students should be able to;
1	<b>Rainfed Agriculture &amp; Watershed Management (BAG361)</b>	<p><b>CO -1.</b> The time concept relates to increasing the intensity of cropping under assured irrigated conditions.</p> <p><b>CO -2 .</b>Effectively managing water to meet food and Environmental conditions.</p> <p><b>CO- 3.</b> The vast potential of rainfed agriculture through knowledge based management of natural resources for increasing productivity and income to achieve food security in the developing world.</p> <p><b>CO -4.</b> Convergence of actors and their actions at watershed level to harness the synergies and to maximize the benefits through efficient and sustainable use of natural resources, to benefit small and marginal farmers through increased productivity per unit of resource.</p> <p><b>CO -5.</b>Low-cost and environment-friendly soil and water conservation measures throughout the top</p>

		<p>sequence for more equitable benefits to a large number of farmers.</p> <p><b>CO- 6.</b> Income-generating activities for the landless and women through allied sector activities and rehabilitation of wastelands for improved livelihoods and protecting the environment.</p>
2	<b>Protected Cultivation and Secondary Agriculture (BAG 362)</b>	<p><b>CO -1.</b> The students will understand the basic concepts of protected cultivation.</p> <p><b>CO -2.</b> The students will design improved protected cultivation measures.</p> <p><b>CO-3.</b>The students will able to know technical know-how on secondary agriculture.</p> <p><b>CO- 4 .</b>The students will analyze cost economics in secondary agriculture.</p> <p><b>CO 5.</b> Space utilization pertains to building up of vertical dimension through multi-tier cropping and farming system approach.</p>
3	<b>Diseases of Field and Horticultural Crops and their Management-II (BAG363)</b>	<p><b>CO-1.</b> Students will know pathogens, symptoms, etiology, disease cycle and management of major diseases of Rabi field crops.</p> <p><b>CO-2.</b> Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of Rabi vegetable crops</p> <p><b>CO-3.</b> Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit crops</p> <p><b>CO-4.</b> Student will know importance of sign and symptoms for detection of pathogens and disease.</p> <p><b>CO-5.</b> Students will know integrated methods of disease management, use of biological and chemicals in disease management.</p>
4	<b>Post-harvest Management and Value Addition of Fruits and Vegetables (BAG 364)</b>	<p><b>CO-1.</b> Students will able to know about post harvest management of fruits and vegetables.</p> <p><b>CO-2.</b> Students will able understand value added product of different fruits and vegetables</p> <p><b>CO-3.</b> Students will know about maturity indices of different fruits and vegetables</p> <p><b>CO-4.</b> Students will able to know about the preparation of jam, jelly etc</p> <p><b>CO-5.</b> Students will able to know about preservation of different fruits and vegetables and also able to know about different methods of preservation</p> <p><b>CO-6.</b> Students will able to know about the different storage and packaging methods of fruits and vegetables</p>
5	<b>Management of Beneficial Insects (BAG365)</b>	<p><b>CO -1.</b> Growing need for biopesticides and biofertilizers for food security requirements.</p> <p><b>CO -2.</b> Knowledge of Importance of beneficial Insects, Beekeeping ,Types of silkworm, Species of lac insect, morphology, biology, host plant, lac production – seed lac, button lac, shellac, lac-products.</p> <p><b>CO- 3.</b> Identification of major parasitoids and</p>

		<p>predators commonly being used in biological control.</p> <p><b>CO -4.</b> Insect orders bearing predators and parasitoids used in pest control and their mass multiplication techniques</p> <p><b>CO- 5.</b> Identification of other important pollinators, weed killers and scavengers.</p>
6	<b>Crop Improvement-II (<i>Rabi crops</i>) (BAG366)</b>	<p>distribution of species, wild relatives in different cereals; pulses; oilseeds; fibers; fodders and cash crops; vegetable and horticultural crops grown during Rabi season.</p> <p><b>CO 2.</b> Students will be able to know about plant genetic resources, its utilization and conservation</p> <p><b>CO 3.</b> Students will be able to know important concepts of breeding self pollinated, cross pollinated and vegetatively propagated crops of Rabi season.</p> <p><b>CO 4.</b> Students will know about major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids.</p> <p><b>CO 5.</b> Students will have adequate practical knowledge on emasculation and hybridization techniques in self &amp; cross pollinated crops of Rabi season.</p>
7	<b>Practical Crop Production –II (<i>Rabi crops</i>) (BAG367)</b>	<p><b>CO-1.</b> The student gains a thorough knowledge on basic production technology of Rabi crop production.</p> <p><b>CO-2.</b> To acquaint the students with modern technologies right from field preparation to marketing by allotting specific crop to each students.</p> <p><b>CO-3.</b> Familiarize on basic techniques of field production of Rabi crops.</p> <p><b>CO-4.</b> Students will be able to apply different field techniques for the production of Rabi crops.</p> <p><b>CO-5.</b> Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of Rabi crops</p> <p><b>CO-6.</b> Practical knowledge on management of Rabi crops.</p>
8	<b>Principles of Organic Farming (BAG368)</b>	<p><b>CO-1.</b> To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.</p> <p><b>CO-2.</b> They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.</p> <p><b>CO-3.</b> To guide our development of positions, programs and standards</p> <p><b>CO -4.</b> Organic farming, principles and its scope in India</p> <p><b>CO- 5.</b> Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture.</p> <p><b>CO- 6.</b> Choice of crops and varieties in organic farming.</p>
9	<b>Farm Management, Production &amp; Resource Economics</b>	<p><b>CO -1.</b> Detailed knowledge on Meaning and concept of farm management, objectives and relationship with other sciences.</p>

	(BAG369)	<p><b>CO -2.</b> Principles of farm management.</p> <p><b>CO -3.</b> Law of equi- marginal/or principles of opportunity cost and law of comparative advantage.</p> <p><b>CO 4.</b>To understands the subject matter and importance of natural resources economics.</p> <p><b>CO-5.</b> Understand and learn the concepts of natural resource economics.</p>
10	<b>Principles of Food Science and Nutrition (BAG3610)</b>	<p><b>CO -1.</b> Concepts of Food Science (definitions, measurements, density, phase change, pH, osmosis, surface tension, colloidal systems etc.).</p> <p><b>CO -2.</b> Food composition and chemistry (water, carbohydrates, proteins, fats, vitamins, minerals, flavors, colors, miscellaneous bioactive, important reactions).</p> <p><b>CO -3.</b> Food microbiology (bacteria, yeast, moulds, spoilage of fresh &amp; processed foods production of fermented foods),</p> <p><b>CO -4.</b> Principles and methods of food processing and preservation (use of heat, low temperature, chemicals, radiation, drying etc.).</p> <p><b>CO -5.</b> Food and nutrition</p>
11	<b>Elective Courses- Micro propagation Technologies/ Agricultural Journalism/System simulation and Agro-Advisory (BAG3611)</b>	<p><b>Micro propagation Technologies</b></p> <p><b>CO- 1.</b> Define the nature of plant growth processes in the tissue culture environment</p> <p><b>CO -2.</b> Apply the technique of micro propagation such as somatic embryogenesis, organogenesis and protoplast culture for ex situ conservation and mass multiplication of endangered and economically important plants</p> <p><b>CO- 3.</b> Evaluate the clonal fidelity and polymorphism of the tissue cultured plants using molecular and statistical tools</p> <p><b>CO -4.</b> Design and develop the protocols for enhanced production of bioactive compounds in cell suspension culture.</p> <p><b>CO- 5.</b> Formulate protocol for development of genetically engineered crops for novel traits.</p> <p><b>Agricultural Journalism</b></p> <p><b>CO -1.</b> Students would be able to gain conceptual and theoretical knowledge of Journalism and Mass Communication, and learn to think critically about issues and topics of the subject.</p> <p><b>CO -2.</b> Students would be able to identify, formulate, review literature, and analyze research problems related to the subject.</p> <p><b>CO -3.</b> Students would be able to use research- based knowledge and research methods including research design, survey analysis and interpretation of data, and synthesis of the information collected to provide valid and cogent conclusions.</p> <p><b>CO -4.</b> Students would be able to apply conceptual</p>

		<p>knowledge and the knowledge gained through research to assess. it's applicability and utility in the domain of society and nation.</p> <p><b>CO -5.</b> Students would be able to communicate effectively about the research conducted, verbally as well as in written, write effective report, make effective presentation, and be an effective media communicator</p> <p><b>CO- 6.</b> Students would be able to engage in higher studies and research, and be a life- long learner in context of media studies</p> <p><b>System simulation and Agro-Advisory</b></p> <p><b>CO -1.</b> Understand analogy of computer.</p> <p><b>CO -2.</b> Basic knowledge of MS Office.</p> <p><b>CO -3.</b> Some basic knowledge of Internet And WWW.</p> <p><b>CO -4.</b> Use of IT application and different IT tools in Agriculture.</p>
<p><b>SEMESTER VII</b></p> <p><b>Rural Agricultural Work Experience and Agro-industrial Attachment (RAWE &amp;AIA)</b></p>		
<b>SN</b>	<b>Course</b>	<b>Outcomes</b> <b>completion of these courses students should be able to;</b>
<b>1</b>	<p><b>General orientation &amp; On campus training by different faculties (1 Week)</b></p> <p><b>Course Code:- BAG471</b></p>	<p><b>CO -1.</b> Students would be able to gain conceptual and theoretical knowledge of RAWE</p> <p><b>CO -2.</b> Students would be able to identify, formulate, review literature, and analyze research problems related to RAWE</p> <p><b>CO- 3.</b> Students would be able to apply conceptual knowledge and the knowledge gained during this training to assess. it's applicability and utility in rural area.</p> <p><b>CO -4.</b> Students would be able to communicate effectively about the research conducted, verbally as well as in written, write effective report, make effective presentation, and be an effective media communicator</p>

<p><b>2</b></p>	<p><b>Village attachment</b> <b>(10 Weeks)</b></p> <ul style="list-style-type: none"> <li>• Orientation and survey of village-1 Week</li> <li>• Agronomical interventions-2 Weeks</li> <li>• crop protection interventions- 2 Weeks</li> <li>• Fruit and vegetable production interventions-2 week</li> <li>• Animal production interventions-1 week</li> <li>• Extension and transfer of technology activities-2 Weeks</li> </ul> <p><b>Course Code:-BAG 472</b></p>	<p><b>CO-1.</b> Rural Agriculture Work Experience also enables the students to gain rural experience giving them confidence and enhancing on-farm problem solving abilities in real life situations especially in contact with farmers, growers, other stakeholders.  <b>CO-2.</b> Confidence building. Develop skill of joint effort (community management)  <b>CO-3.</b> Developing art of creative thinking. Effective decision-making  <b>CO-4.</b> Life's real experiences. Time and relationship management  <b>CO-5.</b> Observe problem and possible solution (crisis management)  <b>CO-6.</b> Understanding and practicing local (ITK) and scientific methods. Working of local institution/organization.</p>
<p><b>3</b></p>	<p><b>Unit attachment in Univ./ College. KVK/ Research Station Attachment (4 Week)</b> <b>Course Code:- BAG473</b></p>	<p><b>CO-1.</b> Acquaintance with Univ./College/KVK/ Research Station and their staff .  <b>CO-2.</b> Study of structure, functioning, objective and mandates of the Univ./ College/KVK/ Research Station.  <b>CO-3.</b> Study of various units and hands-on trainings under supervision of Univ./ College/KVK/ Research Station.  <b>CO-4.</b> Contribution of the Univ./College/KVK/ Research Station in promoting social environment.</p>
<p><b>4</b></p>	<p><b>Agro-Industrial Attachment (4 Week)</b> The students would be attached with the agro-industries for a period of 4 weeks to get an experience of the industrial environment and working.  <b>Course Code:-BAG 474</b></p>	<p><b>CO-1.</b> Acquaintance with industry and staff  <b>CO-2.</b> Study of structure, functioning, objective and mandates of the industry.  <b>CO-3.</b> Study of various processing units and hands-on trainings under supervision of industry.  <b>CO-4.</b> Staff Ethics of industry.  <b>CO-5.</b> Employment generated by the industry.  <b>CO-6.</b> Contribution of the industry promoting environment.  <b>CO-7.</b> Learning business network including outlets of the industry  <b>CO-8.</b> In-plant Training for a short period of time in relevant industry helps gain the knowledge and experience of the work culture. In-plant Training by reputed organizations either MNCs or organized sectors provide an industrial exposure to the students as well as helps develop their career in high tech industrial requirements.</p>
<p><b>5</b></p>	<p><b>Project Report Preparation, Presentation and Evaluation (1 Week)</b>  <b>Course Code:-BAG 475</b></p>	<p><b>CO-1-</b>Upon study of the meaning and definitions of the projects students will understand the meaning of the project in practice.  <b>CO- 2-</b> Upon Study and characteristics of the projects, students will realize the practical importance and try to use in real life.  <b>CO-3-</b> Upon study of the various types of agriculture projects, students will analyze the system and implement in real life practice.  <b>CO-4-</b> Upon study of the project cycle they will know the</p>

		<p>identification, formulation and evaluation of real projects in life.</p> <p><b>CO-5-</b>Upon study of the feasibility, students will know the meaning of market, technical feasibility of the real life project, and will implement it.</p> <p><b>CO-6.</b> Student Project is essential for students interested in higher education. Through this component, they will know how to identify research problem, create experimental set up and to write report etc.</p>
<p><b>SEMESTER VIII</b> <b>(Experiential learning program (ELP))</b></p>		
SN	Course	Outcomes completion of these courses students should be able to;
	<p><b>Modules for Skill Development and Entrepreneurship (Each of 0+10 credit):</b></p> <ol style="list-style-type: none"> <li>1. Production Technology for Bioagents and Biofertilizer(READY- 481)</li> <li>2. Seed Production and Technology(READY- 482)</li> <li>3. Mushroom Cultivation Technology(READY- 483)</li> <li>4. Soil, Plant, Water and Seed Testing(READY- 484)</li> <li>5. Commercial Horticulture (READY- 485)</li> <li>6. Floriculture and Landscaping(READY- 486)</li> <li>7. Food Processing(READY-487)</li> <li>8. Agriculture Waste Management(READY- 488)</li> <li>9. Organic Production Technology(READY- 489)</li> </ol> <p>A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the above package of modules in the <b>VIII semester (ELP).</b></p>	<p><b>CO-1.</b>To reorient graduates of agriculture and allied subjects for ensuring and assuring employability and to develop entrepreneurs for emerging knowledge intensive agriculture.</p> <p><b>CO-2.</b>Conceptualized for building skills in project development and execution, decision-making, individual and team coordination, approach to problem solving, accounting, quality control, marketing and resolving conflicts, etc. with end to end approach in Student READY program.</p> <p><b>CO-3.</b> Experiential Learning helps the student to develop competence, capability, capacity building, acquiring skills, expertise, and confidence to start their own enterprise and turn job creators instead of job seekers.</p>

# **B. Sc. (Hons.) Horticulture**



## Programme Outcomes: B. Sc.(Hons.) Horticulture:

<b>School of Agriculture</b>	After successful completion of four year degree program in horticulture, a student should be able to;
<b>Programme Outcomes</b>	<p><b>PO1 –Knowledge and Understanding</b> Apply the fundamental as well as applied knowledge of horticulture and related specializations to the solution of complex horticultural problems by utilizing scientific, economic and environmental principles underpinning horticultural production and land use. Evaluate the impact of science on the Horticulture Industry. Evaluate technological developments and advancements in Horticulture. Specify activities appropriate for a horticulture business</p> <p><b>PO2- Problem analysis:</b> Identify, formulate, research literature, and analyze complex horticultural problems reaching substantiated conclusions using knowledge of fundamental courses of horticultural science.</p> <p><b>PO3-Development of solutions:</b> Design solutions for complex horticultural problems and design system components or processes that meet the specified needs with appropriate consideration for the health of vegetable fields, orchards, etc. and safety to the cultural, societal, and environmental considerations</p> <p><b>PO4-Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.</p> <p><b>PO5-Environment and Sustainability:</b> Understand the impact of the professional horticultural solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</p> <p><b>PO6-Ethics:</b> Apply ethical principles and values and accept responsibility for them</p> <p><b>PO7 -Individual and Team Work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p><b>PO8- Communication :</b> Communicate effectively on complex horticultural activities with the Agrarian community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</p> <p><b>PO9- Project Management and Finance :</b> Demonstrate knowledge and understanding of the horticultural and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments</p> <p><b>PO10- Life-long learning :</b> Recognize the need for, and have the preparation and ability to engage in</p>

	<p>independent and life-long learning in the broadest context of technological change in country farming by giving training about the most modern methods used in horticultural crop improvement like fertilizers, soil testing, plant tissue culture.</p> <p><b>PO11-Enterprenuership:</b> The course apart from training in scientific skills also trains in marketing skills of horticulture products by providing detailed knowledge of horticulture in India and Indian farmer's income generating enterprises.</p> <p><b>PO12-Final Outcome</b> Under this study the students are exposed to real life rural settings with the aim to develop a sense of awareness among the students so that they can understand the problems of farmers and rural people.</p>
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### Course Outcomes: B. Sc. (Hons.) Horticulture

#### Semester-I

SN	Course	Outcomes
1.	<b>Elementary Statistics and Computer Applications (BHT111)</b>	<p>completion of these courses students should be able to;</p> <p><b>CO-1</b> To analyze statistical data graphically using frequency distributions and cumulative frequency distributions.</p> <p><b>CO-2</b> To Analyze statistical data using measures of central tendency, dispersion and location</p> <p><b>CO-3</b> To use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.</p> <p><b>CO-4</b> To translate real-world problems into probability models.</p> <p><b>CO-5</b> To calculate probabilities, and derive the marginal and conditional distributions of vicariate random variables.</p> <p><b>CO-6</b> To apply various sampling methods for agricultural data.</p> <p><b>CO-7</b> To analyze statistical data using MS-office (Excel, Word, Power-point).</p>
2.	<b>Fundamentals of Soil Science (BHT112)</b>	<p><b>CO-1</b> Students will be able to understand the soil genesis and how the rocks are forming in the soil. The students will be able to understand about the availability of various minerals.</p> <p><b>CO-2</b> Students will be able to understand the soil structure and texture during forming with their porosity.</p> <p><b>CO- 3</b> Students will be able to understand about the different type of the soil in the different region of the country.</p> <p><b>CO-4</b> Students will be able to understand the soil reaction-</p>

		<p>pH, acidity and alkalinity, buffering, effect of pH on nutrient availability; soil colloids - inorganic and organic.</p> <p><b>CO-5</b> Students will be able to illustrate the macro and micro-organism availability in the soil and they are polluted the soils.</p> <p><b>CO-6</b> Students will be able to understand the determination of soil fertility and physico-chemical analysis viz. Organic carbon, pH, EC etc.</p>
<b>3.</b>	<b>Economics and Marketing (BHT113)</b>	<p><b>CO -1.</b> Students will learn basic Economic terms and definitions.</p> <p><b>CO- 2.</b> They will be able to know about consumer behaviour, factors of production.</p> <p><b>CO- 3.</b> Students will be familiar with demand, law of demand, law of supply, price determination etc.</p> <p><b>CO -4.</b> Students will learn about marketing its role and functions of marketing.</p> <p><b>CO -5.</b>Students would be able to know the classification of markets, marketing channel, prices spread, marketing efficiency and constraints in marketing of agricultural produce</p> <p><b>CO -6.</b> They would be acquainted about the guidelines for preparation of project reports, insurance and SWOT analysis.</p>
<b>4.</b>	<b>Elementary Plant Biochemistry (BHT114)</b>	<p><b>CO 1.</b> Understand the chemical aspects of life at molecular life</p> <p><b>CO 2.</b> Learn the structure and functional aspects of important biomolecules such as carbohydrates, lipids, proteins etc.</p> <p><b>CO 3.</b> Understand the mechanism of different enzymatic reactions</p> <p><b>CO 4.</b> Understand the physiological details of central metabolic pathways</p> <p><b>CO 5.</b> Understand the biochemical nature of nucleic acids, their role in living systems</p>
<b>5.</b>	<b>Introductory Crop Physiology (BHT115)</b>	<p><b>CO 1.</b> Learn and understand about mineral nutrition in plants.</p> <p><b>CO 2.</b> Know about mechanism of water movement in plants</p> <p><b>CO 3.</b> Understand the mechanism of transpiration</p> <p><b>CO 4.</b> Understand the process of translocation of solutes in plants</p> <p><b>CO 5.</b> Understand the physiological details of photosynthesis, photorespiration</p>
<b>6.</b>	<b>Fundamentals of Horticulture (BHT116)</b>	<p><b>CO 1.</b>Students will be know about the importance and scope of Horticulture and can easily identify the different horticultural crops like fruits, vegetable, flowering and</p>

		<p>ornamental plants etc.</p> <p>CO 2.Students will be able to know about basic horticultural principles and practices</p> <p>CO 3.Students will be able to know about the different vegetable gardening which is used in the world.</p> <p>CO 4.Students will know about principles, planning, layout and management of orchard.</p> <p>CO 5.Students will know about pruning and training of horticultural plants</p> <p>CO.6. Students will be able to understand the importance of bio regulators in horticulture</p>
7.	<b>Principles of Landscape Architecture (BHT117)</b>	<p>CO 1 Students will be able to understand the residential and commercial water management as it relates to an understanding of the intersection of the Plant-Soil-Water continuum</p> <p>CO 2 Students will be able to identify and recall components of an environmentally and ecologically sound landscape and architecture system</p> <p>CO 3 Students will be able to apply basic green roof design, construction and maintenance techniques</p> <p>CO 4 Students will be able to identify and choose plant materials for designs that will have a desired impact on naturalized landscapes and architecture designs.</p> <p>CO 5 Students will be able to apply an understanding of the effective use of practical and applied design strategies to determine meaningful solutions to landscape design problems pertinent to naturalized environments</p> <p>CO 6 Students will be able to formulate creative new strategies that will effectively develop and manage sustainable landscapes and architecture designs of different type gardens.</p>
8.	<b>Principles of Genetics and Cytogenetics (BHT118)</b>	<p>CO 1.Students will be able to know the structure and function of different cell organelles.</p> <p>CO 2. Students will understand the basic principles of cells, nucleus, chromosomes and their role in living organisms.</p> <p>CO 3. Students will be able to analyse as well as construct the family pedigree.</p> <p>CO 4. Students will be able use punnet square to predict possible offspring variations.</p> <p>CO 5. Students will be able to improve their analytical and problem solving skills.</p> <p>CO 4.Students will know the structure and function of genetic material.</p>

		<p>CO 5. Students will be able to develop their analytical, quantitative and problem solving skills from classical to molecular skills.</p> <p>CO 6. Students will be known about basics concept of the genes and their implementation in the development of new variety with distinct and desirable Features.</p>
9.	<b>Introductory Microbiology (BHT119)</b>	<p>CO-1. Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures</p> <p>CO-2. Know various culture media and their applications and also understand various physical and chemical means of sterilization.</p> <p>CO-3. Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria</p> <p>CO-4. Know about role of microbes in soil fertility and crop production</p> <p>CO-5. Develop an understanding about the beneficial effect of soil microorganisms on plant community</p> <p>CO-6. Understand the nutrient sources and cycles.</p>
10.	<b>Communication Skills and Personality (BHT120)</b>	<p>CO1: Ability to design a language component or process to meet desired need within realistic, Constraints such as economic, environmental, social, political, ethical, scenario</p> <p>CO2: Ability to use English practically in everyday life and Professional life.</p> <p>CO3: An understanding of academic writing skills to be used in the corporate field.</p> <p>CO4: The ability to present oneself in the business, Corporate and digital world.</p>
11.	<b>NSS/NCC/Physical Education &amp; Yoga Practices (BHTNC111)</b>	<p>CO 1. Understand various streams of Yoga.</p> <p>CO 2. Know procedure and techniques of doing various Asanas.</p> <p>CO 3. Know the benefits of Asanas with various types of Pranayams.</p> <p>CO 4. Practice Asanas Pranayams and Meditation.</p> <p>CO 5. Understand relaxing Yogic Asanas and Exercises.</p> <p>CO 6. Know concept of Yogic food.</p>

## SEMESTER-II

SN	Course	Outcomes
1.	<b>Tropical and Subtropical Fruits (BHT121)</b>	<p>completion of these courses students should be able to;</p> <p><b>CO 1</b> Students will be able to know about horticultural classification of fruits along with genome classification.</p> <p><b>CO 2</b> Students will be able to understand different horticultural zones of India and they will be able to identify which type of fruits is suitable for which zone.</p> <p><b>CO 3</b> Students will be able to know about climate and soil requirements and propagation techniques of different fruit crops.</p> <p><b>CO 4</b> Students will be able to understand production technology of different fruit crops which is grown in India.</p> <p><b>CO 5</b> Students will be able to know about post-harvest technology, harvest indices, harvesting methods, grading, packaging and storage of different fruit crops.</p> <p><b>CO 6</b> Students will be able to know about cost of cultivation of different fruit crops.</p>
2.	<b>Tropical and Subtropical Vegetables (BHT122)</b>	<p><b>CO 1</b> Students will able to know about history of tropical and subtropical vegetable in India</p> <p><b>CO 2</b> Students will able to understand importance and scope of tropical and subtropical vegetable production in India.</p> <p><b>CO 3</b> Students will able to understand types of vegetable grading.</p> <p><b>CO-4.</b> Students will able to know about role of temperature, humidity and light in vegetable production.</p> <p><b>CO 5</b> Students will able to know about seed production technology of different temperate vegetable crops.</p> <p><b>CO 6</b> Students will able to understand germination and purity analysis.</p>
3.	<b>Principles of Plant Breeding (BHT123)</b>	<p>CO-1 Develop the ability to understand the process of Breeding in plants.</p> <p>CO-2 Will understand the mode of reproduction and genetic consequences.</p> <p>CO-3 Ability to understand the mechanism of improved yield and varieties.</p> <p>CO-4 Ability to understand different principles and methods of plant breeding.</p> <p>CO-5 Will acquaint with flower biology of different crops.</p> <p>CO-6 Will acquire knowledge and practical skills in plant breeding.</p>

4.	<b>Soil Fertility and Nutrient Management (BHT124)</b>	<p>CO 1 Students will be able to understand the nutrient transformation in relation to soil-plant System.</p> <p>CO 2 Students will be able to understand the nutrient deficiency symptoms and functions of Essential plant nutrients. .</p> <p>CO 3 Students will be able to understand history of soil fertility and plant nutrition and criteria of essentiality which helps them to understand the Nutrient deficiency in soil.</p> <p>CO 4 Students will be able to understand the Chemistry of soil nutrient. They must be able to evaluate soil fertility for critical levels of different nutrients analysis</p> <p>CO 5 Students will be able to understand use of indicator plants and various factors influencing Nutrient use efficiency (NUE).</p> <p>CO 6 Students will be able to understand the role of organic matter into the soil fertility management.</p>
5.	<b>Water Management in Horticultural Crops (BHT125)</b>	<p>CO-1. Understand and learn definition, meaning, scope Importance of water in plants &amp; irrigation.</p> <p>CO-2 Know significance, introduction of, role of Indian Water resources and Rajasthan.</p> <p>CO-3 Learn the forms of soil water and Soil moisture Constants.</p> <p>CO-4 Observation and learn the methods soil moisture Determination, crop water requirement.</p> <p>CO-5 Know about methods of vapor-transpiration,</p> <p>CO-6. Develop and understand of irrigation, Water requirement.</p> <p>CO-7 Understand the role of crop vs. water requirement</p>
6.	<b>Plant Propagation and Nursery Management (BHT126)</b>	<p>CO 1 Students will be identify and practice safe use of tools, equipment and supplies used in nursery and garden center management careers</p> <p>CO 2 Students should be an understanding of the composition, fertility and biology of soil and how they relate to good plant growth</p> <p>CO 3 Students will be an understanding of functional business knowledge in the nursery and greenhouse management industry</p> <p>CO 4 Students will be understand to propagate with different parts of plant, grow, and maintain plants in horticulture production systems</p>

		<p>CO 5 Students will be understand a fundamental understanding of plant identification, selection, use and maintenance of plant material best suited for conventional</p> <p>CO 6 Students will be able to apply relevant mathematical principles and calculations inherent in all aspects of the nursery, qualitative plant development and horticulture Industry</p>
7.	<b>Environmental Studies and Disaster Management (BHT127)</b>	<p>CO-1. Upon study of the subject the Students will be able to understand the importance of the environment</p> <p>CO-2 Upon study of the ecosystem students will analyze the eco system and implement use the basic requirements to preserve them.</p> <p>CO-3 Upon study of the environmental pollution, they will use in real life and try to find out the solution.</p> <p>CO-4 Upon study of the solid waste management, they will use it in real life.</p> <p>CO-5 To understand the concepts involved in Environmental ethics students will analyze the nuclear accidents and other problems and try to use in practice to manage it.</p> <p>CO-6-. Upon study of the natural disasters, they will Take appropriate actions to prevent it.</p> <p>CO-7. Upon study of the management of disasters students will implement in real life to manage the Disasters.</p>
8.	<b>Growth and Development of Horticultural Crops (BHT128)</b>	<p><b>CO 1.</b>Students will be known about the importance and scope of Horticulture.</p> <p><b>CO 2.</b>Students will be able to know about the climate and soil for Horticultural crops.</p> <p><b>CO 3.</b>Students will be able to know about the growth and development of Horticultural crops.</p> <p><b>CO-4.</b>Students will able to know about role of temperature, humidity and light in Horticultural crops.</p> <p><b>CO 5.</b>Students will know about pruning and training of horticultural plants.</p> <p><b>CO.6.</b> Students will be able to understand the importance of growth regulators in horticulture.</p>
9.	<b>Physical and Health Education (BHTNC129)</b>	<p>CO 1. Understand various streams of Yoga.</p> <p>CO 2. Know procedure and techniques of doing various Asanas.</p> <p>CO 3. Know the benefits of Asanas with various types of Pranayams.</p> <p>CO 4. Practice Asanas Pranayams and Meditation.</p>



		CO 5. Understand relaxing Yogic Asanas and Exercises. CO 6. No concept of Yogic food.
<b>10.</b>	<b>Information and Communication Technology (BHTNC130)</b>	CO-1. To understand basics elements of computer system, hardware and software system. CO-2. To understand the basic knowledge about operating systems and various programming languages available. CO-3. To understand and apply the features and functions of the major categories of application software's (word processing, spreadsheets and presentations). CO-4. To create and analyze format texts in various communication forms, presentations, excel worksheets, and will have the knowledge of working with databases in practical for data creation, editing, presenting, creation and interpretation of graphs. CO-5. To understand and apply working online and can connect to world through internet and use electronic mails for communication purpose, take part in various online discussion forums using AV aids. CO-6. To understand different types of networks available and ways to connect over these networks.

### SEMESTER III

SN	Course	Outcomes
<b>1.</b>	<b>Fundamentals of Plant Pathology (BHT231)</b>	completion of these courses students should be able to; CO 1. Understand and accurately apply terminology used in the field of plant pathology, and understand the fundamental differences between different types of microorganisms including bacteria, viruses, fungi, protozoa and protozoa. CO 2. Identify major principles of plant pathology and recognize the etiological agents of disease CO 3. Describe the concepts of what constitutes disease in plants. CO 4. Know about concept of disease, causal agents of plant diseases, identification methods and management of crop diseases. CO 5. Employ methods to diagnose and manage a wide range of plant diseases CO.6 Understand the different factors disease spread, favorable environmental conditions and control of plant diseases.

2.	<b>Fundamentals of Entomology (BHT232)</b>	<p>CO -1.Students will be able to evaluate and apply key concepts related to identify the importance of insects’ role in the world to the functioning of the terrestrial ecosystems.</p> <p>CO- 2.Students will be able to critically assess role that explain how insects deal with the world around them.</p> <p>CO- 3.Students will be able to use insects as examples to apply concepts and comparisons with other organisms.</p> <p>CO- 4.Students will know identification and nomenclature of insects.</p> <p>CO -5.Students will be known about basics of insect pest management which will reflect on the practical implementation of IPM Programme.</p> <p>CO-6. Students will be able to create something which will be helpful in explaining which order an insect belongs to and will be able to identify insects to the level order.</p>
3.	<b>Temperate Vegetable Crops (BHT233)</b>	<p>CO 1 Students will able to know about history of temperate vegetable in India</p> <p>CO 2 Students will able to understand the importance and scope of temperate vegetable production in India</p> <p>CO 3 Students will able to understand the types of vegetable grading.</p> <p>CO-4. Students will able to know about role of temperature, humidity and light in vegetable production.</p> <p>CO 5 Students will able to know about seed production technology of different temperate vegetable crops.</p> <p>CO 6 Students will able to understand germination and purity analysis.</p>
4.	<b>Nematode pests of Horticultural crops and their Management (BHT234)</b>	<p>CO 1 Understand the basic biology, ecology and physiology of nematodes</p> <p>CO 2 Understand the different nematode feeding/trophic groups, such as ectoparasites, endoparasites and semi-endoparasites and how these pests inflict damage symptoms</p> <p>CO 3 Understand the influences that determine the duration of the nematode life-cycle</p> <p>CO 4 Know which nematode pests are important for each crop and the damage they cause</p> <p>CO 5 Learn about the integrated control measures required to control and manage nematodes in fields of selected grain and deciduous fruit as well as citrus and potato</p> <p>CO 6 Refer producers who encounter specific nematode problems to expert nematologists in India for diagnostic analysis and advice</p>
5.	<b>Diseases of fruit, Plantation, Medicinal and Aromatic Crops (BHT235)</b>	<p>CO-1. Students will know pathogens, symptoms, etiology, disease cycle and management of major</p>

		<p>Diseases of fruit, Plantation, Medicinal and Aromatic Crops.</p> <p>CO-2. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit, Plantation, Medicinal and Aromatic Crops.</p> <p>CO-3. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit crops.</p> <p>CO-4. Student will know importance of sign and Symptoms for detection of pathogens and disease.</p> <p>CO-5. Students will know integrated methods of disease management, use of biological and chemicals in fruit, Plantation, Medicinal and Aromatic Crops.</p>
6.	<b>Fundamentals of Food Technology (BHT236)</b>	<p>CO -1. Concepts of Food Science (definitions, measurements, density, phase change, pH, osmosis, surface tension, colloidal systems etc.).</p> <p>CO -2. Food composition and chemistry (water, carbohydrates, proteins, fats, vitamins, minerals, flavors, colors, miscellaneous bioactive, important reactions).</p> <p>CO -3. Food microbiology (bacteria, yeast, moulds, spoilage of fresh &amp; processed foods production of fermented foods),</p> <p>CO -4. Principles and methods of food processing and preservation (use of heat, low temperature, chemicals, radiation, drying etc.).</p> <p>CO -5. Food and nutrition.</p>
7.	<b>Temperate Fruit Crops (BHT237)</b>	<p><b>CO 1-</b> knowledge on - what are temperate fruits and their classification on the basis of fruit morphology, bearing habit, plant stature and fruit growth pattern.</p> <p><b>CO 2-</b> introduction of apple and other important temperate fruits, area and production, soil and climatic requirements, varieties, rootstocks and propagation techniques, planting density, training and pruning systems.</p> <p><b>CO 3 -</b>knowledge of flowering. Pollination, nutrition, orchard floor and weed management, use of growth regulators, fruit thinning and fruit drop, harvesting and post-harvest management of apple and other temperate fruits.</p> <p><b>CO 4</b> knowledge to students on insect pests, diseases and special production problems of apple and other temperate fruits.</p> <p><b>CO 5-</b>Recognize the importance of temperate fruits, its production technology using the latest technology and also</p>

		<p>methods of its protection</p> <p><b>CO 6</b> Students are expected to understand various stages of fruit plants phenology and physiology in order to solve related problems.</p>
<b>8.</b>	<b>Weed Management in Horticultural Crops (BHT238)</b>	<p><b>CO 1</b> Synthesize information regarding weed biology, ecology and management into integrated weed management systems in Horticultural Crops</p> <p><b>CO 2</b> Justify the system's components Describe its implementation</p> <p><b>CO 3</b> Evaluate the weed management system based on congruence with the goals of integrated weed management, cropping system function, farming system sustainability, and environmental stewardship in Horticultural Crops</p> <p><b>CO 4</b> Weed management in major field and horticultural crops.</p> <p><b>CO 5</b> Study of phytotoxicity symptoms of weedicides</p>
<b>9.</b>	<b>Commercial Floriculture (BHT239)</b>	<p><b>CO 1</b> Students will be able to identify commercially important floricultural crops</p> <p><b>CO 2</b> Students will be able to understand about scope and importance of commercial floriculture in India.</p> <p><b>CO 3</b> Students will be able to know about production techniques of commercial flower crops.</p> <p><b>CO 4</b> Students will be able to know about postharvest technology of cut flowers in respect of commercial flower crops</p> <p><b>CO 5</b> Students will be able to know about cultivation of different flower crops under protected condition.</p> <p><b>CO 6</b> Students will be able to understand about dehydration technique for drying of flowers</p>
<b>10.</b>	<b>Elementary Plant Biotechnology (BHT240)</b>	<p><b>CO 1</b> Students will understand basic concepts of Plant Biotechnology</p> <p><b>CO 2</b> Students will know scope and importance of plant tissue culture in crop improvement</p> <p><b>CO 3</b> Students will learn different in-vitro culture techniques, their applications and achievements</p> <p><b>CO 4</b> Students will study gene cloning and direct and indirect methods of gene transfer</p> <p><b>CO 5</b> Students will learn about the concept of transgenic plants and their applications in modern agriculture</p>

**SEMESTER IV**

SN	Course	Outcomes completion of these courses students should be able to;
1.	<b>Soil, Water and Plant Analysis (BHT241)</b>	<p>CO-1.To trained on professional skill, professional knowledge and Employability skill.</p> <p>CO-2.In addition to this a candidate is entrusted to undertake project work and extracurricular activities to build up confidence.</p> <p>CO-3. Gets the idea of trade tools, apparatus &amp; their Standardization, calibration, identifies different types of Laboratory equipments.</p> <p>CO-4. Preparation of standard solution and chemical reagents for soil Plant, Water and Seed testing</p> <p>CO-5.Practice of different soil testing methods to determine various properties viz. soil texture, pH value, moisture content, Electric conductivity, hydraulic conductivity, organic carbon, Cation exchange capacity etc.</p>
2.	<b>Spices and Condiments (BHT242)</b>	<p><b>CO 1</b> Students will able to identify commercially important spices and condiments</p> <p><b>CO 2</b> Students will be able to know about climate and soil requirements and propagation techniques of different spices and condiments</p> <p><b>CO 3</b> Students will be able to know about production technology of different types of spices and condiments grown in India</p> <p><b>CO 4</b> Students will be able to know about harvesting, post-harvest technology, packaging, storage, value added products, methods of extraction of essential oil and oleoresins of different types of spices and condiments grown in India.</p> <p><b>CO 5</b> Students will be able to know about cost of cultivation of different spices and condiments.</p>
3.	<b>Ornamentals Horticulture (BHT243)</b>	<p><b>CO 1</b> Students will able to identify commercially important Ornamentals crops</p> <p><b>CO 2</b> Students will be able to understand about scope and importance of commercial ornamentals in India.</p> <p><b>CO 3</b> Students will be able to know about production techniques of commercial flower crops.</p> <p><b>CO 4</b> Students will be able to know about postharvest technology of cut flowers in respect of commercial flower crops</p> <p><b>CO 5</b> Students will be able to know about cultivation of</p>

		<p>different flower crops under protected condition.</p> <p><b>CO 6</b> Students will be able to understand about dehydration technique for drying of flowers</p>
4.	<b>Plantation Crops (BHT244)</b>	<p><b>CO 1-</b> Students will be able to identify plant vegetative and reproductive structures.</p> <p><b>CO 2-</b> Students will understand basic principles, processes and functions of plant growth and reproduction, including photosynthesis, respiration, transpiration, vegetative growth and reproductive growth, fertilization and fruit formation.</p> <p><b>CO 3-</b> Students will understand sustainable practices for production of food, feed and fiber crops and how to implement and evaluate them.</p> <p><b>CO 4-</b> Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management.</p> <p><b>CO 5-</b> knowledge on - what are plantation Crops and their classification on the basis of fruit morphology, bearing habit, plant stature and fruit growth pattern.</p> <p><b>CO 6-</b> Students are expected to understand various stages of plantation crop phenology and physiology in order to solve related problems.</p>
5.	<b>Breeding of Fruit and Plantation Crops (BHT245)</b>	<p><b>CO-1</b> define the objectives and challenges of breeding of various fruit and plantation crops species.</p> <p><b>CO-2</b> evaluate and characterize the germplasm of fruit and plantation crops and Nuts.</p> <p><b>CO-3</b> Develop the ability to understand different breeding methods. Fruits and plantation crops</p> <p><b>CO-4</b> Ability to understand importance of breeding in fruits.</p> <p><b>CO-5</b> Ability to understand mutagenesis and its application in crop improvement.</p> <p><b>CO-6</b> analyze significance of rootstock breeding in improvement of fruit and plantation crops production.</p>
6.	<b>Farm Power and Machinery (BHT246)</b>	<p>CO-1. The students will be able to learn about different sources of farm power, construction and functioning of CI and SI engines, IC engine fuels, Coolants, anti freeze and anti corrosion materials</p> <p>CO-2. To identify the need of farm mechanization in India. Also equip the students with technical knowledge and skills required for the operation</p> <p>CO-3 The students will be able to learn about maintenance and evaluation of Tillage, Sowing and intercultural operational machinery needed for agricultural farms..</p> <p>CO-4. To abreast the students with mathematical,</p>

		<p>experimental and computational skills for solving different field problems</p> <p>CO-5. To develop skills in the students required to develop and modification of indigenous farm machines as per the requirements.</p> <p>CO-6. Also to give a brief introductory idea of importance of testing of agricultural machines and tractors.</p>
7.	<b>Insect Pests of Fruit, Plantation, Medicinal &amp; Aromatic Crops (BHT247)</b>	<p>CO 1 To develop knowledge on biology, ecology damage symptom, losses and caused by various insects on Fruit, Plantation, Medicinal &amp; Aromatic Crops</p> <p>CO 2 To improve the skill on usage of IPM tools for scientific pest management for Fruit, Plantation, Medicinal &amp; Aromatic Crops</p> <p>CO 3 To develop the ability to know the reasons for outbreak, damage, transmission of diseases on different Fruit, Plantation, Medicinal &amp; Aromatic Crops</p> <p>CO 4 To develop intellectual skill on timing of pesticide application, dosage, equipment selection, for effective pest management in Fruit, Plantation, Medicinal &amp; Aromatic Crops.</p> <p>CO 5 To understand the consequences of pesticide residues, its impact on environment, and methods to overcome the problem in Fruit, Plantation, Medicinal &amp; Aromatic Crops.</p>
8.	<b>Precision Farming and Protected Cultivation (BHT248)</b>	<p>CO-1 Students will able to know about protected cultivation of different vegetables and flowers.</p> <p>CO-2 Students will able to understand about importance of protected cultivation in India.</p> <p>CO-3 Students will able to know to about the different irrigation system used in protected cultivation</p> <p>CO-4 Students will know about the material of construction for traditional and low cost green houses</p> <p>CO-5 Students will know about protected cultivation of different high value vegetables like tomato, cucumber and sweet pepper etc.</p>
9.	<b>Dry land Horticulture (BHT249)</b>	<p><b>CO 1-</b> To evolve simple technologies through inter disciplinary research to substantially increase the crop productivity and viability under dry-land farming conditions in India.</p> <p><b>CO 2-</b> To increase stability of horticultural crop production over the years by improving in natural resource management and crop management systems and providing alternate crop production technologies matching weather conditions.</p>

		<p><b>CO 3-</b> To develop alternate and efficient land use systems through inter disciplinary research and farmers' perspective and operational scale experimentation.</p> <p><b>CO 4-</b> To optimize the use of natural resources viz., rainfall, land and water; minimize soil and water losses and degradation of environment.</p> <p><b>CO 5-</b> To evaluate and study transferability of the improved dry land technologies on farmers' fields.</p> <p><b>CO 6-</b> Strategies for Enhancement of Farmers Income in Dry land Agriculture.</p>
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### SEMESTER V

SN	Course	Outcomes
		completion of these courses students should be able to;
1.	<b>Organic Farming (BHT351)</b>	<p><b>CO 1-</b> is able to appraise the philosophy and ecological basis of organic horticulture.</p> <p><b>CO 2-</b> is able to evaluate the certification standards that apply to organic horticulture.</p> <p><b>CO 3-</b> is able to identify and appraise the practices used in the management of organic agricultural and horticultural systems.</p> <p><b>CO 4-</b>be able to plan strategies for the conversion to an accredited organic system of management.</p> <p><b>CO 5-</b>be able to plan and monitor strategies for the management of farms according to the organic standard.</p> <p><b>CO 6 -</b>be able to identify the health, environmental, and economic benefits of organic farming.</p>
2.	<b>Introduction to Major Field Crops (BHT352)</b>	<p>CO 1 Knowledge of the state and trends in the production of field crops</p> <p>CO 2 Select the crops and cultivars / hybrids suitable to the given environmental conditions</p> <p>CO 3 Plan and design crop rotation in different cropping systems</p> <p>CO 4 Independently create management practices in field crops production (tillage, fertilization, planting, care and protection of crops)</p> <p>CO 5 Apply appropriate practices in order to reduce the impact of management practices on environmental pollution</p> <p>CO 6 Identify the most important weeds, diseases and pests of the field crops</p>
3.	<b>Medicinal and Aromatic crops (BHT353)</b>	<p><b>CO 1</b> Students will able to identify different medicinal and aromatic plants</p>



		<p><b>CO 2</b> Students will be able to know about history, scope, opportunities and constraints in the cultivation and maintenance of medicinal and aromatic plants in India</p> <p><b>CO 3</b> Students will be able to know about climatic and soil requirements, propagation and nursery techniques of important medicinal and aromatic plants.</p> <p><b>CO 4</b> Students will be able to know about plant protection, harvesting and processing of important medicinal and aromatic plants.</p> <p><b>CO 5</b> Students will be able to know about storage techniques of essential oils</p>
4.	<b>Introductory Agro forestry (BHT354)</b>	<p><b>CO 1</b> To be able to identify and explain the various social and ecological agroforestry concepts, cultures and techniques used worldwide.</p> <p><b>CO 2</b> To understand the interactions between farming communities, agricultural crops, livestock and trees for food, nutrients, water, and minimize competition for these resources.</p> <p><b>CO 3</b> To analyze the connections between this course and other environmental courses</p> <p><b>CO 4</b> To develop the ability of students to think critically about environmental issues and practices associated with social agroforestry, domestically and globally</p> <p><b>CO 5</b> To enable each student to investigate in depth at least one agroforestry issue or practice and learn to find feasible solutions to current environmentally related problems.</p> <p><b>CO 6</b> To identify different land-use systems, characterizes economic and socio-cultural qualities.</p>
5.	<b>Breeding of Vegetables, Tuber and Spice Crops (BHT355)</b>	<p><b>CO-1</b> Students will able to know about Breeding of Vegetables, Tuber and Spice Crops.</p> <p><b>CO-2</b> identify the seeds and plants of vegetable and spice crops.</p> <p><b>CO-3</b> Students will able to know to about the develop the ability to understand different breeding methods.</p> <p><b>CO-4</b> Students will able to understand about different flowering stage of breeding of vegetables, tuber and spice crops.</p> <p><b>CO-5</b> To understand the consequences of breeding of Vegetables, Tuber and Spice Crops.</p> <p><b>CO-6.</b> To improve the skill on usage of application in</p>

		crop improvement.
<b>6.</b>	<b>Diseases of Vegetables, Ornamentals and Spice Crops (BHT356)</b>	<p>CO-1. Students will know pathogens, symptoms, etiology, disease cycle and management of major Diseases of vegetables, ornamentals and spice crops</p> <p>CO-2. Students will know common pathogens, symptoms, etiology, disease cycle and management of Diseases of vegetables, ornamentals and spice crops.</p> <p>CO-3. Students will know common pathogens, symptoms, etiology, disease cycle and management of Diseases of vegetables, ornamentals and spice crops.</p> <p>CO-4. Student will know importance of sign and Symptoms for detection of pathogens and disease.</p> <p>CO-5. Students will know integrated methods of disease management, use of biological and chemicals in Vegetables, Ornamentals and Spice Crops.</p>
<b>7.</b>	<b>Orchard and Estate Management (BHT357)</b>	<p><b>CO 1</b> Students will able to understand about importance, objectives, merits and demerits of orchard &amp; estate management</p> <p><b>CO 2</b> Students will be able to know about inorganic and organic mulches used in horticulture</p> <p><b>CO 3</b> Students will be able to know about Biological efficiency of cropping systems in horticulture</p> <p><b>CO 4</b> Students will be able to know about Integrated nutrient and pest management</p> <p><b>CO 5</b> Students will be able to know about Climate aberrations and mitigation measures of Horticultural crops.</p>
<b>8.</b>	<b>Agro-meteorology and Climate Change (BHT358)</b>	<p>CO 1 Students will be able to articulate and retain Knowledge relevant to agro meteorology.</p> <p>CO 2 Students will be able to gain the information of weather and climate which are considered as basic input in agriculture planning viz. land Preparation, ploughing, harrowing etc.</p> <p>CO 3 Students will be able to explain weather hazards, weather forecasting and impact of climate change on agriculture.</p> <p>CO 4 Students will be able to acquaint with the meteorological instruments and recording the observation from the agro meteorological observatory.</p>
<b>9.</b>	<b>Potato and tuber crops (BHT359)</b>	<p><b>CO 1</b> Student will be able to identify use of seed tubers or true potato seed for cultivation based on area / eco system and resistance from pest and diseases</p> <p><b>CO 2</b> Student will must be able to ascertain the tubers free from any soil particles or they are free from any</p>

		<p>infection</p> <p><b>CO 3</b> Student will must be able to store the seed tubers if there is lag in procurement and sowing</p> <p><b>CO 4</b> Student will must be able to make preparations for proper storage (considering aspects like location, temperature, lighting &amp; air circulation)</p> <p><b>CO 5</b> Student will must be able to use all the necessary safety material and follow all the preventive measures to avoid any injury during use / application of pesticide</p> <p><b>CO 6</b> Student will must be able to treat the seeds with insecticides(chemical as well as biological) as per the dosage recommended by agriculture university / department or as prescribed by the pesticide manufacturer</p>
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### SEMESTER VI

SN	Course	Outcomes
1.	<b>Apiculture, Sericulture and Lac culture (BHT361)</b>	<p>completion of these courses students should be able to;</p> <p><b>CO 1</b> be able to adopt modern rearing techniques of honey bees and realize the economic scope of apiculture.</p> <p><b>CO 2</b> be able to correlate growth of crop production with the pollinator role of honey bee.</p> <p><b>CO 3</b> be introduced to different types of silkworms and understand the merit of modern methods of sericulture.</p> <p><b>CO 4</b> be able to understand products of sericulture and there marketing value.</p> <p><b>CO 5</b> be able to acquire basic knowledge of methodology of Lac culture and understand the commercial uses of Lac.</p> <p><b>CO 6</b> be able to understand the processing techniques of stick Lac to powder Lac.</p>
2.	<b>Insect Pests of Vegetable, Ornamentals and Spice Crops (BHT362)</b>	<p><b>CO-1</b> Students will able to know about Insect Pests of Vegetable, Ornamentals and Spice Crops.</p> <p><b>CO-2</b> Students will able to know to about the major Insect Pests of Vegetable, Ornamentals and Spice Crops</p> <p><b>CO-3</b> Students will able to understand about different damaging stage of insect pests.</p> <p><b>CO-4</b> Students will know about the control methods of insect pests.</p> <p><b>CO-5</b> To understand the consequences of pesticide residues, its impact on environment, and methods to overcome the problem.</p> <p><b>CO 6.</b> To improve the skill on usage of IPM tools for</p>

		scientific pest management
3.	<b>Post-harvest Management of Horticultural Crops (BHT363)</b> (Faculty: Ms. Komal Kanwar)	<p><b>CO 1</b> Students should be able to understand technologies of post-harvest technology and its role in providing better quality produce to the consumer.</p> <p><b>CO 2</b> Students should be able to understand importance of prevention of losses and post harvest management of horticulture crops.</p> <p><b>CO 3</b> Students should be able to understand functional foods and nutraceuticals.</p> <p><b>CO 4</b> Students should be able to understand utilization of the produce and methods for shelf-life extension Learn storage and cold chain management.</p> <p><b>CO 5</b> Students should be able to understand quality control and various standards required for domestic and export market.</p> <p><b>CO 6</b> Student should be made aware of the technological changes that are occurring in this field along with pre and post-harvest technology, physiology and biochemistry, cooling and storage systems, waste management, advances in processing, nutraceuticals and functional foods.</p>
4.	<b>Seed production of Vegetable, Tuber and Spice Crops (BHT364)</b>	<p><b>CO 1</b> Students will able to know about history of seed industry in India</p> <p><b>CO 2</b> Students will able to understand importance and scope of vegetable seed production in India</p> <p><b>CO 3</b> Students will able to understand principles of vegetable seed production</p> <p><b>CO 4</b> Students will able to know about role of temperature, humidity and light in vegetable seed production</p> <p><b>CO 5</b> Students will able to know about seed production technology of different vegetable crops and spices</p> <p><b>CO 6</b> Students will able to understand seed germination and purity analysis</p>
5.	<b>Breeding and Seed Production of Flower and Ornamentals Plants (BHT365)</b>	<p><b>CO-1</b> describe principles and practices adopted for breeding of flower crops and ornamental plants.</p> <p><b>CO-2</b> observe the inheritance pattern of important traits in flower crops and ornamental plants.</p> <p><b>CO-3</b> discuss breeding achievements in commercial flower crops.</p>

		<p><b>CO-4</b> enumerate breeding achievements in important ornamental plants.</p> <p><b>CO-5</b> identify constructive approaches in hybrid seed production in flower crops.</p> <p><b>CO-6</b> apply advanced techniques of breeding in flower crops and ornamental plants.</p>
6.	<b>Processing of Horticultural Crops (BHT366)</b>	<p>CO-1. Students will able to know about post harvest management of fruits and vegetables.</p> <p>CO-2. Students will able understand value added product of different fruits and vegetables</p> <p>CO-3. Students will know about maturity indices of different fruits and vegetables</p> <p>CO-4. Students will able to know about the preparation of jam, jelly etc</p> <p>CO-5. Students will able to know about preservation of different fruits and vegetables and also able to know about different methods of preservation</p> <p>CO-6. Students will able to know about the different storage and packaging methods of fruits and vegetables</p>
7.	<b>Horti-Business Management (BHT367)</b>	<p><b>CO 1</b> To make the students aware about decision making for farm management</p> <p><b>CO 2</b> To study the production related functions and develop technical relationship</p> <p><b>CO 3</b> To understand the concept and principles of cost and returns</p> <p><b>CO 4</b> To analyze the horticultural scenario with business perspective and planning</p> <p><b>CO 5</b> To implement the functional areas of business management in horticultural businesses</p> <p><b>CO 6</b> To link financial and marketing aspects and implement in project preparation</p>
8.	<b>Entrepreneurship Development and Business Management (BHT368)</b>	<p>CO-1. Understand theories of entrepreneurship and business development.</p> <p>CO-2. Understand the key resources required to develop an existing business such as ideas and finance, launch a new venture, or initiate a business enterprise.</p> <p>CO-3. Be able to state, understand and evaluate the key factors needed to develop a successful business.</p> <p>CO-4. Understand the central role of opportunity recognition and marketing to business development.</p> <p>CO-5. Understand the creation of business sustainability</p>
9.	<b>Fundamentals of Extension Education (BHT369)</b>	<p><b>CO-1</b> Students will learn about evaluate the effectiveness of the formulated programme in for the farmers. The students will decide the plan of work in advance for the farmers as per their need and interest. The students will identify the</p>

		<p>importance of the subjects and how the extension methodology will implement in the rural area.</p> <p><b>CO-2</b> Students will be able to understand how the programmes were implemented for the rural poor before independence and after independence. How these programmes were changed the socio-economic conditions of the rural poor after acquire the benefits of these programmes.</p> <p><b>CO-3</b> Students will be able to familiar with the new technologies which are helping to the farmers through the help of internet, mobile, marketing related information, farmers led extension. The students will able to communicate the idea in short period of time in masses.</p> <p><b>CO-4</b> Students will be able to identify the successfulness of the projects and if any failure is there that will be assess during monitoring and evaluation of the programme. Students will also identify the deficient area of the training programme.</p> <p><b>CO-5</b> Students will be known the basic objectives of the implementation of programme in rural context and how the programme can be transfer up to the famers by adopting the various technologies.</p> <p><b>CO-6</b> Students will be able to promote the government programmes among the farmers by using the various communication methods and will able to identify the barriers of the communication during transfer of technology.</p>
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## SEMESTER VII

### Rural Horticultural Work Experience Programme and IAI

SN	Course	Outcomes
1.	<b>STUDENT READY-Placement in Industries (BHT471)</b>	<p>completion of these courses students should be able to;</p> <p><b>CO-1.</b> Acquaintance with industry and staff</p> <p><b>CO-2.</b> Study of structure, functioning, objective and mandates of the industry.</p> <p><b>CO-3.</b> Study of various processing units and hands-on trainings under supervision of industry.</p> <p><b>CO-4.</b> Staff Ethics of industry.</p> <p><b>CO-5.</b> Employment generated by the industry.</p> <p><b>CO-6.</b> Contribution of the industry promoting environment.</p> <p><b>CO-7.</b> Learning business network including outlets of the industry</p> <p><b>CO-8.</b> In-plant Training for a short period of time in relevant industry helps gain the knowledge and experience of the work culture. In-plant Training by reputed organizations either MNCs or organized sectors provide an industrial exposure to the students as well as helps develop their career in high tech industrial requirements.</p>

2.	<b>STUDENT READY-Placement in Villages (BHT472)</b>	<p><b>CO-1.</b> Rural Agriculture Work Experience also enables the students to gain rural experience giving them confidence and enhancing on-farm problem solving abilities in real life situations especially in contact with farmers, growers, other stakeholders.</p> <p><b>CO-2.</b> Confidence building. Develop skill of joint effort (community management)</p> <p><b>CO-3.</b> Developing art of creative thinking. Effective decision-making</p> <p><b>CO-4.</b> Life's real experiences. Time and relationship management</p> <p><b>CO-5.</b> Observe problem and possible solution (crisis management)</p> <p><b>CO-6.</b> Understanding and practicing local (ITK) and scientific methods. Working of local institution/organization.</p>
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**SEMESTER VIII**  
**STUDENT READY: Experimental Learning Programme**

S. N.	Course	Outcomes completion of these courses students should be able to;
1.	<b>Commercial Horticulture (BHT481)</b>	<p><b>CO 1</b> Students will able to know about history of Horticulture in India</p> <p><b>CO 2</b> Students will able to understand importance and scope of Horticulture crops production in India</p> <p><b>CO 3</b> Students will able to understand the types of Horticulture crops grading.</p> <p><b>CO-4.</b> Students will able to know about role of temperature, humidity and light in Horticulture crops production.</p> <p><b>CO 5</b> Students will able to know about seed production technology of different Horticulture crops.</p> <p><b>CO 6</b> Students will able to understand germination and purity analysis.</p>
2.	<b>Protective Cultivation of High Value Horticulture Crops (BHT482)</b>	<p>CO-1 Students will able to know about protected cultivation of different vegetables</p> <p>CO-2 Students will able to understand about importance of green house cultivation in India</p> <p>CO-3 Students will able to know to about the different irrigation system used in protected cultivation</p> <p>CO-4 Students will know about the material of construction for traditional and low cost green houses</p> <p>CO-5 Students will know about protected cultivation of different high value vegetables like tomato, cucumber etc.</p>
3.	<b>Processing of Fruits and Vegetables</b>	<b>CO 1</b> Student will able to understand the value addition

	<p><b>for Value Addition (BHT483)</b></p>	<p>of horticultural produce  <b>CO 2</b> Student will able to understand processing of horticultural produce  <b>CO 3</b> Student will able to understand the work space, tool and equipment design for processing and value addition  <b>CO 4</b> Student will able to understand the various certification and accreditation i.e. FASSI, HACCP, ISO and other leveling  <b>CO 5</b> Student will able to understand the principles and methods of processing and value addition of horticultural produce.  <b>CO 6</b> Student will able to understand recent trends in processing – high pressure processing and processing using pulse electric field and Utilization of fruit and vegetable waste.</p>
<p><b>4.</b></p>	<p><b>Floriculture and Landscape Architecture (BHT484)</b></p>	<p><b>CO 1</b> Students will be able to understand the residential and commercial water management as it relates to an understanding of the intersection of the Plant-Soil-Water continuum  <b>CO 2</b> Students will be able to identify and recall components of an environmentally and ecologically sound landscape and architecture system  <b>CO 3</b> Students will be able to apply basic green roof design, construction and maintenance techniques  <b>CO 4</b> Students will be able to identify and choose plant materials for designs that will have a desired impact on naturalized landscapes and architecture designs.  <b>CO 5</b> Students will be able to apply an understanding of the effective use of practical and applied design strategies to determine meaningful solutions to landscape design problems pertinent to naturalized environments  <b>CO 6</b> Students will be able to formulate creative new strategies that will effectively develop and manage sustainable landscapes and architecture designs of different type gardens.</p>
<p><b>5.</b></p>	<p><b>Bio-inputs: Bio-fertilizer and Bio-pesticides (BHT485)</b></p>	<p><b>CO 1</b> Students will be able to learn that bio-fertilizers supplement the requirements of fertilizers and do Not replace them.  <b>CO 2</b> The use of bio-fertilizers is being emphasized along with chemical fertilizers and organic Manures.  <b>CO 3</b> Students will be able to distinguish the types of Bio-fertilizers and bio-pesticides.</p>



		<p>CO 4 Students will be learn that how to Applied bio-fertilizers/ bio-pesticides to seed/seed material/ seedlings/ soil/ waste matter/crop residues in order To increase the population.</p> <p>CO 5 Bio-fertilizers are live products (or latent cells of microbes) and require care in storage, transport, Application and maintaining field conditions.</p>
6.	<b>Mass Multiplication of Plant and Molecules through Tissue Culture (BHT486)</b>	<p>CO 1. Understand requirements of establishing a plant tissue Lab</p> <p>CO 2. Gain knowledge of different micro propagation techniques</p> <p>CO 3. Develop the skills among the students for employment or entrepreneurship</p> <p>CO 4. Recognize the role of plant tissue culture in agriculture development</p> <p>CO 5. Know about recent advances in plant tissue culture techniques i.e. synthetic seeds.</p>
7.	<b>Mushroom Cultivation (BHT487)</b>	<p><b>CO 1:</b> Students will be able to know about various types of edible mushrooms and Non-edible mushrooms.</p> <p><b>CO 2:</b> Students will be able to know importance of mushroom growing.</p> <p><b>CO 3:</b> Students will be acquainted about food and nutritive value of mushrooms.</p> <p><b>CO 4:</b> Students will be able to understand the spawn preparation and cultivation techniques of various mushrooms.</p> <p><b>CO 5:</b> Students will be acquainted about low cost production technology.</p> <p><b>CO 6:</b> Students will be able to understand about marketing and processing of various mushrooms.</p>
8.	<b>Bee Keeping (BHT488)</b>	<p><b>CO 1</b> Students should be able to understand the basic life cycle of the honeybee</p> <p><b>CO 2</b> Students should be able to understand about beekeeping tools and equipment</p> <p><b>CO 3</b> Students should be able to understand to manage beehives for honey production and pollination</p> <p><b>CO 4</b> Students should be able to understand about bee diseases and pests</p> <p><b>CO 5</b> Students should be able to understand to harvest and market honey</p> <p><b>CO 6</b> Students should be able to understand market value of honey and there medicinal uses and other uses.</p>

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Allied Health Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. DMLT
2. Diploma Dialysis Technician
3. M.Sc. Medical Microbiology
4. Indian Diploma Critical Care
5. Diploma Anesthesia Technician
6. B.Sc. MLT (Bachelor in Medical Laboratory Technology)
7. B.C.D. (B.Sc. Clinical Dietetics)
8. M.Sc. Clinical Nutrition
9. BPT
10. MPT
11. M.Sc. Medical Anatomy
12. PG Diploma in Dermatology

**Diploma in**  
**Medical Laboratory Technology**

<b>Name of the programme</b>	<b>Diploma</b>
<b>Programme Outcome</b>	<p><b>A student completing a Diploma in Medical Laboratory Technology shall be able to apply:</b></p> <p><b>POs1.</b>As Lab Technician in Clinical Laboratory</p> <p><b>POs2.</b>Government job as Lab Technician in Hospitals</p> <p><b>POs3.</b>Laboratory assistant in various research laboratory</p> <p><b>POs4:</b>Work as technologist in the diagnostic division of hospitals, nursing homes, IVF centres, diagnostic laboratories. Establish their own diagnostic lab (Entrepreneurship), diagnostic division of forensic science, molecular biology and genetics. Work as QC and QA officer in the biomedical industries and healthcare projects etc.</p>
<b>Name of the specific programme</b>	<b>Diploma in Medical Laboratory Technology</b>
<b>Programme Specific Outcome</b>	DMLT programme will enrich the students with theoretical and practical knowledge of pathology, medical biochemistry, medical microbiology, human anatomy & physiology, immunology and forensic science etc. Study of these courses makes the students able to understand the causes and mechanism of disease which help in better diagnosis of disease. Six month training along with an analytical project will make the students able to correlate the diagnosis of disease with the clinical history of the patients.
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Communication Skills in English(8001)</b>
<b>Course Outcome</b>	Students seeking admission to the diploma course do not have the required proficiency in English. It has therefore, been decided to introduce English and communication Technique to help them to attain proficiency in the subject.
<b>Name of Course</b>	<b>Computer Application(8002)</b>
<b>Course Outcome</b>	Computer application course has been designed to provide an introduction to computer technology and its tools. The student will be able to understand the basics of computer and its application. The student will be able to appreciate the role of computer technology, more specifically computer hardware, Software and its application in the present social and economic scenario
<b>Name of Course</b>	<b>Anatomy &amp; Physiology(8003)</b>
<b>Course Outcome</b>	The study of basic anatomy and physiology is essential because it will help in understanding the basic structure of the human body and normal function in health. During disease the normal function may likely to be affected by various laboratory tests, The students will be able to know the abnormal functioning of the body and ultimately helps in diagnosis of the disease
<b>Name of Course</b>	<b>Hematology and Blood Banking (8004)</b>

<b>Course Outcome</b>	Hematology and Blood Banking are very important branches of laboratory medicine. The student will be able to know the basic components of blood and their significance in normal health, by examination of blood, various types of disease can be diagnosed
<b>Name of Course</b>	<b>Clinical Pathology (8005)</b>
<b>Course Outcome</b>	It helps in monitoring the normal functioning of different system of human body abnormal clinical-Pathological result give a clue regarding a disease process going on inside the body
<b>Semester/Year</b>	<b>II Year</b>
<b>Name of Course</b>	<b>Entrepreneurship &amp; Professional Management (8011)</b>
<b>Course Outcome</b>	It will equip them with the necessary skills and training for setting up small scale enterprises in their own area of study. This course includes the procedure how to select, Proceed and start the small enterprises. To Achieve the targets and goals in an organization, It is essential to co-ordinate the entire system. For this knowledge of Principles of management, Personnel management; Management is required
<b>Name of Course</b>	<b>Environmental Studies (8012)</b>
<b>Course Outcome</b>	Environmental study is a subject as per directions of supreme court/Govt. of India. Under act.51A(g) of our constitution. It is our fundamental duty to protect our environment so that a Diploma Holder must have knowledge of different types of pollution and health hazards so that he/she may help in balancing the eco system and controlling pollution by pollution control measure. She/he should also be aware of environmental laws related to the control of pollution in general and biomedical waste in particular
<b>Name of Course</b>	<b>Microbiology (8013)</b>
<b>Course Outcome</b>	A Large of diseases are Cussed by infections organism. The microbiology and parasitology give knowledge of various infections agent and their role in different infectious disease. Immunology deals with immune system and its role in normal health and various diseases.
<b>Name of Course</b>	<b>Histopathology (8014)</b>
<b>Course Outcome</b>	In health different body system and parts work normally, However during disease process, Normal structures and functions of body parts may be altered pathology deals with all abnormal changes taking place inside the body during disease
<b>Name of Course</b>	<b>Biochemistry (8015)</b>
<b>Course Outcome</b>	Bio-Chemistry imparts knowledge of basic chemical components i.e. Carbohydrate, Proteins, Lipids, Minerals etc which very important for various biochemical reactions going on in human body. Disturbance in various normal biochemical reactions may result during disease process. Therefore their study helps in diagnosis of disease

# **Diploma in Dialysis Technician**

Name of the programme	Diploma
<b>Programme Outcome</b>	1) Assembling the dialysis machine and ensuring its proper performance 2) Monitoring patients undergoing dialysis treatment. 3) Ensuring usage of the dialysis machine is safe and secure. 4) Administering local anesthesia. 5) Talking patients through the dialysis process. 6) Monitoring and adjusting patient fluid removal rates as required. 7) Working in tandem with nurses and doctors. 8) Ensuring sterilization of operating equipment before use. 9) Responding to emergency scenarios. 10) Attending to patient needs. 11) Understanding patient physical and emotional concerns. 12) Educating patients on health maintenance and care.
<b>Name of the specific programme</b>	<b>Diploma in Dialysis Technician</b>
<b>Programme Specific Outcome</b>	1) Assembling the dialysis machine and ensuring its proper performance 2) Monitoring patients undergoing dialysis treatment. 3) Ensuring usage of the dialysis machine is safe and secure. 4) Administering local anesthesia. 5) Talking patients through the dialysis process. 6) Monitoring and adjusting patient fluid removal rates as required. 7) Working in tandem with nurses and doctors. 8) Ensuring sterilization of operating equipment before use. 9) Responding to emergency scenarios. 10) Attending to patient needs. 11) Understanding patient physical and emotional concerns. 12) Educating patients on health maintenance and care.
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Basic Sciences and Nutritional aspects as applied to dialysis therapy</b>
<b>Course Outcome</b>	Know the physiology and anatomy of excretory system. Understands principles of haemodialysis; Aware of various common diseases of the kidney; Comprehend the relation of diet to health and disease; Classify various nutrients; Plan a diet according to the nutritional need of a particular patient
<b>Name of Course</b>	<b>Introduction to Dialysis</b>
<b>Course Outcome</b>	Posses knowledge on different types of dialysers; Understand dialysate and dialysate delivery system; Oriented on initiation, monitoring and on discontinuation of haemodialysis; Identify complications arising during dialysis; Procedure involve in re-use of dialysers ;Bacteriology of haemodialysis
<b>Semester/Year</b>	<b>II Year</b>

<b>Name of Course</b>	<b>Technical and Mechanical aspects of Dialysis</b>
<b>Course Outcome</b>	Knowledge on drugs related to kidney diseases and dialysis technology ; Collect medical history from patients with various kidney diseases; Clinically examine patients with kidney diseases; Explain prescriptions to patients with kidney diseases
<b>Name of Course</b>	<b>Hemodialysis, peritoneal dialysis and recent advances</b>
<b>Course Outcome</b>	Start and close hemodialysis sessions independently; Successfully cannulate arterio-venous fistulae for hemodialysis; Oriented in peritoneal dialysis for patients and their caregivers; Do water maintenance for the hemodialysis room; Maintain hemodialysis machines with respect to regular disinfection; Operate hemodialysis machines, CAPD cyclers reuse machines independently; Knowledge of participating in conduct of renal transplant programme; Knowledge on use of pulse oximeters, pressure monitors defibrillators correctly; Interpret laboratory investigations



# **M.Sc. Medical Microbiology**

<b>Name of the programme</b>	<b>Post Graduation (M.Sc.)</b>
<b>Programme Outcome</b>	
<b>Name of the specific programme</b>	<b>M.Sc. Medical Microbiology</b>
<b>Programme Specific Outcome</b>	
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Human Anatomy, Physiology and Biochemistry - I</b>
<b>Course Outcome</b>	<p>Upon completion of the course, the student shall be able to:</p> <ol style="list-style-type: none"> <li>1) explain the gross morphology, structure and functions and chemical composition of various organs of the human body.</li> <li>2) describe the various homeostatic mechanisms and their imbalances.</li> <li>3) identify the various tissues and organs of different systems of human body</li> <li>4) perform the various experiments related to special senses and nervous system.</li> <li>5) appreciate coordinated working pattern of different organs of each system.</li> <li>6) Describe the various chemical process going in a human body.</li> <li>7) Describe the various diets and nutrition aspects required for a human body</li> <li>8) understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes</li> <li>9) understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes</li> <li>10) understand the metabolism of nutrient molecules in physiological and pathological conditions.</li> </ol>
<b>Semester/Year</b>	<b>II Year</b>
<b>Name of Course</b>	<b>Medical Microbiology</b>

<b>Course Outcome</b>	<p>Define concepts of disease, evolution of microbiology, sterilisation, identification , growth and metabolism of bacteria;</p> <p>Understand Immunity and its role with reference to structure and function of Immune system;</p> <p>Acquainted with morphology, mechanisms of normal pathogenicity, clinical manifestations, Laboratory diagnosis and drug resistance of all medically important bacteria;</p> <p>Perform culture of all medically important bacteria and serological tests;</p> <p>Trained and motivated towards a topic of dissertation theory and practical work.</p>
<b>Semester/Year</b>	<b>III Year</b>
<b>Name of Course</b>	<b>Medical Microbiology</b>
<b>Course Outcome</b>	<p>Upon completion of course student must be able to:</p> <p>Describe general properties of medically important viruses wrt. to structure, classification, morphology, pathogenesis, laboratory diagnosis, clinical manifestation and vaccination programmes;</p> <p>Define etiological agents, pathogenesis, laboratory diagnosis and clinical manifestations of Fungal infections ;</p> <p>Define general characteristics of parasites causing infections in humans and describe their life cycle, pathogenesis and clinical significance;</p> <p>Perform microscopy and identification for medically significant fungal and parasitic agents;</p> <p>Understand the concepts of prevention of Hospital acquired infections, quality control procedures, recent advances and syndromic approach in Microbiology;</p> <p>Submit dissertation work in the department with relevant data and documents.</p>

# **Indian Diploma in Critical Care**

<b>Name of the programme</b>	<b>Diploma</b>
<b>Programme Outcome</b>	<p>Develop ability to diagnose critical illness and their management;</p> <p>Develop an ability to advise required various investigation of patient and then to interpret their result;</p> <p>Develop ability to manage acute condition of patients immediately;</p> <p>Develop attitude to follow Medical ethics;</p> <p>Develop an aptitude for lifelong learning and continuous professional development.</p>
<b>Name of the specific programme</b>	<b>IDCC (Indian Diploma in Critical Care)</b>
<b>Programme Specific Outcome</b>	<p>Develop ability to diagnose critical illness and their management;</p> <p>Develop an ability to advise required various investigation of patient and then to interpret their result;</p> <p>Develop ability to manage acute condition of patients immediately;</p> <p>Develop attitude to follow Medical ethics;</p> <p>Develop an aptitude for lifelong learning and continuous professional development.</p>
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>IDCC (Indian Diploma in Critical Care)</b>
<b>Course Outcome</b>	<p>Develop ability to diagnose critical illness and their management.</p> <p>Provide students with a strong and well-defined concept regarding physiology of various systems e.g. Cardio Vascular System, Central Nervous System, Genito urinary system, Hepato Biliary system, etc</p> <p>Develop an ability to advise required various investigation of patient and then to interpret their result.</p> <p>Develop ability to manage acute condition of patients immediately.</p> <p>Develop written and oral communication skills in order to communicate effectively to relatives of patients (counseling).</p> <p>Develop team spirit, in staff of ICU</p> <p>Develop attitude to follow Medical ethics.</p> <p>Develop an aptitude for lifelong learning and continuous professional development</p> <p>Develop knowledge and skill to use Non-Invasive. Ventilators and invasive Mechanical Ventilations</p> <p>To Learn Interpretation of ECG, ABG Analysis.</p>

# **Diploma in Anaesthesia Technician**

<b>Name of the programme</b>	<b>Certificate</b>
<b>Programme Outcome</b>	<p>Basic understanding of Ethics, Discipline, Layout, Equipment in OT; Technique of receiving, shifting and handling over patients to wards and recovery room;</p> <p>Basic of Anaesthesia related drugs and equipments;</p> <p>Positioning of patient in different operations and anaesthesia;</p> <p>Principles of IV line, fluids, transfusion and CPR;</p> <p>Laying out instrument trolley for different for different operations;</p> <p>Routine care of instruments and machines in operation theatre;</p> <p>Sterilization of OT room, Instruments, endoscopes and CSSD;</p> <p>Book keeping and Stock Maintenance;</p> <p>Data collection and information computation;</p> <p>Develop a scientific temper, team spirit and aptitude for continuous learning and professional development;</p> <p>Possess requisite knowledge, skills, attitude, values and responsiveness to serve the patients in the community</p>
<b>Name of the specific programme</b>	<b>Anaesthesia Technician</b>
<b>Programme Specific Outcome</b>	<p>Basic understanding of Ethics, Discipline, Layout, Equipment in OT; Technique of receiving, shifting and handling over patients to wards and recovery room;</p> <p>Basic of Anaesthesia related drugs and equipments;</p> <p>Positioning of patient in different operations and anaesthesia;</p> <p>Principles of IV line, fluids, transfusion and CPR;</p> <p>Laying out instrument trolley for different for different operations;</p> <p>Routine care of instruments and machines in operation theatre;</p> <p>Sterilization of OT room, Instruments, endoscopes and CSSD;</p> <p>Book keeping and Stock Maintenance;</p> <p>Data collection and information computation;</p> <p>Develop a scientific temper, team spirit and aptitude for continuous learning and professional development;</p> <p>Possess requisite knowledge, skills, attitude, values and responsiveness to serve the patients in the community</p>
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Anatomy</b>
<b>Course Outcome</b>	<p>A) Explain the gross morphology, structure and functions of various organs of the human body.</p> <p>B) Identify the various tissues and organs of different systems of human body.</p> <p>C) Appreciate coordinated working pattern of different organs of each system.</p>

<b>Name of course</b>	<b>Physiology</b>
<b>Course Outcome</b>	<p>A) Describe the various homeostatic mechanisms and interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body and their imbalances.</p> <p>B) Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.</p> <p>C) Perform the various experiments related to special senses and nervous system</p>
<b>Name of course</b>	<b>Bio Chemisry</b>
<b>Course Outcome</b>	<p>A) Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.</p> <p>B) Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.</p> <p>C) Understand the metabolism of nutrient molecules in physiological and pathological conditions.</p>
<b>Semester/Year</b>	<b>II Year</b>
<b>Name of course</b>	<b>General Surgical Procedure and CPR</b>
<b>Course Outcome</b>	<p>Upon completion of the course, the student shall be able to:</p> <p>A) Basic understanding of Ethics, Discipline, Layout, Equipment in OT.</p> <p>B) Technique of receiving, shifting and handling over patients to wards and recovery room.</p> <p>C)Basic of Anaesthesia related drugs and equipments.</p> <p>D)Positioning of patient in different operations and anaesthesia.</p> <p>E) Principles of IV line, fluids, transfusion and CPR.</p> <p>F) Laying out instrument trolley for different for different operations.</p> <p>G) Routine care of instruments and machines in operation theatre.</p> <p>H) Sterilization of OT room, Instruments, endoscopes and CSSD.</p> <p>I)Book keeping and Stock Maintenance.</p> <p>J) Data collection and information computation.</p>



**B.Sc. MLT**

Name of the programme	B.Sc
Programme Code	B.Sc MLT
Programme Outcome	<p>1. Students will be able to understand the causes, pathogenesis and techniques for diagnosis of inflammation, microbial diseases, and metabolic &amp; hormonal disorders.</p> <p>2. Students become able to diagnose the diseases and disorders in the patients by testing blood, body fluids, feaces, histo and cytopathological specimens etc.</p> <p>3. After successful programme completion, the students will be able to: Work as technologist in the diagnostic division of hospitals, nursing homes, IVF centres, diagnostic laboratories. Establish their own diagnostic lab (Entrepreneurship), diagnostic division of forensic science, molecular biology and genetics. Work as QC and QA officer in the biomedical industries and healthcare projects etc.</p>
Name of the specific programme	<b>B.Sc in Medical Laboratory Technology</b>
Programme Specific Outcome	B.Sc MLT programme will enriches the students with theoretical and practical knowledge of pathology, medical biochemistry, medical microbiology, human anatomy & physiology, immunology and forensic science etc. Study of these courses makes the students able to understand the causes and mechanism of disease which help in better diagnosis of disease. A six month training along with an analytical project will make the students able to the correlate the diagnosis of disease with the clinical history of the patients.
<b>Semester/Year</b>	<b>I Semester /I Year</b>
Basic Pathology-I	course code (BMLT101)
Course Outcome	This course enriches the students with knowledge of safety measures while handling specimens, spillage and disposal of biological wastes. Students will learn about fundamentals laboratory techniques like preparation blood collection vials, blood collection techniques, preparing blood films. This course enables the students to identify different blood cells on the microscope. Students also get the knowledge of cell, organells and basic concept of cell injury.
Basic Biochemistry-I	course code-BMLT-102
Course Outcome	Students will know about different solutions and their preparation, instruments used in the biochemistry lab for qualitative and quantitative estimation of compounds in the biological specimens for diagnosis of diseases. Basic concept of nutrition and its related disorder makes will make the students able to correlate the metabolic disorder with their diagnosis.
General Microbiology	course code-BMLT-103

Course Outcome	Students will get knowledge about safety handling of specimens in microbiology lab., history of microbiology, morphology of bacteria and bacterial structures. They will know the preparation and uses of culture media, different culture methods, and various requirements for bacterial growth in artificial environments. This course imparts the knowledge of various methods for disinfection and sterilization techniques used for safe handling of microbes in the clinical lab. as well as introduction of pathogenic viruses, fungi and protozoa etc. Students will know about mode of action and effect of antimicrobial agents and antibiotics on the microbes.
Human Anatomy And Physiology-I	course code-BMLT-104
Course Outcome	This course will provide the knowledge of anatomy and its divisions, terms of location, positions and planes of the human body. The students know the structure and function of different parts of digestive system, skeleton system, excretory system, endocrine system and muscular system along with pathophysiology of diseases of these various body systems. Students will know about the homeostasis of body and structure and functions of various sensory organs like ear, eye and skin etc.
Professionals Communication Skills	BMLT 105
Course Outcome	Students will be able to learn English language with propriety and effectiveness to develop an argument in a positive manner. Students will write clearly, grammatically and syntactically correct sentences. Students will be able to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation. Students will have an appreciation of the differences between primary and secondary documents, and will advance their reading comprehension. Students will be able to read texts closely and explicate texts written in a wide variety of forms, styles, structures, and modes. The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.
Semester/Year	II Semester /I Year
Basic Pathology-II	BMLT 201

Course Outcome	Students will have knowledge about hemoglobin and its methods of estimation, complete blood cell count, ESR and PCV determination in the blood samples, techniques of bone marrow examination which are applied for diagnosis of the disease. It provides the concept of Pathology of inflammation, Pathology of chronic disorder like Tuberculosis, Leprosy, Syphilis, Rheumatological disorders. Students will know about disturbances of body fluids in pathological condition as well as the types and characteristics of tumors.
Basic Biochemistry-II	BMLT 202
Course Outcome	This will provide the concept of forces stabilizing structure of biomolecules, transport of various particles across the plasma membrane. Students will have concept of chemistry of different biomolecules like carbohydrates, lipids, proteins, nucleic acids and enzymes.
Microbial Techniques	BMLT203
Course Outcome	Students will know how to Collect, transport & dispose the microbial samples. Students will be able to work and care on the different microscope, perform various staining techniques and biochemical tests for microbial identification, antibiotics sensitivity test against pathogenic bacteria and care and management of experimental animals like Rabbits, Mice, Rats, Hamster, Monkey and fowl. This course will give knowledge about principle and working of various instruments in the clinical microbiology lab.
Human Anatomy and Physiology-II	BMLT 204
Course Outcome	The students know the structure and function of different parts of cardiovascular system, reproductive system, respiratory system, nervous system along with pathophysiology of diseases of these various body systems. Students will know about the composition and functions of different body as well as pathology of fever etc.
<b>Semester/Year</b>	<b>III Semester /II Year</b>
Clinical Haematology	BMLT 301
Course Outcome	Understanding the Hematological different tests, causes and mechanism of development of hematological disease like coagulation and bleeding disorders, anaemia, leukemias, lymphoma multiple myeloma hemoglobinopathy (sickle syndrome, thalassemia) etc, the students will be able to diagnose these disease hematological disease by performing laboratory tests. Students will also learn about hematological changes in pregnancy, AIDS, pediatric and geriatric age group and Using radioisotopes, measurement of blood volume, use of radioisotopes for determination of Red cell volume and plasma volume, red cell life span.
Metabolic & Blood Biochemistry	BMLT 302

Course Outcome	Students will know about metabolism of biomolecules and its related metabolic disorders like Diabetes, Cholesterol & Lipoproteins disorders, disorders of lipid and protein metabolism. They will learn about different parameters and profiles in the blood which are used in diagnosis of these metabolic disorders.
Bacterial Pathogens & Associated Diseases	BMLT 303
Course Outcome	Students have detail knowledge about pathogenic bacteria (including staining, culture characteristics and selective culture media, and biochemical reaction, mode of infection, virulence factors, pathogenesis, diseases and laboratory investigation) and diseases caused by them. Students know the samples processing and tests for diagnosis of bacterial disease. It provides knowledge of normal flora of human body, different infection including hospital acquired infection.
Immunology	BMLT 304
Course Outcome	It provides the concept of immunity against infection by microbes in human. Students have concept of different immunity, cells and organs of immune system, Ag, Ab, Ag-Ab reactions, measurement of Ag-Ab reactions, compliment system, autoimmune disorders.
Preventive Medicine and Health Care	BMLT 305
Course Outcome	Students have knowledge of pre-exposure prophylaxis for prevention of water born, air born and other diseases in the community. Getting concept about infection and its control, hygiene and sanitation, epidemiology and prophylactic immunization, the students are able to prevent spread of infections in the community. It provide basic concept and practical aspect of nursing, healthcare programmes and Family welfare planning and child health care programmes.
<b>Semester/Year</b>	<b>IV Semester /II Year</b>
Histopathological Techniques	BMLT 401
Course Outcome	Students will have knowledge about technical and practical aspects of histology and histopathology like preservation & safe disposal of histopathological specimens, handling of histopathological instruments, processing of various specimens, tissue processing, section cutting, staining of histopathological slides. These techniques help in study of cells/tissues in physiological and pathological conditions for establishing the diagnosis of disease.
Biochemical & Biophysical Techniques	BMLT 402

Course Outcome	It gives theoretical background on different types, use, advantages and disadvantages of automated analysers used in a diagnostic laboratory. Theoretical, technical and practical knowledge of various techniques like spectroscopy, chromatography, flame photometry and electrophoresis helps in separation and quantization of molecules in the biological sample for diagnosis of the disease. Technical and practical aspects of techniques and their automation like Blood cell counters, ELISA, RIA, Immunofluorescent tech., PCR and Blood gases analyzers expertise the students in establishing the diagnosis of disease.
Pathogenic Viruses	BMLT 403
Course Outcome	Students will have knowledge about pathogenic viruses (including viral properties, replication, virulence factors, pathogenesis, diseases and laboratory investigation) and viral disease (including pathogenesis, clinical features & lab. Diagnosis). Students will know the samples processing and tests for diagnosis of viral disease.
Clinical Pathology	BMLT 404
Course Outcome	Students become able to perform various tests in urine and other body fluids which make them able to understand the changes in the human body physiology due to metabolic and endocrinal disbalance and hence in diagnosis of diseases. Knowledge of stool examination helps the students to establish the diagnosis of various parasitic infections. Students become able to perform semen analysis which helps them in diagnosis of infertility problems and access them to IVF (In-Vitro Fertility) technology.
<b>Semester/Year</b>	<b>V Semester /III Year</b>
Blood Banking & Transfusion Medicine	BMLT 501
Course Outcome	Student will have the knowledge of complete blood banking procedure starting from selection of donor, testing and storage of donor blood components up to safe transfusion of blood components into recipients along with assessment of post-transfusion reactions. Students can perform various tests in the blood bank like blood grouping, screening of abnormal antibodies in donor and recipient blood before transfusion, donor and recipient blood compatibility test, separation of various blood components from donor blood etc. Students will have detail theoretical concept of various blood group and all above blood banking techniques and procedures. This course provides theoretical and technical knowledge of advance techniques in transfusion medicine like different apheresis and adverse donor reaction assessment.
Diagnostic Enzymes & Vitamines	BMLT 502

Course Outcome	This course provides the concept of properties, inhibition and factors responsible for abnormal enzyme level in serum. Students will have the theoretical and practical concept of various isoenzymes in blood which helps them to establish the diagnosis of diseases. Study of isoenzymes along with other parameters in blood enables the students to perform test for liver, heart diseases. Knowledge of chemistry, functions and method of estimation of vitamins along with disorders due to their deficiency helps the students to establish differential diagnosis of disorders and diseases.
Clinical Mycology	BMLT 503
Course Outcome	Students will know about morphology, classification, nutrition, cultivation, reproduction and sporulation of pathogenic fungi. Using knowledge of laboratory diagnostic techniques of fungal infection, students can find out the fungal infections from patient's sample. Student will have wide approach of various pathogenic fungi about their morphology, life cycle, culture characteristics, pathogenesis, infection with clinical feature and laboratory diagnosis. Students become able to process various clinical samples from patients like skin, nail, hair, pus, sputum, CSF and other body fluids and thus can find out the infection caused by fungi.
Biostatistics & Computer Fundamentals	BMLT 504
Course Outcome	Learners completing this course should be able to demonstrate understanding of statistical issues arising in medical research, apply bio statistical knowledge to real-life problems in medical research, demonstrate skills in the design and analysis of clinical trials, demonstrate skills in the analysis of epidemiological data, ability to analyze biomedical data using R, demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing, understand the fundamental hardware components that make up a computer's hardware and the role of each of these components, understand the difference between an operating system and an application program, and what each is used for in a computer, describe some examples of computers and state the effect that the use of computer technology has had on some common products, identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
Histo&Cytopathological Techniques	BMLT 601

Course Outcome	This course provides techniques for demonstration of enzymes, nucleic acid, lipid and microorganism in the histopathological specimens (tissues from biopsy/autopsy) which helps in diagnosis of diseases. Students can access different branches of diagnostic cytology including exfoliative cytological techniques which helps in diagnosis of various cancers. Students can perform various techniques that enable the study of cells in pathological condition for study of systemic pathology and body fluids. Theoretical and practical aspects of cytopathological techniques like interventional cytology (FNAC) techniques help the students to establish the diagnosis of various tumor and analogy in the patients. Students further get access to theoretical and technical concept of advance techniques and automation like Immunohistochemistry, human tissue culture, cyto-genetics and flowcytometry which make the very specialised in the field of diagnostic sciences.
Histo&Cytopathological Techniques	BMLT601
Course Outcome	This course provides techniques for demonstration of enzymes, nucleic acid, lipid and microorganism in the histopathological specimens (tissues from biopsy/autopsy) which helps in diagnosis of diseases. Students can access different branches of diagnostic cytology including exfoliative cytological techniques which helps in diagnosis of various cancers. Students can perform various techniques that enable the study of cells in pathological condition for study of systemic pathology and body fluids. Theoretical and practical aspects of cytopathological techniques like interventional cytology (FNAC) techniques help the students to establish the diagnosis of various tumor and analogy in the patients. Students further get access to theoretical and technical concept of advance techniques and automation like Immunohistochemistry, human tissue culture, cyto-genetics and flowcytometry which make the very specialised in the field of diagnostic sciences.
Hormones & Disorders	BMLT 602
Course Outcome	Students will understand the chemistry, mode of action, regulation, metabolic and clinical effects and methods of estimation (in serum) of hormones. Further they will have the knowledge of disorders caused by hormonal disbalance including causes, pathogenesis and clinical features. Students will know the theoretical and practical aspect of various methods of used for diagnosis of hormonal disorders.
Clinical Parasitology	BMLT 603



Course Outcome	Students can understand host parasite interaction and can perform various tests in the patient's sample for diagnosis of parasitic infection. Students will have detail information about various disease causing parasites (like protozoa, helminthes including morphology, life cycle, mode of transmission, pathogenesis, disease caused by them & techniques for their demonstration in patient's sample. This also gives knowledge about various parasitic infections including causes, pathogenesis, sign and symptoms & Lab. diagnosis. Students will know about collection, transport, preservation and processing of various sample for diagnosis of parasitic infections.
Research Methodology	BMLT-604
Course Outcome	After completion of course students will have basic knowledge on qualitative, quantitative and mixed methods research, as well as relevant ethical and philosophical considerations. They can choose the right statistical technique to be used with the research method, understand when to apply which statistical procedure, make informed choices with respect to methodology and research design and develop independent thinking for critically analyzing and writing research reports.
Environment Studies & Disaster Management	BMLT 605
Course Outcome	The students will be able to understand the biodiversity, bio-conservation They can recognize the physical, chemical and biological components of the earth's systems and how they function. Students become able to understand structure and function of ecosystem and management of natural disasters. They can critically examine all sides of environmental issues and apply understanding from science, law, history, and policy to create informed opinions about how to interact with the environment both personally and socially. They will be able to understand probabilistic aspects of human interactions with the environment.
<b>Semester/Year</b>	<b>VII Semester /IV Year</b>
Immunopathology	BMLT 701
Course Outcome	Students will have the theoretical concept of diseases of immunity and they can perform tests to establish the diagnosis of such diseases. Theoretical and practical knowledge of MHC and HLA typing enable the students to get access into transplantation technology. Students will get a brief account of stem cell therapy diagnostic molecular pathology which will make them specialized.
Advance Biochemical Techniques	BMLT 702
Course Outcome	Students will have knowledge various cancer markers and methods for their detection which help them to establish the diagnosis of cancer. Theoretical and practical knowledge of blotting techniques, drug abuse and clinical toxicology make the student specialised in the in the field of clinical biochemistry.

Advance Microbial Techniques	BMLT 703
Course Outcome	Students will know the methods to identify the unknown organism in sample. Further they can the samples of choice and their processing to diagnose various infective syndromes. They will know various diagnostic test and tools which help them to pursue carrier in advance diagnostic division of infectious diseases.
MLT As Entrepreneur And Quality Laboratory Management (QLM)	BMLT 704
Course Outcome	Knowledge of quality laboratory management, QA and QC help the student to provide best quality of reports for correct diagnosis of diseases. Concept of entrepreneurship helps the students to establish their own diagnostic laboratory, polyclinic etc.
Medical Jurisprudence	BMLT 705
Course Outcome	Students will know the medical law and ethic. They further know about forensic medicine, legal procedures in medico-legal cases, and laboratory methods of identification of an individual and forensic toxicology. These all techniques help the students to persue carrier in the clinical forensic science.
<b>Semester/Year</b>	<b>VII Semester /IV Year</b>
Six Month's Training along with An Analytical Project	BMLT 801
Course Outcome	Training in the hospitals , certified (NABL, CAP) diagnostic lab. makes the students able to test the samples of real patients, solve the discipancies in the test resul, evaluate the quality of test reports. Clinical training enhances the concept of the theory to find out the causes and characteristics of the disease and hence the students will be able to establish the diagnosis of the disease. Again the students will learn the complex automation during training which will lead them to a specialised carrier. Analytical project will help the students to get access in various national & international pojects as a project incharge.

# **B.Sc. Clinical Dietetics**

Name of the programme	B.Sc
Programme Code	B.Sc Clinical Dietetics
Programme Outcome	1. The bachelor in clinical dietetics will provide the student practical and technical knowledge and understanding about the various aspects related to nutrition and health.
	2. It enable the student to understand the relationship between dietary habits and occurrence of diseases, its etiology, clinical symptoms and nutritional therapy required in different health conditions
	3. After completion of programme students will be able to work as nutritional professional in hospitals, health and diet clinics, food industries etc. where they can apply evidence based nutritional recommendations for different health conditions.
Name of the specific programme	<b>B.Sc in Clinical Dietetics</b>
Semester/Year	I Semester /I Year
Biostatistics and Introduction to Computers	BCD 101
Course Outcome	<p>Learners completing this course should be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of statistical issues arising in medical research.</li> <li>• Apply bio statistical knowledge to real-life problems in medical research.</li> <li>• Demonstrate skills in the design and analysis of clinical trials..</li> <li>• Demonstrate skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
Basic Nutrition	BCD 102
Course Outcome	<p>Upon completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the fundamentals and role of nutrition and nutrients in our daily life.</li> <li>• Elaborate major properties, functions, important food sources, requirements, and metabolism of the major nutrients.</li> <li>• Explain the needs and method for determination of energy requirements depending upon physical activity.</li> </ul>
General Microbiology	BCD 103

Course Outcome	<ul style="list-style-type: none"> <li>• Students will learn about the the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes</li> <li>• Understand the basic morphology, characteristics and importance of various physiological groups of bacteria/archaea, virus, algae, fungi and protozoa</li> <li>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization. Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae</li> <li>• Understand the causation factors and pathogens which are responsible for various diseases.</li> </ul>
Human Anatomy And Physiology-I	BCD 104
Course Outcome	This course will provide the knowledge of anatomy and its divisions, terms of location, positions and planes of the human body. The students know the structure and function of different parts of digestive system, skeleton system, excretory system, endocrine system and muscular system along with pathophysiology of diseases of these various body systems. Students will know about the homeostasis of body and structure and functions of various sensory organs like ear, eye and skin etc.
Basic Dietetics	BCD 105
Course Outcome	<p>.Students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the role of dietitian/nutritionist in the health sector.</li> <li>• Differentiate between different types of hospital diets.</li> <li>• Explain the diet to be recommended in different health conditions.</li> </ul>
Semester/Year	II Semester /I Year
Clinical Nutrition	BCD 201
Course Outcome	<p>.The class will be able to :</p> <ul style="list-style-type: none"> <li>• Learn the different types of diseased conditions depending upon their aetiology, symptoms and metabolic changes.</li> <li>• Understand the dietary management to be recommended for the various health conditions.</li> </ul>
Vitamins And Mineral Nutrients	BCD 202
Course Outcome	<p>After the course completion the class will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the important macrominerals, microminerals, fat soluble and water soluble vitamins needed by the body.</li> <li>• Describe the role, sources, requirements, absorption and utilization, deficiency disease and toxicity of different important minerals and vitamins</li> </ul>
Fundamentals of Biochemistry	BCD 203
Course Outcome	<p>.The students will learn about:</p> <ul style="list-style-type: none"> <li>• Bimolecular diversity, structure and functional significance</li> <li>• Basics of pH and buffers,</li> <li>• Enzyme structure, function and kinetics.</li> </ul>
Human Anatomy and Physiology-II	BCD 204

Course Outcome	The students know the structure and function of different parts of cardiovascular system, reproductive system, respiratory system, nervous system along with pathophysiology of diseases of these various body systems. Students will know about the composition and functions of different body as well as pathology of fever etc.
Basic Molecular Biology	BCD 205
Course Outcome	<ul style="list-style-type: none"> <li>• Extend understanding of the molecular mechanisms via which genetic information is stored and expressed, regulated and transmitted among generations.</li> <li>• Provide knowledge about the basic techniques used in genetic engineering.</li> <li>• Enables to learn about the environmental toxicology in relation to health.</li> </ul>
Semester/Year	III Semester /II Year
Therapeutic Nutrition	BCD 301
Course Outcome	<p>The class will be able to:</p> <ul style="list-style-type: none"> <li>• Know about the causes, symptoms, risk factors and pathophysiology of different diseases.</li> <li>• Understand the management of diet in various diseases related to cardiovascular system, Liver and Gall bladder, renal system and cancer.</li> </ul>
Nutritional Biochemistry	BCD 302
Course Outcome	<p>.The class will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the metabolic pathways and fate of carbohydrate, lipids and proteins in the body.</li> <li>• Learn about the metabolism of nutrients in different syndromes such as obesity and starvation.</li> <li>• Gain knowledge about Interrelation of different nutrients and metabolic adaptation during exercise, stress, starvation and diabetes</li> </ul>
Community Nutrition	BCD 303
Course Outcome	<p>.The students will be able to:</p> <ul style="list-style-type: none"> <li>• Know the major public health problems occurring in our country, their causes and preventive measures to be taken.</li> <li>• Learn about the various methods for assessment of nutritional status and their significance.</li> <li>• Understand about the importance of providing nutrition education through different nutrition intervention methods.</li> <li>• Role of national and international agencies aimed towards providing better nutrition to the community through different intervention programmes.</li> </ul>
Professional Communication Skills*	BCD 304

Course Outcome	<ul style="list-style-type: none"> <li>• Students will be able to learn English language with propriety and effectiveness to develop an argument in a positive manner.</li> <li>• Students will write clearly, grammatically and syntactically correct sentences.</li> <li>• Students will be able to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation.</li> <li>• Students will have an appreciation of the differences between primary and secondary documents, and will advance their reading comprehension.</li> <li>• Students will be able to read texts closely and explicate texts written in a wide variety of forms, styles, structures, and modes.</li> <li>• The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.</li> </ul>
Family Meal Management	BCD 305
Course Outcome	<p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Learn the basic concepts of balanced diet and principles of menu planning during different age and health conditions.</li> <li>• Understand the important terminology of nutrition during pregnancy, lactation, infancy, early childhood, adolescent and geriatric.</li> </ul>
Food Commodities I	BCD-306
	<p>After the completion of course the class will be able to:</p> <ul style="list-style-type: none"> <li>• Differentiate between different methods of cooking and their significance.</li> <li>• Understand the composition, nutritive value, properties and processing of different food commodities including cereals, pulses, nuts, oilseeds, vegetables and fruits.</li> </ul>
Semester/Year	IV Semester /II Year
Food Microbiology, Sanitation And Hygiene	BCD 401
Course Outcome	<p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Gain knowledge about concept of food spoilage and contamination.</li> <li>• Understand about the preservation techniques of different food commodities.</li> <li>• Learn about the quality control measures and strategies in food systems.</li> <li>• Explain the concept and principles of hygiene and sanitation measures required in food industries.</li> </ul>
Food Commodities II	BCD 402
Course Outcome	<p>.After the completion of course the class will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the composition, nutritive value, properties and processing of different food commodities including sugar, milk and milk products, meat, fish and poultry.</li> </ul>
Food Preservation	BCD 403

Course Outcome	<p>After the completion of course the learner will be able to:</p> <ul style="list-style-type: none"> <li>• Know about the basic principles and importance of food preservation.</li> <li>• Understand about the processing and preservation by different methods such as low temperature, heat, drying.</li> <li>• Learn about the processing and preservation by non thermal methods.</li> </ul>
Food Fortification	BCD 404
Course Outcome	<p>The students will have conceptual understanding of:</p> <ul style="list-style-type: none"> <li>• Term food fortification, its need, objective and criteria for selection of vehicle.</li> <li>• Nutrients that are generally fortified, its safety and quality assurance aspect.</li> <li>• Technologies used for fortification of different food commodities and their health implication.</li> </ul>
Preventive Nutrition	BCD 405
Course Outcome	<ul style="list-style-type: none"> <li>• The student will get acquainted about the importance and role of functional foods in the diet.</li> <li>• The students will learn about the different perspective employed in preventive nutrition.</li> </ul>
Semester/Year	V Semester /III Year
Food Toxicology	BCD 501
Course Outcome	<ul style="list-style-type: none"> <li>• The student will gain basic knowledge about the term toxicology and its need for assessment in the food system.</li> <li>• They will learn about the food additives and implication of different additives in the food system.</li> <li>• They will get aware about the chemistry and effect of food allergens, environmental contaminants and drug residues on the health.</li> </ul>
Food Adulteration	BCD 502
Course Outcome	<ul style="list-style-type: none"> <li>• The student will inculcate the conceptual knowledge about the chemistry and role of different types of adulterants, additives, colorants and sweeteners used in the food systems.</li> <li>• They will understand the effect of different food additives on the health and the permissible limits for these additives.</li> </ul>
Food Safety	BCD 503
Course Outcome	<p>On completion of this course learner should be able to:</p> <ul style="list-style-type: none"> <li>• Identify food safety hazards and their control</li> <li>• Explain the role of food hygiene and effective food handling in day to day life.</li> <li>• Identify &amp; prevent potential sources of food contamination</li> <li>• Apply a range of food quality systems</li> <li>• prepare a food safety plan</li> </ul>
Food Service Management	BCD 504



Course Outcome	<p>.After successful completion of the program, student should be able to:</p> <ul style="list-style-type: none"> <li>• Manage the human resources within a food services organization or department</li> <li>• Communicate appropriately with clients, staff and management</li> <li>• Apply food services technology and operate industry equipment</li> <li>• Develop nutritional menus for food service production</li> <li>• Manage food service production</li> <li>• Demonstrate professional behaviours expected within the food service industry</li> <li>• Manage food services budgets</li> <li>• Adhere to regulations, standards and best practices of food service industry</li> </ul>
Research Methodology and Statistics	BCD-505
Course Outcome	<p>After completion of course students will:</p> <ul style="list-style-type: none"> <li>• Have basic knowledge on qualitative, quantitative and mixed methods research, as well as relevant ethical and philosophical considerations</li> <li>• Choose the right statistical technique to be used with the research method</li> <li>• Understand when to apply which statistical procedure</li> <li>• Make informed choices with respect to methodology and research design</li> <li>• Develop independent thinking for critically analyzing and writing research reports.</li> </ul>
Semester/Year	VI Semester /III Year
Project & on Job Training	BCD 601
Course Outcome	<ul style="list-style-type: none"> <li>• It will enable the students to initiate research work.</li> <li>• It will help the student to understand clinical and pathological conditions of various diseases (atleast three case studies), planning diet, prescription and dietary intervention for the same.</li> <li>• It will make the student to observe and study the food service management practices.</li> </ul>
Nutrition in Special Conditions	BCD 602
Course Outcome	<p>The student will acquire knowledge about:</p> <ul style="list-style-type: none"> <li>• Diet and nutrition required for sports person, space stations, higher altitudes, sea voyage and military.</li> <li>• Nutrient requirements and physiological changes occurring in the body in special conditions.</li> </ul>
Environmental Studies*	BCD 603
Course Outcome	<p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Recognize the physical, chemical, and biological components of the earth's systems and how they function.</li> <li>• Critically examine all sides of environmental issues and apply understanding from science, law, history, and policy to create informed opinions about how to interact with the environment both personally and socially.</li> <li>• Understand probabilistic aspects of human interactions with the environment.</li> </ul>

# **M.Sc. Clinical Nutrition**

<b>Name of the programme</b>	<b>M.Sc</b>
<b>Programme Code</b>	<b>M.Sc Clinical Nutrition</b>
<b>Programme Outcome</b>	1. Masters in clinical nutrition will provide the students practical and technical understanding and expertise about the different aspects related to food, nutrition and public health.
	2. This course is concerned with therapeutic uses for nutrition, usually in medical settings as part of a complete health care program. So this program will enables students to create effective nutrition plans that work towards health outcomes such as disease prevention and treatment, strengthening of the immune system and nourishment of those unables to care for themselves.
	3. After completion of this program, students will able to become health care professionals for services in various fields of clinical nutrition and medical nutrition management and related areas such as hospitals academics, research, industry, clinical nutrition department, training, extension and community service.
<b>Name of the specific programme</b>	<b>M.Sc in Clinical Nutrition</b>
<b>Course Outcome</b>	
<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Advanced Nutrition-I</b>	<b>MCN 101</b>
<b>Course Outcome</b>	Learners completing this course should be able to:
	<ul style="list-style-type: none"> <li>Recall fundamental aspects of the nutrition like definition of terms like food, nutrition and health, different aspects of the RDA, food groups, balanced diet, energy metabolism and Water balance of the body.</li> </ul>
	<ul style="list-style-type: none"> <li>Explain the basic concept regarding determination of Recommended Dietary Allowances, Daily energy requirement and expenditure of the individuals.</li> </ul>
	<ul style="list-style-type: none"> <li>Apply their knowledge regarding RDA and energy metabolism in the determination of nutritional needs of the individuals and groups across the lifespan.</li> </ul>
	<ul style="list-style-type: none"> <li>Determine the role of homeostasis of various metabolic processes like energy metabolism, water balance, electrolyte balance etc. in maintaining nutritional status and health of the individual and groups.</li> </ul>
<b>Advanced Nutrition-II</b>	<b>MCN-102</b>

<b>Course Outcome</b>	<p>Upon completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Identify role of nutrients in the different metabolic process of the body.</li> <li>• Explain about different aspects of nutrients like carbohydrate, protein, fat and fibre and their metabolic regulation in the body</li> <li>• Build-up concepts regarding assessing nutritional requirement and recommended allowances of the nutrients for individuals and groups.</li> <li>• Determine how nutrients effect biochemical processes and signal transduction pathways, and how this can lead to development of nutritionally related diseases.</li> </ul>
<b>General Biochemistry</b>	<b>MCN 103</b>
<b>Course Outcome</b>	<b>Upon completion of the course, the student will be able to:</b>
	<ul style="list-style-type: none"> <li>• Recall the basics of biochemistry of the nutrients like synthesis of proteins, lipids, nucleic acids, and carbohydrates and their role in metabolic pathways.</li> </ul>
	<ul style="list-style-type: none"> <li>• Illustrate the students about practical skills necessary to conduct laboratory-based investigations of metabolic and nutritional biochemistry</li> </ul>
	<ul style="list-style-type: none"> <li>• Provide knowledge about nutrient metabolism which can be apply to describe role of nutrients in disease pathology.</li> </ul>
	<ul style="list-style-type: none"> <li>• Analyze discuss and present laboratory-based data and scientific information in written and oral forms of communication</li> <li>• Assess about the function of various nutrients including how they are metabolized to form energy used by the human body.</li> </ul>
<b>Human Anatomy and Physiology-I</b>	<b>MCN-104</b>
<b>Course Outcome</b>	<b>Upon successful completion of the course, students would be able:</b>
	<ul style="list-style-type: none"> <li>• Recall concepts and knowledge of the general terminology, cell structure and function, histology, gross anatomy, and physiology related to different systems of the body.</li> </ul>
	<ul style="list-style-type: none"> <li>• Explain about how these human organ systems are interrelated to apply a holistic approach to human health.</li> </ul>
	<ul style="list-style-type: none"> <li>• Utilize scientific laboratory equipment in order to gather and analyze data on human anatomy and physiology.</li> </ul>
	<ul style="list-style-type: none"> <li>• Investigate interrelationships among molecular, cellular, tissue and organ functions in each system.</li> <li>• Evaluate information on human health and medical research as to its social, environmental, and ethical implications as part of responsible citizenship.</li> </ul>
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Advances in Human Nutrition</b>	<b>MCN-201</b>
<b>Course Outcome</b>	Upon completion of the course, the student will be able to:
	<ul style="list-style-type: none"> <li>• Recall the basic concept of about micronutrient, essential nutrients and nutritional requirement for different age groups</li> </ul>

	<ul style="list-style-type: none"> <li>• Explain the role of Nutrition in growth and development.</li> <li>• Utilize the knowledge to understand the importance of nutrition in maintaining optimum body composition</li> <li>• Examine the need for special nutritional considerations in altered climatic conditions Update students on the recent advances in Human Nutrition</li> </ul>
<b>Food Science and Food Processing</b>	<b>MCN-202</b>
<b>Course Outcome</b>	Upon successful completion of the course, students would be able:
	<ul style="list-style-type: none"> <li>• Identify the different concepts of food science and food processing technologies</li> </ul>
	<ul style="list-style-type: none"> <li>• Understand the processing technology of various food stuffs, physical and chemical principles in food processing</li> </ul>
	<ul style="list-style-type: none"> <li>• Explain about composition and nutritive value of food and knowledge relevant to processing, shelf life extension, reduction of toxins and enhancement in sensory quality of food.</li> </ul>
	<ul style="list-style-type: none"> <li>• Acquaint with the technologies of food processing and preservation of plant and animal foods; cereals, pulses, oilseeds, fruits vegetables, spices, meat, fish, poultry, sea food, milk and dairy products.</li> </ul>
	<ul style="list-style-type: none"> <li>• Assess the importance of food safety and quality management, national and international food laws and regulations as well as importance of food engineering and packaging in food industry.</li> </ul>
<b>Research Methodology and Biostatistics</b>	<b>MCN-203</b>
<b>Course Outcome</b>	By the end of this course students will be able to:
	<ul style="list-style-type: none"> <li>• Recall different types of research and statistical methods required for the qualitative as well as quantitative research.</li> </ul>
	<ul style="list-style-type: none"> <li>• Illustrate their knowledge on qualitative, quantitative and mixed methods research, as well as relevant ethical and philosophical considerations.</li> </ul>
	<ul style="list-style-type: none"> <li>• Choose the right statistical technique to be used with the research method.</li> </ul>
	<ul style="list-style-type: none"> <li>• Assess the appropriateness of different kinds of research designs and methodology, for instance in terms of their appropriateness, transparency and quality.</li> </ul>
	<ul style="list-style-type: none"> <li>• Interpret statistical literature, research articles, and the claims made on the basis of statistics</li> </ul>
<b>Human Anatomy and Physiology-II</b>	<b>MCN-204</b>
<b>Course Outcome</b>	<b>Upon successful completion of the course, students would be able:</b>
	<ul style="list-style-type: none"> <li>• Recall concepts and knowledge of the general terminology, cell structure and function, histology, gross anatomy, and physiology related to different systems of the body.</li> </ul>
	<ul style="list-style-type: none"> <li>• Understand the anatomy and functions of human body.</li> </ul>

	<ul style="list-style-type: none"> <li>• Develop vivid understanding of the various human physiological systems.</li> <li>• Utilize scientific laboratory equipment in order to gather and analyze data on human anatomy and physiology.</li> </ul>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Community Health and Nutrition</b>	<b>MCN-301</b>
<b>Course Outcome</b>	Upon successful completion of the course, students would be able:
	<ul style="list-style-type: none"> <li>• Identify the practice of public health nutrition, discussion of significant public health nutrition problems today, and an overview of food and nutrition programs available to the community.</li> </ul>
	<ul style="list-style-type: none"> <li>• Illustrate expanding role of the community dietitian as well as understand and articulate nutrition problems and practices in the community.</li> </ul>
	<ul style="list-style-type: none"> <li>• Build skills needed to deliver nutrition services and methods of accessing community nutrition resources and information.</li> </ul>
	<ul style="list-style-type: none"> <li>• Determine beliefs, customs and food practices of various cultural groups and apply this knowledge in planning nutrition education and intervention programs.</li> </ul>
	<ul style="list-style-type: none"> <li>• Demonstrate effective and professional oral and written communication and documentation and use of current information technologies when communicating with individuals, groups and the public</li> </ul>
<b>Institutional Food Management</b>	<b>MCN-302</b>
<b>Course Outcome</b>	Upon successful completion of the course, students would be able:
	<ul style="list-style-type: none"> <li>• Recall a systems approach to management concepts and explores issues associated with the management of foodservice operations. This includes menu planning, ordering, preparations methods for quantity food production, quality control, and human resource management within a quality management framework.</li> </ul>
	<ul style="list-style-type: none"> <li>• Manage the human resources within a food services organization or department</li> </ul>
	<ul style="list-style-type: none"> <li>• Apply food services technology and operate industry equipment</li> </ul>
	<ul style="list-style-type: none"> <li>• Adhere to regulations, standards and best practices of food service industry</li> </ul>
	<ul style="list-style-type: none"> <li>• Assess the opportunity to apply theoretical knowledge and skills in professional food service practices.</li> </ul>
<b>Dietetics and Therapeutic Nutrition</b>	<b>MCN-303</b>
<b>Course Outcome</b>	Upon successful completion of the course, students would be able:
	<ul style="list-style-type: none"> <li>• Recall coherent and advanced knowledge of the principles and concepts associated with nutrition and dietetics.</li> </ul>
	<ul style="list-style-type: none"> <li>• Illustrate comprehensive knowledge on principles and planning of therapeutic diet and nutritional needs of normal and sick persons.</li> </ul>

	<ul style="list-style-type: none"> <li>• Explain about the causes, symptoms, risk factors and pathophysiology of different diseases.</li> <li>• Assess the nutritional problems of community and effectively manage the nutritional needs of the community.</li> </ul>
	Utilize effective and appropriate communication skills in providing information, advice and professional opinion to individuals, groups and communities
<b>Food Microbiology and Food Safety</b>	<b>MCN-304</b>
<b>Course Outcome</b>	By the end of this course students will be able to:
	<ul style="list-style-type: none"> <li>• Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.</li> </ul>
	<ul style="list-style-type: none"> <li>• Determine the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.</li> </ul>
	<ul style="list-style-type: none"> <li>• Identify the conditions under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.</li> </ul>
	<ul style="list-style-type: none"> <li>• Investigate the role and significance of microbial inactivation, adaptation and environmental factors (i.e. pH, temperature) on growth and response of microorganisms in various environments, and conditions.</li> </ul>
	<ul style="list-style-type: none"> <li>• Utilize laboratory techniques to detect, quantify, and identify microorganisms in foods.</li> </ul>
<b>Hospital Training and Presentation</b>	<b>MCN-305</b>
<b>Course Outcome</b>	After completion of this Training Program, students will be able to-
	<ul style="list-style-type: none"> <li>• To provide students a high quality education and a supervised practical exposure that will prepare them as competent and effective dietetic practitioners for entry-level positions in general dietetics.</li> </ul>
	<ul style="list-style-type: none"> <li>• To integrate knowledge and critical thinking skills with service</li> </ul>
	<ul style="list-style-type: none"> <li>• To emphasize professional practice that facilitates modification of personal food choices, food access and food systems</li> </ul>
<b>Semester/Year</b>	<b>IV Semester /II Year</b>
<b>Dissertation Work</b>	<b>MCN-401</b>
<b>Course Outcome</b>	After completion of dissertation work, students will be able to-
	· Acquire skills to undertake systematic research in the area of food science and nutrition
	· Understand the applications of nutritional sciences in clinical interventions, communication for health promotion, food service management, food science and processing
	· Assess innovative <b>Nutrition Research</b> which provides the basis for solutions to larger health-related issues, allowing individuals to live healthier and more productive lives.

	<ul style="list-style-type: none"><li>· Bridging the gap between disease prevention and disease treatment by fostering clinical <b>research</b>, providing innovative education for caregivers and patients, and delineating best practices for medical <b>nutrition</b> in primary care settings.</li></ul>
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**Bachelor of Physiotherapy**  
**(B.P.T.)**

<b>Name of the programme</b>	<b><u>B.P.T.</u></b>
<b>Programme Outcome</b>	<b>A student completing a Bachelor of Physiotherapy shall be able to apply:</b> <b>POs1.</b> As Clinical Physiotherapist <b>POs2.</b> Government job as Clinical Physiotherapist in Hospitals <b>POs3.</b> Clinical Physiotherapist in individual Physiotherapy Clinics & Holistic Centres
<b>Name of the specific programme</b>	<b>Bachelor of Physiotherapy</b>
<b>Programme Specific Outcome</b>	Possess knowledge of basic courses like Human Anatomy, Human Physiology, Exercise therapy and Electrotherapy along with basic medical subjects which will lay the foundation for practice of Physiotherapy. Develop various skills & techniques of physiotherapy to treat various medical & surgical conditions. Acquires attitude to practice moral and ethical values. Develops interests for care of the individual and provide physiotherapy services to the community. Demonstrates skills in practicing physiotherapy, teaching, management, research guidance and counseling.
<b>Semester/Year</b>	<b>I Semester- I Year</b>
<b>Name of course</b>	<b>Communication Skills in English</b>
<b>Course Outcome</b>	Students seeking admission to the diploma course do not have the required proficiency in English. It has therefore, been decided to introduce English and communication Technique to help them to attain proficiency in the subject.
<b>Name of Course</b>	<b>Computer Application</b>
<b>Course Outcome</b>	Computer application course has been designed to provide an introduction to computer technology and its tools. The student will be able to understand the basics of computer and its application. The student will be able to appreciate the role of computer technology, more specifically computer hardware, Software and its application in the present social and economic scenario
<b>Name of Course</b>	<b>Human Anatomy-I (BPT 101): Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the identification of all gross anatomical structures. Particular emphasis will be placed on description of musculoskeletal anatomy which includes bones, joints, muscles, cardiovascular system and Respiratory system, as these are related to the application of physiotherapy in patients.
<b>Name of Course</b>	<b>Human Physiology-I (BPT 102) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basics of normal human physiology with special emphasis on the functioning of the cardiovascular, respiratory and digestive system.
<b>Name of Course</b>	<b>Biochemistry (BPT 103)</b>

<b>Course Outcome</b>	In this subject, the student will learn the essentials of biochemistry in nutrition and biochemical reactions.
<b>Name of Course</b>	<b>Basics of Physiotherapy-I: Fundamentals of Exercise Therapy &amp; Biomechanics (BPT 104) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basic concepts of human movement, joint mechanics, muscular mechanics and its application of various biomechanical principles towards the practice of physiotherapy in patients.
<b>Name of Course</b>	<b>Basics of Physiotherapy-II: Fundamentals of Biomedical Physics (BPT 105) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject the students will learn the fundamentals of biomedical physics and its application in various electrical modalities used in physiotherapy practice.
<b>Semester/Year</b>	<b>II Semester- I Year</b>
<b>Name of Course</b>	<b>Human Anatomy-II (BPT 201) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the identification of all gross anatomical structures. Particular emphasis will be placed on description of developmental anatomy, musculoskeletal anatomy which includes bones, joints, muscles, nervous system and other systems as these are related to the application of physiotherapy in patients.
<b>Name of Course</b>	<b>Human Physiology-II (BPT 202) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basics of normal human physiology with special emphasis on the functioning of the cardiovascular, respiratory and other systems.
<b>Name of Course</b>	<b>Exercise Therapy-I (BPT 203) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function.
<b>Name of Course</b>	<b>Electrotherapy-I (BPT 204) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the high frequency currents utilized in various modalities. They will also learn the principles, production, application, parameters, effects, testing, dangers and precautions of various modalities for various conditions
<b>Name of Course</b>	<b>Sociology &amp; Psychology (BPT 205)</b>
<b>Course Outcome</b>	In this subject, the students will learn about basic sociological concepts, principles and social process, social institution in relation to the individual family and community and the various social, factors affecting the family in the rural and urban communities in India. In this subject, the student will learn about specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, rehabilitation and discharge.
<b>Semester/Year</b>	<b>III Semester- II Year</b>

<b>Name of Course</b>	<b>Pharmacology (BPT 301)</b>
<b>Course Outcome</b>	In this subject, the student will be able to understand the mechanism of action, therapeutic effects and adverse effects of drugs for the common diseases that physiotherapists encounter in their routine practice.
<b>Name of Course</b>	<b>Pathology &amp; Microbiology (BPT 302)</b>
<b>Course Outcome</b>	In this subject, the student will learn the etiologies, mechanisms, and manifestations of various diseases. In this subject, the student will learn about microorganisms, their functions and involvement in the disease process.
<b>Name of Course</b>	<b>Exercise Therapy-II (BPT 303) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn the principles, testing and application of various techniques in the restoration of physical function.
<b>Name of Course</b>	<b>Electrotherapy-II (BPT 304) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the low frequency and medium frequency currents utilized in various modalities. They will also learn about Principles of production, techniques of application, physiological effects, therapeutic effects, indications and contraindications of various modalities for various conditions.
<b>Name of Course</b>	<b>Basics Of First Aid &amp; Critical Care (BPT 305) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basics of first aid including the reviving of patients from conditions like cardiac arrest, MI etc. The student will also know about apparatus, instrumentation & working in a critical care unit.
<b>Semester/Year</b>	<b>IV Semester- II Year</b>
<b>Name of Course</b>	<b>General Medicine (BPT 401)</b>
<b>Course Outcome</b>	In this subject, the student will learn the causes, pathophysiology, signs and symptoms of various diseases along with investigative procedures and also integrate the effect of Physiotherapy component in those diseases.
<b>Name of Course</b>	<b>General Surgery (BPT 402)</b>
<b>Course Outcome</b>	In this subject, the student will learn about various types of surgeries, extent of incisions, indications, contraindications, post operative complications and treatment for various pathological conditions.
<b>Name of Course</b>	<b>Community Medicine (BPT 403)</b>

<b>Course Outcome</b>	In this subject, students will learn about effects of the environment and the community dynamics on the health of the individual & prevalence of diseases in different cohorts. The student will also learn about various Government Health Plans.
<b>Name of Course</b>	<b>Biomechanics &amp; Kinesiology-I (BPT 404) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the biomechanics of various joints and its implications towards the restoration of function for patients. The student will also learn about the movement & forces occurring around joints of Spine & Upper extremity.
<b>Name of Course</b>	<b>Ethics &amp; Administration (BPT 405)</b>
<b>Course Outcome</b>	In this subject, the student will learn about moral values and ethical principles, administration of Indian health care system and its applications in the field of physiotherapy.
<b>Semester/Year</b>	<b>V Semester- III Year</b>
<b>Name of Course</b>	<b>Clinical Orthopedics (BPT 501)</b>
<b>Course Outcome</b>	In this subject, the student will learn about causes, signs and symptoms, investigations, conservative and surgical management of various traumatic & non traumatic musculoskeletal .
<b>Name of Course</b>	<b>Clinical Neurology &amp; Psychiatry (BPT 502)</b>
<b>Course Outcome</b>	In this subject, the student will learn about in detail about basic neurophysiology, various neurological conditions and its medical and surgical management. The student will also learn about the presentation & treatment of Psychiatric disorders.
<b>Name of Course</b>	<b>Clinical Cardiorespiratory Conditions (BPT 503)</b>
<b>Course Outcome</b>	In this subject, the student will learn about various cardio respiratory conditions, its medical and surgical management
<b>Name of Course</b>	<b>Biomechanics &amp; Kinesiology-II (BPT 504) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the biomechanics of various joints and its implications towards the restoration of function for patients. The student will also learn about the movement & forces occurring around joints of Lower extremity, Gait (Pattern of Walking) & Posture.
<b>Name of Course</b>	<b>Community Based Rehabilitation (BPT 505)</b>
<b>Course Outcome</b>	In this subject student will be able to describe the strategy to assess – prevalence and incidence of various conditions that increase the morbidity, role of physical therapy in improving morbidity, expected functional and clinical recovery; reasons for non-compliance in specific community environment – solution – strategies of Community Based Rehabilitation programme. Particular emphasis will be placed on concept of multidisciplinary team approach in rehabilitation.

<b>Semester/Year</b>	<b>VI Semester- III Year</b>
<b>Name of Course</b>	<b>Clinical Obstetrics, Gynaecology &amp; Paediatrics (BPT 601)</b>
<b>Course Outcome</b>	In this subject, the student will learn about various types of surgeries, extent of incisions, indications, contraindications, post operative complications and treatment for various pathological conditions. The student will also learn about normal development of child from birth till age 12 and know about various paediatric conditions along with its treatment.
<b>Name of Course</b>	<b>Physiotherapy in Surgery &amp; Hand (BPT 602) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about how Physiotherapy is helpful in post surgical conditions of abdomen, hernia etc. and surgical & non-surgical conditions of Hand condition.
<b>Name of Course</b>	<b>Bioengineering (BPT 603)</b>
<b>Course Outcome</b>	In this subject, the student will acquire knowledge about biomechanical principles of application of various aids & appliances used for ambulation, protection & prevention of disease.
<b>Name of Course</b>	<b>Physiotherapy in Medicine &amp; Geriatric Conditions (BPT 604) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basics of management of individual patient care suffering from various medical ailments. The students will also learn about the conditions & patient care in the Geriatric population.
<b>Name of Course</b>	<b>Physiotherapy In Sports Fitness And Allied Therapeutics (BPT 605) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the Physiology of Physical Exercise. Be able to prescribe & train for general fitness and health promotion for children, pregnant and lactating females, obese and elderly subjects. Know Sports related types of injuries. Know the type & management of Sports injuries.
<b>Semester/Year</b>	<b>VII Semester- IV Year</b>
<b>Name of Course</b>	<b>Physiotherapy in Orthopedic Conditions-I (BPT 701) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn in detail about Physiotherapy assessment & management of various traumatic & non-traumatic orthopaedic conditions of fractures, deformities & various surgical & non-surgical conditions of Spine & Upper limb.
<b>Name of Course</b>	<b>Physiotherapy in Neurological Conditions-I (BPT 702) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will apply biomedical and behavioral scientific knowledge to the physiotherapy evaluation and management of basic neurological disorders across the lifespan and also appropriately select, modify as necessary, and correctly demonstrate basic measurement and testing procedures commonly used in assessing neurological dysfunction.

<b>Name of Course</b>	<b>Physiotherapy In Obstetrics, Gynecology &amp; Pediatrics(BPT 703) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about the basics of management of individual patient care suffering from various ailments of obstetrics & gynaecology. The students will also learn about the conditions & patient care in the paediatric population.
<b>Name of Course</b>	<b>Advanced Physical &amp; Functional Diagnosis(BPT 704)</b>
<b>Course Outcome</b>	In this subject, the student will learn about various concepts of evaluation of functions and measurements of various systems in general and in various pathological conditions.
<b>Name of Course</b>	<b>Biostatistics And Research Methodology(BPT 705)</b>
<b>Course Outcome</b>	In this subject, the student will learn about statistical science and its application to problems of human health and disease, with the ultimate goal of advancing the public's health. In this subject, the student will learn about various phases of research that are needed to conduct research and publish research papers.
<b>Semester/Year</b>	<b>VIII Semester- IV Year</b>
<b>Name of Course</b>	<b>Physiotherapy in Orthopedic Conditions-II (BPT 801) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn in detail about Physiotherapy assessment & management of various traumatic & non-traumatic orthopaedic conditions of fractures, deformities & various surgical & non-surgical conditions of Spine & Upper limb.
<b>Name of Course</b>	<b>Physiotherapy in Neurological Conditions-II (BPT 802) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will apply biomedical and behavioral scientific knowledge to the physiotherapy evaluation and management of basic neurological disorders across the lifespan and also appropriately select, modify as necessary, and correctly demonstrate basic measurement and testing procedures commonly used in assessing neurological dysfunction.
<b>Name of Course</b>	<b>Physiotherapy in Cardiorespiratory Conditions (BPT 803) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, student will understand the core foundation and framework of chest physical therapy practice and how it applied to chest Physical therapy evaluation and intervention and know the unique contributions of chest physical therapy within an interdisciplinary team.
<b>Name of Course</b>	<b>Eclectic Approaches in Physiotherapy (BPT 804)</b>
<b>Course Outcome</b>	In this subject the student will learn about the recent techniques & its evidence based approach including Manual therapy, dry needling, kinesio taping, diet & nutrition etc.
<b>Name of Course</b>	<b>Project (BPT 805)</b>
<b>Course Outcome</b>	In this, the student will learn in detail how to do a research project.

**Master of Physiotherapy**  
**(M.P.T.)**



<b>Name of the programme</b>	<b>Post Graduation (M.P.T.)</b>
<b>Programme Outcome</b>	<p>The students have to take up the research projects based on the specified specialization of Physiotherapy i.e Community based Rehabilitation, Orthopedic Rehabilitation, Sports Rehabilitation, Neurological Rehabilitation, Cardiac Rehabilitation and Manual Therapy in the final semester of the course.</p> <p>Physiotherapists can also obtain a doctorate degree and become involved in research. Physiotherapists that demonstrate a high level of skill, knowledge and competence in their work may find many opportunities for growth, such as moving into supervisory or management positions, teaching positions, or they may decide to open their own physiotherapy clinic or service.</p>
<b>Name of the specific programme</b>	<b>Master of Physiotherapy (M.P.T.)</b>
<b>Programme Specific Outcome</b>	<p>At the end of the postgraduate programme in the discipline concerned the student shall be able to;</p> <ol style="list-style-type: none"> <li>1) Develop skills in using educational methods and techniques as applicable to the teaching of physiotherapy students.</li> <li>2) He / she should be able to perform different eclectic techniques and to demonstrate it to their students</li> <li>3) He /she should be more research oriented in physical therapy.</li> </ol>
<b>Semester/Year</b>	<b>Semester I-I Year</b>
<b>Name of course</b>	<b>Basic Medical Science [B.M.S.] (MPT 101) : Theory</b>
<b>Course Outcome</b>	<p>Upon completion of the course, the student shall be able to:</p> <ol style="list-style-type: none"> <li>1) Explain the gross morphology, structure and functions and chemical composition of various organs of the human body in the study of Human Anatomy.</li> <li>2) Describe the various homeostatic mechanisms and their imbalances in the study of Human Physiology.</li> <li>3) Identify the various tissues, organs, bones etc. pertaining to their pathologies of different systems of human body in the study of Radiology.</li> <li>4) understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of drugs in the study of Pharmacology.</li> </ol>
<b>Name of course</b>	<b>Research Methodology And Biostatistics(MPT 102) : Theory</b>
<b>Course Outcome</b>	<p>In this subject, the student will learn about statistical science and its application to problems of human health and disease, with the ultimate goal of advancing the public's health. In this subject, the student will learn about various phases of research that are needed to conduct research and publish research papers.</p>
<b>Name of course</b>	<b>Basics of Exercise Physiology (MPT 103) : Theory</b>

<b>Course Outcome</b>	In this subject the student will learn about the physiological changes during various forms of exercises & training and adaptations in different types of environmental conditions.
<b>Name of course</b>	<b>Electrophysiology &amp; Electrotherapeutics (MPT 104) : Theory</b>
<b>Course Outcome</b>	In this subject the student will learn about the evidence based instrumentation, functioning & mechanism of actions of various therapeutic & diagnostic physical agents.
<b>Name of course</b>	<b>Seminar on Clinical Topics (MPT 105): Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about skills of presentation & public speaking on various relevant clinical topics with their recent evidences.
<b>Semester/Year</b>	<b>Semester II- I Year</b>
<b>Name of Course</b>	<b>Biomechanics &amp; Kinesiology-I (MPT 201) : Theory</b>
<b>Course Outcome</b>	In this subject, the student will learn about the biomechanics of various joints and its implications towards the restoration of function for patients. The student will also learn about the movement & forces occurring around joints of Spine & Upper extremity.
<b>Name of Course</b>	<b>Ethics, Principles, Management &amp; Educational Methodology In Physiotherapy (MPT 202) : Theory</b>
<b>Course Outcome</b>	In this subject, the student will learn about moral values and ethical principles, administration of Indian health care system and its applications in the field of physiotherapy. The student will also learn about educational methodologies in academics.
<b>Name of Course</b>	<b>Physical &amp; Functional Diagnosis (MPT 203) : Theory</b>
<b>Course Outcome</b>	In this subject, the student will learn about various concepts of evaluation of functions and measurements of various systems in general and in various pathological conditions.
<b>Name of Course</b>	<b>Seminar on Clinical Topics (MPT 204): Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about skills of presentation & public speaking on various relevant clinical topics with their recent evidences.
<b>Semester/Year</b>	<b>Semester III-II Year</b>
<b>Name of Course</b>	<b>Biomechanics &amp; Kinesiology-II (MPT 301) : Theory</b>
<b>Course Outcome</b>	In this subject, the student will learn about the biomechanics of various joints and its implications towards the restoration of function for patients. The student will also learn about the movement & forces occurring around joints of Lower extremity, Gait (Pattern of Walking) & Posture.
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Orthopedics &amp; Sports) –I (MPT OS 302) : Theory + Practical</b>

<b>Course Outcome</b>	In this subject, the patient will learn about the on-field & off-field assessment & rehabilitation techniques of athletes & other sports individuals. The student will also get knowledge about doping & sports psychology.
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Orthopedics &amp; Manual Therapy) –I (MPT OM 302) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about assessment & rehabilitation techniques of various musculoskeletal disorders for spine & upper extremity. The student will also learn about different manual therapy techniques.
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Neurology &amp; Psychosomatic Disorders) –I (MPT NP 302) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about assessment & rehabilitation techniques of various neurological disorders. The student will also learn about different neurotherapy techniques.
<b>Semester/Year</b>	<b>Semester IV-II Year</b>
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Orthopedics &amp; Sports) –I (MPT OS 401) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the patient will learn about the on-field & off-field assessment & rehabilitation techniques of athletes & other sports individuals. The student will also get knowledge about doping & sports psychology.
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Orthopedics &amp; Manual Therapy) –I (MPT OM 401) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about assessment & rehabilitation techniques of various musculoskeletal disorders for lower extremity & other connective tissue disorders. The student will also learn about different manual therapy techniques
<b>Name of Course</b>	<b>Rehabilitation in Physiotherapy Conditions (Neurology &amp; Psychosomatic Disorders) –I (MPT NP 401) : Theory + Practical</b>
<b>Course Outcome</b>	In this subject, the student will learn about assessment & rehabilitation techniques of various neurological & paediatric disorders. The student will also learn about different neurotherapy techniques.
<b>Name of Course</b>	<b>Dissertation On A Research Topic (MPT 402) : Practical</b>
<b>Course Outcome</b>	In this, the student will learn in detail how to do a research project & make a comprehensive thesis for a relevant topics.

# **M.Sc. Medical Anatomy**

<b>Name of the programme</b>	<b>Post Graduation (M.Sc.)</b>
<b>Programme Outcome</b>	At the end of the postgraduate training in the discipline concerned the student shall be able to; 1) Demonstrate competence in basic concepts of research methodology and be able to critically analyze relevant published research literature. 2) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students and paramedical health workers.
<b>Name of the specific programme</b>	<b>M.Sc. Medical Anatomy</b>
<b>Programme Specific Outcome</b>	At the end of the postgraduate training in the discipline concerned the student shall be able to; 1) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students and paramedical health workers. 2) He / she should be able to dissect the cadavers and to demonstrate it to their students 3) He /she should be more research oriented in Gross anatomy, Histology, Neuro anatomy and Embryology field.
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Human Anatomy,</b>
<b>Course Outcome (Human Anatomy)</b>	Upon completion of the course, the student shall be able to: 1) Explain the gross morphology, structure and functions and chemical composition of various organs of the human body. 2) Identify the various tissues and organs of different systems of human body 3) Appreciate coordinated working pattern of different organs of each system. 4) Student must know about identification of organ with their relations ,blood supply, nerve supply and clinical aspects of them.
<b>Name of Course</b>	<b>Human Physiology</b>
<b>Course Outcome (Human Physiology)</b>	1. Describe the various homeostatic mechanisms and their imbalances. 2. Identify the various tissues and organs of different systems of human body 3. Perform the various experiments related to special senses and nervous system.
<b>Name of Course</b>	<b>Human Biochemistry</b>

<b>Course Outcome (Biochemistry)</b>	<p>1. Describe the various chemical processes going on in a human body.</p> <p>2. Describe the various diets and nutrition aspects required for a human body.</p> <p>3. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.</p> <p>4. Understand the metabolism of nutrient molecules in physiological and pathological conditions.</p>
<b>Semester/Year</b>	<b>II &amp; III Year</b>
<b>Name of Course</b>	<b>Gross Anatomy</b>
<b>Course Outcome (PAPER-1)</b>	<p>Upon completion of the course, the student shall be able to:</p> <p>a) Take the demo classes for MBBS and other allied sciences students</p> <p>b) Demonstrate the human bones, human parts with their gross features to the students</p> <p>c) Should be able to know how to give and conduct seminars, journal clubs in the field of anatomy</p> <p>d) Know how to select a dissertation or thesis topic</p> <p>e) Know how to select the research topics</p> <p>f) Should be able to know about statistics which are used for writing the dissertation or thesis.</p> <p>g) Explain the gross morphology, structure and functions and chemical composition of various organs of the human body.</p> <p>h) Identify the various tissues and organs of different systems of the human body</p> <p>i) Appreciate the coordinated working pattern of different organs of each system.</p> <p>j) Student must know about identification of organs with their relations, blood supply, nerve supply and clinical aspects of them.</p>
<b>Name of Course</b>	<b>Embryology And Histology</b>
<b>Course Outcome (PAPER-2)</b>	<p>a) Students must know about the microscopic structure of each and every tissue of the body</p> <p>b) Must know how to prepare the histology slides and how to describe them</p> <p>c) Must know about histological techniques with how to use instruments</p>
<b>Name of Course</b>	<b>Neuro-Anatomy, Genetics, Comparative Anatomy, Recent Advances, Clinical Anatomy</b>
<b>Course Outcome (PAPER-3)</b>	<p>a) Students should know the gross features and functions of neuroanatomy</p> <p>b) Should be able to teach the students about neuroanatomy</p> <p>c) Must know about recent advances related to human anatomy aspects that have been newly invented which are used for human anatomy</p> <p>d) He/she should be able to describe the clinical aspects related to each and every part of the body</p> <p>e) Student should also know about the evolution process so he/she can compare the human body anatomy and lower animal anatomy</p>

**Post-Graduation Diploma  
Dermatology**

<b>Name of the programme</b>	<b>Post Graduation Diploma</b>
<b>Programme Outcome</b>	At the end of the postgraduate training in the discipline concerned the student shall be able to; 1) Demonstrate competence in basic concepts of research methodology and be able to critically analyze relevant published research literature. 2) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students and paramedical health workers.
<b>Name of the specific programme</b>	<b>Post-Graduation Diploma Dermatology</b>
<b>Programme Specific Outcome</b>	1.) Demonstrate competence in identifying common dermatological diseases. 2.) Should be able to manage common skin conditions. 3.) Demonstrate competence in identifying and working up case of leprosy. 4.) Demonstrate competence in identifying sexually transmitted diseases. 5.) Develop skills in basic dermatology procedures like radiofrequency ablation, cryotherapy, comedone extraction and chemical cauterisation. 6.) Develop skills in cosmetology procedures like chemical peeling, acne scar management, microdermabrasion and microneedling. 7.) Develop skills in surgical procedures like vitiligo surgery and nail surgery.
<b>Semester/Year</b>	<b>I Year</b>
<b>Name of course</b>	<b>Paper I</b>
<b>Course Outcome</b>	1.) Demonstrate competence in identifying common dermatological diseases. 2.) Should be able to manage common skin conditions. 3.) Demonstrate competence in identifying and working up case of leprosy. 4.) Demonstrate competence in identifying sexually transmitted diseases. 5.) Develop skills in basic dermatology procedures like radiofrequency ablation, cryotherapy, comedone extraction and



chemical cauterisation.

6.) Develop skills in cosmetology procedures like chemical peeling, acne scar management, microdermabrasion and microneedling.

7.) Develop skills in surgical procedures like vitiligo surgery and nail surgery.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Business & Management

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. BBA
2. B.Com
3. B.Com (Hons.) ABST
4. B.Com (Hons.) BADM
5. MBA
6. MBA Dual Specialization
7. MBA (HHM)
8. Ph.D (Business & Management)

**BBA**

1. **Name of the Program: BBA**

2. **Program Outcomes:**

After completing the three-year graduation in the professional BBA programme, a student will be able to -

**PO 1:** Gain good knowledge and expertise in almost all fields of business environment including economic, financial, legal, social, technological etc.

**PO 2:** Develop hard core skills with academic knowledge, as well as soft business skills required to excel in business as managers, entrepreneurs, investors, analysts etc.

**PO 3:** Transform themselves into capable, employable, professional, ethical leaders or participants of the Indian or global business scenario.

3. **Name of the Specific Program: BBA**

4. **Program Specific Outcomes:**

After completing the three-year graduation in BBA, a student will be able to -

**PSO1:** Enrich themselves with in-depth knowledge of business management- its organization, structure and functions.

**PSO2:** learn various quantitative tools like statistics, basics of business mathematics, analysis and appraisal of projects etc.

**PSO3:** develop an understanding of macro and micro aspects of economies; how they affect the functioning of domestic and International businesses.

**PSO4:** understand the legal framework of business environment by undertaking courses in company law, and other laws like sale of goods act, contract act, consumer protection act, special contracts etc.

**PSO5:** BBA is a professional specialisation course and where students will develop specialised skills by undertaking 4-5 courses of the chosen field as part of their curriculum.

**PSO6:** Develop good communication skills in business English through participating in seminars, writing of survey report, industrial visit report etc. as well as develop good interpersonal skills.

**PSO7:** Trained in the basics of financial accounting, presentation of financial data as well as comparing and analysing internal and external data for decision making using various tools of Cost accounting and Management Accounting.

**PSO8:** Enhance their scope for employment or self-employment and learn the ground realities of present-day business functioning by undertaking a compulsory 45 days internship programme with any firm /industry of their choice

## 5. Course Outcomes

### Semester/Year: I / I

#### **Name of the Course: BBA(BB 1.1) Environmental Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** recall the introduction to the basic of Environmental Management, its concepts and principles

**CO2:** to get knowledge of Energy Management in current scenario.

**CO3:** understand disaster management and its role in present complexities

**CO4:** comprehend the environment needs, problems and develop sustainable development

**CO5:** Recommend desired course of action for optimal utilization of scarce resources of the planet.

#### **Name of the Course: BBA (BB 1.2) Business Organization**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** knowledge about the process of setting up business enterprise and consideration required for starting new business.

**CO2:** aware about the source of finance raised by the enterprise for starting new business.

**CO3:** Identify the basic fundamentals of the business environment, organisational theory and marketing, including capacity to recognise and use relevant terminology.

**CO4:** Describe the processes underlying diversity within an organization.

**CO5:** Analyse effective application of knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

#### **Name of the Course: BBA (BB 1.3) Managerial Economics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic of managerial economics, its concepts and principles used to relate with business.

**CO2:** understand the internal and external decisions to be made by managers.

**CO3:** analyse the demand and supply conditions and assess the position of a company

**CO4:** design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets

**CO5:** appraise real-world business problems with a systematic managerial economics theoretical framework

#### **Name of the Course: BBA (BB 1.4) Financial Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** recall what is incomplete record accounting, its concepts and principles used to produce financial statement.

**CO2:** to learn the higher concepts of branch and departmental accounting and comprehend it

**CO3:** instill the knowledge about accounting procedures, methods and techniques.

**CO4:** understand the fundamentals of company accounts –issue of shares and debentures its entries and balance sheet.

**CO5:** interpret the financial performance of the firm and company.

**Name of the Course: BBA (BB 1.5) Business Statistics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** describe and understand the key terminology, tools and techniques used in business statistical analysis and able to recall statistical concepts.

**CO2:** critically understand the underlying usage of Central Tendency of data dispersion of data.

**CO3:** understand, critically summarize and illustrate Index Numbers

**CO4:** discuss the uses and limitations of Correlation and Regression

**CO5:** solve a range of problems using the techniques covered and conduct basic Statistical Analysis of Time Series and Association of Attributes.

**Name of the Course: BBA (BB 1.6) Entrepreneurship & Skill Development**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the development of entrepreneurship as a field of study and as a profession

**CO2:** develop the entrepreneurial process

**CO3:** imbibe the business decisions involved in starting a new business venture & the role of government in promoting entrepreneurship

**CO4:** analyse new concept/product/service ideas as an entrepreneur

**CO5:** appraise the creative process of opportunity identification and screening.

**Semester/Year: II / I**

**Name of the Course: BBA (BB 2.1) Business Communication**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** identify the basic principles & various aspects of Business Communication.

**CO2:** understand various communication models and the chief barriers to effective communication.

**CO3:** be equipped with the knowledge of proceeding with all types of written business correspondences.

**CO4:** develops writing skills required for different types of business letters and would also learn basic skills to face interviews.

**CO5:** develop smart and self-esteemed personality.

**Name of the Course: BBA (BB 2.2) Principles and Practices of Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the basic nature, functions and scope of management.

**CO2:** Demonstrate the roles, skills and functions of management.

**CO3:** Conceptualize the significance of various techniques of management.

**CO4:** Exhibit effective decision-making skills, employing analytical and critical thinking ability.

**CO5:** Analyse effective application of PoM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

**Name of the Course: BBA (BB 2.3) Business Environment**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** to identify and analyse micro and macro environment before setting up the business enterprise.

**CO2:** Demonstrate awareness of the economic, social and cultural environments within which international businesses operate.

**CO3:** Develop viable alternatives and make effective decisions relating to business ethics and social responsibility.

**CO4:** Impart value-based education which identifies consequences that result from unethical behaviour.

**CO5:** Developing research aptitude in order to analyse and solve the business problems.

**Name of the Course: BBA (BB 2.4) Business Mathematics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** recall the basic of mathematics, its concepts & Compound Interest Progressions: Arithmetic, Geometric, Harmonic Mean

**CO2:** Appreciate business mathematics concepts that are encountered in the real world, understand and be able to communicate the underlying business concepts and mathematics involved to help another person gain insight into the situation.

**CO3:** use correct mathematical terminology and symbolic processes in order to be prepared for future work in business.

**CO4:** develop various mathematical models to solve business problems.

**CO5:** Analyse real world scenarios to recognize when simple and compound interest, annuities, payroll preparation

**Name of the Course: BBA (BB 2.5) Management of Financial Institutions**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the types, importance and advantages of various financial institutions in the country. Evaluate how their functioning affects the economic development.

**CO2:** Gain an in-depth knowledge about the promotional as well as regulatory institutions like the Reserve Bank of India and Securities and Exchange Board of India.

**CO3:** Analyse the role and functions of commercial banks and the need and importance of rural banking in India.

**CO4:** Demonstrate knowledge about the recent trends in banking and participate in the capital market through investment in mutual funds.

**CO5:** Learn about the International scenario in banking by knowing about the chief international financial institutions and their functioning.

**Name of the Course: BBA (BB 2.6) Business Ethics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the principles of moral decision-making in global business & identify the trade-offs that face an ethical manager.

**CO2:** develop the thinking toward show competitive advantage maps on to corporate social responsibility.

**CO3:** examine and discuss competing positions on a range of ethical issues facing business and society.

**CO4:** inculcate an environment of ethical management and ethical leadership that drives the organization.

**CO5:** become an ethical manager

**Name of the Course: BBA (BB 2.7) Industrial Tour**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** get an insight of the industrial environment

**CO2:** ability to conduct research in the chosen fields

**CO3:** understanding of the importance of sustainability and cost-effectiveness.

**CO4:** ability to be a multi-skilled manager with good knowledge, management, leadership and entrepreneurship skills.

**CO5:** capability and enthusiasm for self-improvement through continuous professional development and life-long learning.

**Semester/Year: III / II**

**Name of the Course: BBA (BB 3.1) Indian Economy**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Evaluate and apply the key concepts Related to Indian Economy Including Agricultural Economy, Industrial Sector, and Infrastructural sector

**CO2:** Critically assess the role that Indian Economy can play in development and growth of India

**CO3:** Make students aware about the new technology used in development of Agricultural and Infrastructural Sector

**CO4:** Reflect on the practical Implementation on the growth of Indian Economy

**CO5:** Creation for Education and Skill development Services and Trade and also to solve the problems that are coming in Development of Indian Economy

**Name of the Course: BBA (BB 3.2) Marketing Management**

**Course Outcome:** After studying this course, a student will be able to –



- CO1: understand the basic concept of marketing /concepts &philosophies.
- CO2: know the relevance of marketing in modern competitive world
- CO3: familiarize students about product and its classifications/new product development
- CO4: understand marketing philosophy and generating ideas for marketing research for consumer satisfaction
- CO5: develop an analytical ability to plan for various marketing strategy

**Name of the Course: BBA (BB 3.3) Cost Accounting**

**Course Outcome:** After studying this course, a student will able to –

- CO1: imbibe conceptual knowledge of cost accounting.
- CO2: differentiate methods of schedule costs per unit of production.
- CO3: select the costs according to their impact on business.
- CO4: identify &interpret the specifics of different costing methods.
- CO5: demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement systems.

**Name of the Course: BBA (BB 3.4)Legal Framework**

**Course Outcome:** After studying this course, a student will able to –

- CO1: Demonstrate an understanding of the Legal Environment of Business.
- CO2: understanding of legality and Statute of Frauds in contracts &mercantile laws.
- CO3: apply the various provisions of Sales of Goods Act, Consumer Protection Act and Partnership Act.
- CO4: use analytical skills in case study analysis.
- CO5: Communicate effectively using standard business and legal terminology

**Name of the Course: BBA (BB 3.5) IT for Managers**

**Course Outcome:** After studying this course, a student will able to –

- CO1: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- CO2: Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.
- CO3: Ability to design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs
- CO4: Made decisions related to work that demonstrate understanding of the importance of being an ethical computing professional
- CO5: An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems

**Name of the Course: BBA (BB 3.6) Indian Diversity & Business**

**Course Outcome:** After studying this course, a student will able to –

- CO1: get the knowledge of India’s diversity and will value it.
- CO2: understand problems arising due to diversity.
- CO3: link the people, livelihood, occupational diversity and socio-economic challenges.
- CO4: understand the diversity and its implications for the business and will be able to utilize and sustain such issues in future.

## **Semester/Year: IV / II**

### **Name of the Course: BBA (BB 4.1) Research Methods**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Demonstrate knowledge of research processes & perform literature reviews using print and online databases

**CO2:** describe, compare, and contrast descriptive and inferential statistics

**CO3:** identify, explain, compare, and prepare the key elements of a research proposal/report

**CO4:** compare and contrast quantitative and qualitative research paradigms

**CO5:** demonstrate how educational research contributes to the research proposal

### **Name of the Course: BBA (BB 4.2) Human Resource Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs

**CO2:** Analyse the role of recruitment and selection in relation to the organization's business and HRM objectives

**CO3:** demonstrating the appropriate use of job descriptions, application forms and related staffing tools such as internet recruiting

**CO4:** Develop, analyse and apply advanced training strategies and specifications for the delivery of training programs

**CO5:** justify the responsibilities of management, HRM specialists, managers, and employees in managing the employment relationship in a unionized or a non-unionized environment

### **Name of the Course: BBA (BB 4.3) Indian Financial System**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the broad features, set up and classification of Indian financial system

**CO2:** Effectively narrate the kinds and components of money with its regulatory system; be aware of the functions, objectives and limitations of commercial banks.

**CO3:** know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.

**CO4:** Understand the conditions of financial markets and its impact in the economy.

**CO5:** Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.

### **Name of the Course: BBA (BB 4.4) Management Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** to understand the basic of management accounting, its concepts and principles used to analyse financial statements.

**CO2:** have an insight on financial statement analysis in practical point of view.

**CO3:** develop the know-how and concept of marginal costing with practical problems.

**CO4:** Apply and analyse different types of management accounting tools through the preparation of statements.

**CO5:** Apply management accounting and its objectives in facilitating decision making.

**Name of the Course: BBA (BB 4.5) Tax Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** remember the introduction to the basic of Indian Tax Procedure, its concepts and principles used to produce tax adjustments

**CO2:** familiarize the different know-how and heads of income with its components

**CO3:** differentiate various categories of income of n individuals

**CO4:** assess the tax of an individual under different heads and deductions

**CO5:** compute the tax returns and assessments.

**Name of the Course: BBA (BB 4.6) Event Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** identify the importance of events for the organization and also develop the skills to raise the sponsorship for the same.

**CO2:** learn how to design and organize a successful event according to the need of audience

**CO3:** critically identify the need of conducting Market Research before organizing the event.

**CO4:** develop the skills of creating a promotional campaign in order to attract sponsors and audience.

**CO5:** understand the importance of organizing meetings and exhibitions for the organizations.

**Name of the Course: BBA (BB 4.7) Survey Report**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Recall the fundamental concepts of Research Methodology

**CO2:** Explain the practical approach towards sampling, data collection and Statistical tools.

**CO3:** Imbibe the learning of market survey

**CO4:** Prepare a Survey report which may be used as Research Paper in the future.

**Semester/Year: V / III**

**Name of the Course: BBA (BB 5.1) Quantitative Techniques**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the basic of quantitative techniques, its concepts and principles

**CO2:** apply mathematical models to solve business problems

**CO3:** appreciate the value of mathematical reasoning in day to day basis

**CO4:** familiarity with linear equation models to minimize the cost

**CO5:** apprise the importance of the costing techniques to find solution of the complex problem

**Name of the Course: BBA (BB 5.2) Company Law**

**Course Outcome:** After studying this course, a student will able to –

- CO1: update the knowledge of provisions of the Companies Act of 2013.  
CO2: impart the provisions and procedures under company law for different types of companies.  
CO3: acquaint the students with the duties and responsibilities of Key Managerial Personnel, directors and company secretary  
CO4: apprise the students of new concepts involving in company law regime  
CO5: Recommend desired course of action for formation, meetings, winding up of companies.

**Name of the Course: BBA (BB 5.3) International Business**

**Course Outcome:** After studying this course, a student will able to –

- CO1: explain how international factors affect domestic concerns  
CO2: understand regional economic integration and economic and political integration  
CO3: identify the main institutions that shape the global marketplace  
CO4: implement the key legal issues related to businesses operating in other countries  
CO5: enhance their cognitive knowledge of global issues; interpersonal skills with individuals from various cultures, and social responsibility awareness on global issue

**Name of the Course: BBA (BB 5.4) Organizational Behaviour**

**Course Outcome:** After studying this course, a student will able to –

- CO1: aware about the application of psychological concepts such as Personality, Learning, Motivation, Leadership, Attitude, Leadership in Organizational context.  
CO2: help the students to develop cognizance of the importance of human behaviour.  
CO3: enable students to describe how people behave under different conditions and understand why people behave as they do.  
CO4: help the students to acquire and develop skill to take rational decisions in the process of O.B.  
CO5: Analyse individual and group behaviour, and understand the implications of organizational behaviour on the process of management.

**Name of the Course: BBA Security Analysis and Portfolio Management**

**Course Outcome:** After studying this course, a student will able to –

- CO1: Understand the various alternatives available for investment  
CO2: Learn to measure risk and return. Find the relationship between risk and return.  
CO3: Gain knowledge of the various strategies followed by investment practitioners.  
CO4: identify portfolio theory and study various methods of modelling the risk associated with stock investment such as the capital asset pricing model and arbitrage pricing theory.  
CO5: recommend various strategies of investment based upon Fundamental analysis, technical analysis and efficient market analysis.

**Name of the Course: BBA Banking Service and Operation**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Develop an understanding for the concept of Banking and its nature, structure, principles, functions.

**CO2:** Apply operational thinking and analysis the basics of Retail Banking and its forms

**CO3:** Conceptualize fundamentals of rural finance, credit delivery mechanism

**CO4:** Determine changing nature of banking operations and exhibits importance of customer relationship management in enhancing various banking products and services

**CO5:** Appraise & update themselves of the dynamic changes taking place in banking sector with the advent of the internet. Example RTGS, e banking, risk mitigation in internet banking, etc.

**Name of the Course: BBA Training and Development**

**Course Outcome: Course Outcome: After studying this course, a student will able to –**

**CO1:** Understand the underlying concept of training in the organization i.e. its need, functions and advantages of training.

**CO2:** Identify and analyse various methods of on the job and off the job training and will also be able to comprehend the situation in which they are applicable.

**CO3:** Learn fundamental need of Management Development Program and various methods used for managerial development in organization.

**CO4:** Reflect and Training evaluation statements and the effectiveness.

**CO5:** Assess the need of OD and will able to learn the methods to implement OD

**Name of the Course: BBA Leadership Skills and Change Management**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** understand the core concept of Leadership and what makes leadership effective.

**CO2:** know the Challenges face by the managers of 21 century

**CO3:** critically learn and analyse the need of change for an organization and how to manage it.

**CO4:** identify the major drivers of change and how to cope up with them.

**CO5:** Assess the major models of executing and implementing change

**Name of the Course: BBA Consumer Behaviour**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** identify the dynamics of human behavior and the basic factors that influence the consumer decision process.

**CO2:** learn about the application of psychological concepts such as Personality, Learning, Motivation, Leadership, Attitude, Leadership in Consumer decision making process.

**CO3:** to help the students to acquire and develop skill to take rational decisions in the process of Consumer Behavior.

**CO4:** aware about the application of psychological concepts such as Personality, Learning, Motivation, Leadership, Attitude, Leadership in Consumer decision making process.

**CO5:** Analyze individual and group behavior, and understand the implications of consumer behavior in making strategies of marketing.

**Name of the Course: BBA Management of Services**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Discuss how the services sector operates in developed economies

**CO2:** Define and illustrate the main components of services marketing theory

**CO3:** Develop an understanding of the roles of relationship marketing and customer service in adding value to the customer's perception of a service

**CO4:** Critically appraise the way in which this theory can be practically applied in the service sector.

**CO5:** Recognise how services marketing principles can be used as a conceptual framework to help managers identify and solve marketing problems

**Name of the Course: BBA (BB 5.7) Summer Training Report**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Explore career alternatives prior to graduation

**CO2:** Develop work habits and attitudes necessary for job success

**CO3:** Develop communication, interpersonal and other critical skills in the job interview process

**CO4:** Assess interests and abilities in their field of study

**CO5:** Acquire employment contacts leading directly to a full-time job following graduation from college

**Semester/Year: VI / III**

**Name of the Course: BBA (BB 6.1) Strategic Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** appreciate the role and importance of strategic management in today's business environment.

**CO2:** identify, examine and differentiate between the vision and mission statements of companies, the goals, objectives, strategies, tactics, policies etc.

**CO3:** develop a deep understanding of the external as well as internal environment in which businesses exist.

**CO4:** evaluate various functional strategic alternatives and also develop them.

**CO5:** With the help of case studies students shall understand the meaning of strategic control and appreciate how corporates are practically strategizing their businesses with mergers, acquisitions etc.

**Name of the Course: BBA (BB 6.2) Auditing - Principles and Practice**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the environment and types relating to the auditing function, steps and terminology.

**CO2:** know how to prepare and use working papers, such as checklists & evaluate internal controls

**CO3:** apply auditing practices to different nature of Concerns

**CO4:** able to draft business reports and letters

CO5: equipped to assess the audit of sole proprietorship and partnership concerns financial statements

**Name of the Course: BBA (BB 6.3) Project Management**

**Course Outcome:** After studying this course, a student will able to –

CO1: remember the basics of Project Management, its concepts and types.

CO2: Enable them to develop project formulation and preparation of project report

CO3: equip the students for project appraisal and corrective measures

CO4: understand more about project finance and its source and techniques numerically.

CO5: develop a cognitive thinking on the project decisions and qualities of project manager.

**Name of the Course: BBA (BB 6.4) Outsourcing Management**

**Course Outcome:** After studying this course, a student will able to –

CO1: Understand the conceptual framework of outsourcing and its impact on the economy

CO2: Identify various outsourcing 1 opportunities and evaluate the strategies associated with each type of opportunity

CO3: analyse the contribution of outsourcing to the product value chain

CO4: explore debates surrounding outsourcing and managerial prerogatives

CO5: Recognise how outsourcing principles can be used as a conceptual framework to help managers identify and solve marketing problems

**Name of the Course: BBA Financial Reporting**

**Course Outcome:** After studying this course, a student will able to –

CO1: Understand the need importance and legalities with respect to business financial reporting i.e. Published financial statements.

CO2: Develop the ability to understand and prepare accounts as per the Indian Financial reporting standards.

CO3: Understand the International financial reporting standards (IFRS) in various facets of financial reporting, the role of Indian Institute of Chartered Accountants.

CO4: Be aware about the recent changes in financial reporting practices like the use of value-added reporting, reporting of CSR etc.

CO5: Be able to evaluate and critically examine Human Resource Accounting, social accounting etc.

**Name of the Course: BBA Goods and Service Tax**

**Course Outcome:** After studying this course, a student will able to –

CO1: remember the compliances of GST for their businesses or prospective businesses

CO2: develop specialized and updated knowledge in the area of GST in a systematic manner

CO3: differentiate between indirect taxation system, VAT and GST

CO4: to work in Corporate Sector in the area of Taxation as Finance Executive or Finance Manager/ Entrepreneurs

CO5: Enhancing analytical and problem-solving skills for decision making

**Name of the Course: BBA Industrial Relations**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** an understanding of industrial relations institutions such as employer associations, trade unions and industrial tribunals

**CO2:** Apply the essential concepts of industrial relations and their interrelationship at the personal, organisational and national levels.

**CO3:** develop principles of employment law; practical skills in negotiation, advocacy and workplace bargaining

**CO4:** Investigate solutions to industrial relations problems based on research and assessment of current practices

**CO5:** Communicate your knowledge of industrial relations in both written and verbal formats reactive to both audience and purpose

**Name of the Course: BBA Performance Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** equipped to understand the importance of Performance Management in an organization.

**CO2:** understand the significance of Performance Management in context of Human Resource Management.

**CO3:** aware about the various techniques of Performance Management used in an organization to evaluate the performance of employees.

**CO4:** determine the wage and salary structure of employees on the basis of their performance in an organization.

**CO5:** analyse the implication of performance management in designing various training and development programs.

**Name of the Course: BBA Product and Brand Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** learn the fundamental concepts of product and brand development and management

**CO2:** Use the brand positioning framework to develop a brand, keep it relevant, expand a brand internationally, and reposition a brand

**CO3:** Recognize the importance of using teams and organization to coordinate multiple interdisciplinary tasks in order to create and manage products within an organization.

**CO4:** Use portfolio analysis and the product life cycle to understand how a firm manages its product mix.

**CO5:** Apply an understanding of the product manager's role in product pricing, sales, and promotion.

**Name of the Course: BBA Retail Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the impact of retailing on the economy

**CO2:** Comprehend retailing's role in society and, conversely, society's impact on retailing



**CO3:** Identify various retail opportunities and evaluate the strategies associated with each type of opportunity.

**CO4:** Distinguish and characterize the factors and management tools that retailers consider and use when developing their merchandise mix.

**CO5:** Know the responsibilities of retail personnel in the numerous career positions available in the retail field

**B.Com**

**1. Name of the Program: B.Com**

**2. Program Outcomes:**

After completing the three year graduation in a student will able to -

**PO 1:** Gain good knowledge and expertise in fundamentals of accounting and commerce.

**PO 2:** Develop a deep understanding about various facets of business environment from financing to insurance etc.

**PO 3:** Transform themselves into responsible, skilled and capable employees or entrepreneurs or analyst / researchers etc for various businesses, corporates or capital markets.

**3. Name of the Specific Program : B.Com**

**4. Program Specific Outcomes:**

After completing the three year graduation in B.Com, a student will able to -

**PSO1:** Enrich themselves with basic knowledge of business organization and its functions.

**PSO2:** Get a deep insight into various aspects and tools of Accounting including financial accounting and reporting.

**PSO3:** Betrainedincomparing and analysing internal and external data for decision making using various tools of Cost accounting and Management Accounting.

**PSO4:** developan understanding of domestic and International business and economics.

**PSO5:** understand the legal framework of business environment by undertaking courses in company law, and other laws like contract act, consumer protection act etc.

**PSO6:** learn good communication skills by not only being skilled in business communication in English, but also have working knowledge of one local and one international language.

**PSO7:** recognise the features and roles of businessmen, entrepreneurs, managers, consultants, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making.

**PSO8:** Enhance their scope for employment as well as self-employment by undertaking elective courses of their choices like business ethics or Indian Constitution and Research Methods or Project Management etc, all through their B.Com Pass curriculum

## 5. Course Outcomes

### Semester/Year: I / I

**Name of the Course: B.Com (BC1.1) Indian Economy**

**Course Outcome:**

**Name of the Course: B.Com (BC1.2) Financial Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** conceptualise the nature and purpose of financial statements in relationship— to decision making.

**CO2:** Develop the ability to use a basic accounting system to create (record, classify, and summarize) the data needed to solve a variety of business problems

**CO2:** to learn the higher concepts of branch and departmental accounting and comprehend it

**CO3:** instill the knowledge about accounting procedures, methods and techniques.

**CO4:** understand the fundamental of company accounts –issue of shares and debentures its entries and balance sheet.

**CO5:** interpret the financial performance of the firm and company

**Name of the Course: B.Com (BC1.3) Micro Economics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic of micro economics, its concepts and principles used to relate with business.

**CO2:** understand the internal and external decisions to be made by managers.

**CO3:** analyze the demand and supply conditions and assess the position of a company

**CO4:** design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets

**CO5:** appraise real-world business problems with a systematic micro economics theoretical framework

**Name of the Course: B.Com (BC1.4) Principles & Practise of Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the basic nature, functions and scope of management.

**CO2:** Demonstrate the roles, skills and functions of management.

**CO3:** Conceptualize the significance of various techniques of management.

**CO4:** Exhibit effective decision-making skills, employing analytical and critical thinking ability.

**CO5:** Analyze effective application of PoM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

**Name of the Course: B.Com (BC1.5) Business Organisation**

**Course Outcome:** After studying this course, a student will be able to –

CO1: knowledge about the process of setting up business enterprise and consideration required for starting new business.

CO2: aware about the source of finance raised by the enterprise for starting new business.

CO3: Identify the basic fundamentals of the business environment, organisational theory and marketing, including capacity to recognise and use relevant terminology.

CO4: Describe the processes underlying diversity within an organization.

CO5: Analyze effective application of knowledge to diagnose and solve organizational problems and develop optimal managerial decisions

**Name of the Course: B.Com (BC1.6) English**

**Course Outcome:** After studying this course, a student will able to –

CO1: understand the importance of the English language

CO2: draft the various types of letter, notices etc

CO3: Comprehend and hands on English language

**Semester/Year: II / I**

**Name of the Course: B.Com (BC2.1) Environmental Management**

**Course Outcome:** After studying this course, a student will able to –

CO1: recall the introduction to the basic of Environmental Management, its concepts and principles

CO2: to get knowledge of Energy Management in current scenario.

CO3: understand disaster management and its role in present complexities

CO4: comprehend the environment needs, problems and develop sustainable development

CO5: Recommend desired course of action for optimal utilization of scarce resources of the planet.

**Name of the Course: B.Com (BC2.2) Regulatory Framework of Business**

**Course Outcome:** After studying this course, a student will able to –

CO1: Demonstrate an understanding of the Regulatory framework of Business.

CO2: understanding of legality and Statute of Frauds in contracts & mercantile laws.

CO3: apply the various provisions of Sales of Goods Act, Consumer Protection Act and Partnership Act.

CO4: use analytical skills in case study analysis.

CO5: Communicate effectively using standard business and legal terminology

**Name of the Course: B.Com (BC2.3) Banking & Finance**

**Course Outcome:** After studying this course, a student will able to –

CO1: Apprise themselves about the financial environment- both money and capital market along with the various financial services available.

CO2: Gain knowledge about the negotiable instruments and laws governing them.

CO3: Know the important role of Mutual funds, IDBI, LIC, investment companies etc.

**CO4:** Be able to evaluate the role importance and functioning of regulatory institutions in finance and banking.

**CO5:** Be able to understand and use the latest technology in banking and critically examine the cautions to be exercised.

**Name of the Course: B.Com (BC2.4) Business Mathematics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** recall the basic of mathematics, its concepts &Compound Interest Progressions: Arithmetic, Geometric, Harmonic Mean

**CO2:** Appreciate business mathematics concepts that are encountered in the real world, understand and be able to communicate the underlying business concepts and mathematics involved to help another person gain insight into the situation.

**CO3:** use correct mathematical terminology and symbolic processes in order to be prepared for future work in business.

**CO4:** develop various mathematical models to solve business problems.

**CO5:** Analyze real world scenarios to recognize when simple and compound interest, annuities, payroll preparation

**Name of the Course: B.Com (BC2.5) Cost Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** imbibe conceptual knowledge of cost accounting.

**CO2:** differentiate methods of schedule costs per unit of production.

**CO3:** select the costs according to their impact on business.

**CO4:** identify &interpret the specifics of different costing methods.

**CO5:** demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement systems

**Name of the Course: B.Com (BC2.6) Hindi**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** recall the Hindi as a language in writing and speaking

**CO2:** learn the Hindi grammer.

**CO3:** demonstrate the Hindi writing skills

**Semester/Year: III / II**

**Name of the Course: B.Com (BC3.1) Computer Application**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** familiarise with the basics of computers &windows and Microsoft Office

**CO2:** Identify categories of programs, system software and applications. Organize and work with files and folders

**CO3:** Utilize the Internet Web resources and evaluate on-line e-business system

**CO4:** Solve common business problems using appropriate Information Technology applications and systems

**CO5:** Justify technical knowledge and perform specific technical skills

**Name of the Course: B.Com (BC3.2) Corporate Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Have a solid foundation in accounting and reporting requirements of the Companies Act and relevant Indian Accounting Standards.

**CO2:** Have a comprehensive understanding of the advanced issues in accounting for assets, liabilities and owner's equity.

**CO3:** enable to solve Account for mergers and amalgamations, Value goodwill and shares under various methods.

**CO4:** the treatment regarding issue of bonus shares and treatment of prior period profits

**CO5:** apprise the accounting of various companies

**Name of the Course: B.Com (BC3.3) Business Statistics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** describe and understand the key terminology, tools and techniques used in business statistical analysis and able to recall statistical concepts.

**CO2:** critically understands the underlying usage of Central Tendency of data & dispersion of Data.

**CO3:** understand, critically summarize and illustrate Index Numbers

**CO4:** discuss critically the uses and limitations of Correlation and Regression

**CO5:** solve a range of problems using the techniques covered and Conduct Basic Statistical Analysis of Time Series and Association of Attributes.

**Name of the Course: B.Com (BC3.4) Company Law**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** update the knowledge of provisions of the Companies Act of 2013.

**CO2:** impart the provisions and procedures under company law for different types of companies.

**CO3:** acquaint the students with the duties and responsibilities of Key Managerial Personnel, directors and company secretary

**CO4:** apprise the students of new concepts involving in company law regime

**CO5:** Recommend desired course of action for formation, meetings, winding up of companies.

**Name of the Course: B.Com (BC3.5) Macro Economics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the behaviour of Indian and World economy.

**CO2:** apply economic thinking and analysis in context of National economies, monetary and fiscal policy and variables and indicators of macro-economic health

**CO3:** Compare various key macroeconomic indicators of GDP, unemployment, and inflation, then how to apply these concepts to analyse economic policy and behaviour

**CO4:** Determine economic variables including choice and scarcity; supply and demand; elasticity; applications of supply and demand; elasticity; GDP and economic growth; unemployment and inflation; the aggregate demand-aggregate supply model; Keynesian economics and neoclassical economics; the income-

expenditure model; fiscal policy; money and banking; monetary policy; policy applications; exchange rates and international finance.

**CO5:** Assemble; execute various macro economic theories in studies as well in real world together better information of finance to generate better employment opportunities for an individual.

**Name of the Course: B.Com (BC3.6) French**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** recall the French as a language in introductory phase

**CO2:** learn the speaking skills of French language.

**CO3:** demonstrate the Hindi writing skills

**Name of the Course: B.Com (BC3.7) Personality Development**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Develop and nurture a deep understanding of personality

**CO2:** Integrates multiple aspects of personal identity into a coherent whole

**CO3:** Help students understand the attitude process, its benefits and challenges

**CO4:** Assert strengthened personal character and further, an enhanced ethical sense

**CO5:** Employs self reflection to gain insight

**Semester/Year: IV / II**

**Name of the Course: B.Com (BC4.1) Leadership Skills & Change Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the core concept of Leadership and what makes leadership effective.

**CO2:** know the Challenges face by the managers of 21 century

**CO3:** critically learn and analyze the need of change for an organization and how to manage it.

**CO4:** identify the major drivers of change and how to cope up with them.

**CO5:** Assess the major models of executing and implementing change

**Name of the Course: B.Com (BC4.2) Human Resource Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs

**CO2:** Analyze the role of recruitment and selection in relation to the organization's business and HRM objectives

**CO3:** demonstrating the appropriate use of job descriptions, application forms and related staffing tools such as internet recruiting

**CO4:** Develop, analyze and apply advanced training strategies and specifications for the delivery of training programs

**CO5:** justify the responsibilities of management, HRM specialists, managers, and employees in managing the employment relationship in a unionized or a non-unionized environment



**Name of the Course: B.Com (BC4.3) Financial Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the basic of financial management, its concepts and principles used to produce financial decisions.

**CO2:** aware about capital structure and theories of capital structure & the cost of capital in wide aspects.

**CO3:** differentiate between various theories of financial management

**CO4:** facilitate the idea and meaning of material control, break even and capital budgeting

**CO5:** judge between long term financing decisions and working capital financing decisions

**Name of the Course: B.Com (BC4.4) Tax Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the introduction to the basic of Indian Tax Procedure, its concepts and principles used to produce tax adjustments

**CO2:** familiarize the different know-how and heads of income with its components

**CO3:** differentiate various categories of income of individuals

**CO4:** assess the tax of an individual under different heads and deductions

**CO5:** compute the tax returns and assessments.

**Name of the Course: B.Com (BC4.5) Marketing Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the basic concept of marketing / concepts & philosophies.

**CO2:** know the relevance of marketing in modern competitive world

**CO3:** familiarize students about product and its classifications/new product development

**CO4:** understand marketing philosophy and generating ideas for marketing research for consumer satisfaction

**CO5:** develop an analytical ability to plan for various marketing strategy

**Name of the Course: B.Com (BC4.6) Business Communication**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic principles & aspects of Business Communication.

**CO2:** understand various communication models and barriers to effective communication.

**CO3:** be equipped with the knowledge of proceeding with all types of written business correspondence

**CO4:** develops writing different types of Business letters and would also learn basic skills to face interviews

**CO5:** become smart and self esteemed personality

**Name of the Course: B.Com (BC4.7) Event Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the importance of events for the organization and also develop the skills to raise the sponsorship for the same.

**CO2:** learn how to design and organize a successful event according to the need of audience

**CO3:** critically identify the need of conducting Market Research before organizing the event.

**CO4:** develop the skills of creating a promotional campaign in order to attract sponsors and audience.

**CO5:** understand the importance of organizing meetings and exhibitions for the organizations.

### **Semester/Year: V / III**

#### **Name of the Course: B.Com Entrepreneurship & Skill Development**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the development of entrepreneurship as a field of study and as a profession

**CO2:** develop the entrepreneurial process

**CO3:** imbibe the business decisions involved in starting a new business venture & the role of government in promoting entrepreneurship

**CO4:** analyze new concept/product/service ideas as an entrepreneur

**CO5:** appraise the creative process of opportunity identification and screening

#### **Name of the Course: B.Com Advertising Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the basic of Advertising Management, its concepts and principles

**CO2:** prepare Integrated Advertising Program

**CO3:** Identify and understand the various advertising media, types strategies etc

**CO4:** Demonstrate an understanding of how an advertising agency operates

**CO5:** Reflect an understanding of the overall role advertising plays in the business world

#### **Name of the Course: B.Com Management Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** to understand the basic of management accounting, its concepts and principles used to analyze financial statements.

**CO2:** have an insight on financial statement analysis in practical point of view.

**CO3:** develop the know-how and concept of marginal costing with practical problems.

**CO4:** Apply and analyze different types of management accounting tools through the preparation of statements.

**CO5:** Apply management accounting and its objectives in facilitating decision making.

#### **Name of the Course: B.Com Management of Services**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** Discuss how the services sector operates in developed economies

**CO2:** Define and illustrate the main components of services marketing theory

**CO3:** Develop an understanding of the roles of relationship marketing and customer service in adding value to the customer's perception of a service

**CO4:** Critically appraise the way in which this theory can be practically applied in the service sector.

**CO5:** Recognise how services marketing principles can be used as a conceptual framework to help managers identify and solve marketing problems

**Name of the Course: B.Com Training & Development**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** Understand the underlying concept of training in the organization i.e. its need, functions and advantages of training.

**CO2:** Identify and analyze various methods of on the job and off the job training and will also be able to comprehend the situation in which they are applicable.

**CO3:** Learn fundamental need of Management Development Program and various methods used for managerial development in organization.

**CO4:** Reflect and Training evaluation statements and the effectiveness.

**CO5:** Assess the need of OD and will able to learn the methods to implement OD

**Name of the Course: B.Com Auditing - Theory & Practice**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** understand the environment and types relating to the auditing function, steps and terminology.

**CO2:** know how to prepare and use working papers, such as checklists & evaluate internal controls

**CO3:** apply auditing practices to different nature of Concerns

**CO4:** able to draft business reports and letters

**CO5:** equipped to assess the audit of sole proprietorship and partnership concerns financial statements

**Name of the Course: B.Com Operations Management**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** have understanding of Production and Operation Management and nature of manufacturing systems.

**CO2:** examine the factors for selection of Plant Layout that facilitate decision making.

**CO3:** determine the various roles of production planning and control for increasing operational efficiency.

**CO4:** determine various inventory related decisions and various costs associated with it.

**CO5:** appraise the role of various quality management techniques in operation management.

**Name of the Course: B.Com Security Analysis and Portfolio Management**

**Course Outcome: After studying this course, a student will able to -**

- CO1:** Understand the various alternatives available for investment
- CO2:** Learn to measure risk and return. Find the relationship between risk and return.
- CO3:** Gain knowledge of the various strategies followed by investment practitioners.
- CO4:** identify portfolio theory and study various methods of modelling the risk associated with stock investment such as the capital asset pricing model and arbitrage pricing theory.
- CO5:** recommend various strategies of investment based upon Fundamental analysis, technical analysis and efficient market analysis.

**Name of the Course: B.Com Management of Financial Institution**

**Course Outcome: After studying this course, a student will able to -**

- CO1:** understand the types, importance and advantages of various financial institutions in the country. Evaluate how their functioning affects the economic development.
- CO2:** Gain an in-depth knowledge about the promotional as well as regulatory institutions like the Reserve Bank of India and Securities and Exchange Board of India.
- CO3:** Analyse the role and functions of commercial banks and the need and importance of rural banking in India.
- CO4:** Demonstrate knowledge about the recent trends in banking and participate in the capital market through investment in mutual funds.
- CO5:** Learn about the International scenario in banking by knowing about the chief international financial institutions and their functioning

**Name of the Course: B.Com Organization Behavior**

**Course Outcome: After studying this course, a student will able to -**

- CO1:** aware about the application of psychological concepts such as Personality, Learning, Motivation, Leadership, Attitude, Leadership in Organizational context.
- CO2:** help the students to develop cognizance of the importance of human behavior.
- CO3:** enable students to describe how people behave under different conditions and understand why people behave as they do.
- CO4:** help the students to acquire and develop skill to take rational decisions in the process of O.B.
- CO5:** Analyze individual and group behavior, and understand the implications of organizational behavior on the process of management.

**Name of the Course: B.Com Indian Constitution**

**Course Outcome: After studying this course, a student will able to -**

- CO1:** Outlining the basic values and philosophy of Indian Constitution as expressed in the Preamble.
- CO2:** Studying Fundamental rights, duties and Directive Principles of State Policy
- CO3:** Examining Indian federalism through Centre-state relation, and local administration
- CO4:** Evaluating the role of government at various levels
- CO5:** Studying the Election Commission and electoral process in India

**Name of the Course: B.Com Business Ethics**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** understand the principles of moral decision-making in global business & identify the trade-offs that face an ethical manager.

**CO2:** develop the thinking toward show competitive advantage maps on to corporate social responsibility.

**CO3:** examine and discuss competing positions on a range of ethical issues facing business and society.

**CO4:** inculcate a environment of ethical management and ethical leadership that drives the organization.

**CO5:** become an ethical manager

### **Semester/Year: VI / III**

**Name of the Course: B.Com E-Commerce**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** Understand the concept of E-Commerce and Describe the opportunities and challenges offered by E-Commerce

**CO2:** Able to handle electronic payment technology and requirements for internet based payments

**CO3:** differentiate the categories of E-Commerce and understand the different applications of ECommerce

**CO4:** understand and identify security issues of E-Commerce

**CO5:** justify concept of WEB Based Business & understand the M-Commerce applications

**Name of the Course: B.Com Insurance Management**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** identify what insurance is, why insurance works and how to determine insurance needs

**CO2:** explain insurance operation, including functions of insurance, insurance markets, insurance regulations and the use of insurance as a tool to avoid losses and reduce risk

**CO3:** familiarise themselves with major insurance products, such as life insurance, health insurance, property and liability insurance

**CO4:** compare various kinds of insurance plans as well as the contract selection criteria from a cost-benefit point of view.

**CO5:** Communicate your knowledge of insurance in both written and verbal formats reactive to both audience and purpose.

**Name of the Course: B.Com Advance Accounting**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** to understand the basic of accounting, its concepts and principles of Amalgamation of Companies.

**CO2:** learn the journal and ledgers of Liquidation of Companies

**CO3:** instil the knowledge about accounting procedures, methods and techniques.

**CO4:** examine the accounts of companies per the Companies Act 2013

**CO5:** assess the accounts of Electricity Supply Companies. Final Accounts of Banking Companies and General Insurance Companies

**Name of the Course: B.Com Quantitative Techniques**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** understand the basic of quantitative techniques, its concepts and principles

**CO2:** apply mathematical models to solve business problems

**CO3:** appreciate the value of mathematical reasoning in day to day basis

**CO4:** familiarity with linear equation models to minimize the cost

**CO5:** apprise the importance of the costing techniques to find solution of the complex problem

**Name of the Course: B.Com Monetary Policy**

**Course Outcome: After studying this course, a student will able to –**

**CO1:**

**CO2:**

**CO3:**

**CO4:**

**CO5:**

**Name of the Course: B.Com Goods & Service Tax**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** remember the compliances of GST for their businesses or prospective businesses

**CO2:** develop specialized and updated knowledge in the area of GST in a systematic manner

**CO3:** differentiate between indirect taxation system, VAT and GST

**CO4:** to work in Corporate Sector in the area of Taxation as Finance Executive or Finance Manager/ Entrepreneurs

**CO5:** Enhancing analytical and problem solving skills for decision making

**Name of the Course: B.Com Business Budgeting**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** remember the basic of Business Budgets and Budgeting, its concepts and principles used to produce financial statement.

**CO2:** to prepare Types of Budgets, Cash Budgeting and Business forecasting

**CO3:** grasp the wide applicability of the budget and budgetary tools

**CO4:** develop the budgetary reporting system.

**CO5:** Recommend desired course of action for optimal utilization of resources which can lead to improve the efficiency

**Name of the Course: B.Com Management Rural Development**

**Course Outcome: After studying this course, a student will able to –**

**CO1:** understand the basic of Rural Development, its concepts and principles.

**CO2:** learn Land Holdings, Land Reforms in India

- CO3: examine the fundamentals of Rural Indebtedness.  
CO4: assess the Concept, Need & Importance of Rural Marketing  
CO5: comprehend the Economy of Rajasthan

**Name of the Course: B.Com Cost and Management Audit**

**Course Outcome: After studying this course, a student will able to -**

- CO1: remember the concepts of management audit and demonstrate its usefulness  
CO2: Ensure uniformity and maintain cost records as per Generally Accepted Cost Accounting Principles  
CO3: Understand the usefulness of cost audit and interpret for stakeholders view  
CO4: Recommend desired course of action for optimal utilization of scarce resources which can lead to improve the productivity  
CO5: Focus on basic cost information, appropriately computed cost centre wise, system based cost data support for decision making processes

**Name of the Course: B.Com Financial Reporting**

**Course Outcome: After studying this course, a student will able to -**

- CO1: Understand the need importance and legalities with respect to business financial reporting i.e. Published financial statements.  
CO2: Develop the ability to understand and prepare accounts as per the Indian Financial reporting standards.  
CO3: Understand the International financial reporting standards ( IFRS) in various facets of financial reporting, the role of Indian Institute of Chartered Accountants.  
CO4: Be aware about the recent changes in financial reporting practices like the use of value added reporting, reporting of CSR etc.  
CO5: Be able to evaluate and critically examine Human Resource Accounting, social accounting etc.

**Name of the Course: B.Com Industrial Relations**

**Course Outcome: After studying this course, a student will able to -**

- CO1: an understanding of industrial relations institutions such as employer associations, trade unions and industrial tribunals  
CO2: Apply the essential concepts of industrial relations and their interrelationship at the personal, organisational and national levels.  
CO3: develop principles of employment law; practical skills in negotiation, advocacy and workplace bargaining  
CO4: Investigate solutions to industrial relations problems based on research and assessment of current practices  
CO5: Communicate your knowledge of industrial relations in both written and verbal formats reactive to both audience and purpose

**Name of the Course: B.Com Product & Brand Management**

**Course Outcome: After studying this course, a student will able to -**

- CO1: learn the fundamental concepts of product and brand development and management

**CO2:** Use the brand positioning framework to develop a brand, keep it relevant, expand a brand internationally, and reposition a brand

**CO3:** Recognize the importance of using teams and organization to coordinate multiple interdisciplinary tasks in order to create and manage products within an organization.

**CO4:** Use portfolio analysis and the product life cycle to understand how a firm manages its product mix.

**CO5:** Apply an understanding of the product manager's role in product pricing, sales, and promotion

**Name of the Course: B.Com Research Methods**

**Course Outcome: After studying this course, a student will able to -**

**CO1:** Demonstrate knowledge of research processes & perform literature reviews using print and online databases

**CO2:** describe, compare, and contrast descriptive and inferential statistics

**CO3:** identify, explain, compare, and prepare the key elements of a research proposal/report

**CO4:** compare and contrast quantitative and qualitative research paradigms

**CO5:** justify how educational research contributes to the research proposal



# **B.Com (Hons.) ABST**

**1. Name of the Program: B.Com (Hons.)**

**2. Program Outcomes:**

After completing the three year graduation in B.Com (Hons), a student will able to -

**PO 1:** Gain in-depth knowledge in the fundamentals of Commerce and Finance.

**PO 2:** Develop an holistic outlook towards the contemporary issues of commerce and business at national and global level through effective learning

**PO 3:** Transform themselves as Creative, responsive, dutiful business analysts for companies, capital markets and commodity markets, also, researchers, consultants and teachers, with core competencies.

**3. Name of the Specific Program: B.Com (Hons.) in Accountancy & Business Statistics (ABST)**

**4. Program Specific Outcomes:**

After completing the three year graduation in B.Com (Hons) in **Accountancy & Business Statistics (ABST)**, a student will able to -

**PSO1:** Learn the accounting concepts and methods to interpret financial statements for evaluating the financial position and performance of the organization- business analysis and accounting for management

**PSO2:** Conceptualize the use of various quantitative and qualitative statistical tools and methodologies to support organizational decision making and project management

**PSO3:** Equips the students with knowledge of Income tax, corporate tax, GST, Company Law

**PSO4:** Gain Knowledge of primary and secondary capital market including portfolio analysis and management besides a general overview of business laws

**PSO5:** Understand the various types and techniques of costing and budgeting - cost analysis, cost control, budgetary control etc.

**PSO6:** Develop research aptitude among the students including formulating research synopsis, conducting the research, awareness of various statistical packages such as SPSS/ Excel, meaningful data interpretation etc.

**PSO7:** Pursue higher education in the field of advance accounting and other higher education related to accountancy like CA/ICWA/CMA.

## 5. Course Outcomes

### Semester/Year: I / I

#### **Name of the Course: B.Com (ABS 101) Principles of Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the basic nature, functions and scope of management.

**CO2:** Demonstrate the roles, skills and functions of management.

**CO3:** Conceptualize the significance of various techniques of management.

**CO4:** Exhibit effective decision-making skills, employing analytical and critical thinking ability.

**CO5:** Analyze effective application of PoM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

#### **Name of the Course: B.Com (ABS 102) Business Economics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic of business economics, its concepts and principles used to relate with business.

**CO2:** understand the internal and external decisions to be made by managers.

**CO3:** analyze the demand and supply conditions and assess the position of a company

**CO4:** design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets

**CO5:** appraise real-world business problems with a systematic business economics theoretical framework

#### **Name of the Course: B.Com (ABS 103) Computer Applications**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** familiarise with the basics of computers & windows and Microsoft Office

**CO2:** Identify categories of programs, system software and applications. Organize and work with files and folders

**CO3:** Utilize the Internet Web resources and evaluate on-line e-business system

**CO4:** Solve common business problems using appropriate Information Technology applications and systems

**CO5:** Justify technical knowledge and perform specific technical skills.

#### **Name of the Course: B.Com (ABS 104) Fundamental of Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** conceptualise the nature and purpose of financial statements in relationship— to decision making.

**CO2:** Develop the ability to use a basic accounting system to create (record, classify, and summarize) the data needed to solve a variety of business problems

**CO3:** build the ability to use accounting concepts, principles, and frameworks to analyze and effectively communicate information to a variety of audiences

**CO4:** Examines and prepares the financial statement and validate financial performance

**CO5:** generates the ability to use accounting information to solve a variety of accounting problems

**Name of the Course: B.Com (ABS 105) Business Mathematics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** recall the basic of mathematics, its concepts & Compound Interest Progressions: Arithmetic, Geometric, Harmonic Mean

**CO2:** Appreciate business mathematics concepts that are encountered in the real world, understand and be able to communicate the underlying business concepts and mathematics involved to help another person gain insight into the situation.

**CO3:** use correct mathematical terminology and symbolic processes in order to be prepared for future work in business.

**CO4:** develop various mathematical models to solve business problems.

**CO5:** Analyze real world scenarios to recognize when simple and compound interest, annuities, payroll preparation.

**Name of the Course: B.Com (ABS 106) Financial Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** remember the incomplete records accounting, its concepts and principles used to produce financial statement.

**CO2:** to learn the higher concepts of branch and departmental accounting and comprehend it

**CO3:** instill the knowledge about accounting procedures, methods and techniques.

**CO4:** understand the fundamental of company accounts –issue of shares and debentures its entries and balance sheet.

**CO5:** interpret the financial performance of the firm and company.

**Semester/Year: II / I**

**Name of the Course: B.Com (ABS 201) Legal Aspect of Business**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Demonstrate an understanding of the Legal Environment of Business.

**CO2:** understanding of legality and Statute of Frauds in contracts & mercantile laws.

**CO3:** apply the various provisions of Sales of Goods Act, Consumer Protection Act and Partnership Act.

**CO4:** use analytical skills in case study analysis.

**CO5:** Communicate effectively using standard business and legal terminology.

**Name of the Course: B.Com (ABS 202) Economic Environment**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** identify the basic of business, its concepts and principles and its relation with economic environment.

**CO2:** summarize the various macroeconomic forces in which business operates.

- CO3: apply the various policies in real life business problems.  
CO4: Outline how an entity operates in a economic environment.  
CO5: broaden the cognitive thinking as per the economic dimensions.

**Name of the Course: B.Com (ABS 203) Business Statistics**

**Course Outcome:** After studying this course, a student will able to –

- CO1: describe and understand the key terminology, tools and techniques used in business statistical analysis and able to recall statistical concepts.  
CO2: critically understands the underlying usage of Central Tendency of data& dispersion of Data.  
CO3: understand, critically summarize and illustrate Index Numbers  
CO4: discuss critically the uses and limitations of Correlation and Regression  
CO5: solve a range of problems using the techniques covered and Conduct Basic Statistical Analysis of Time Series and Association of Attributes.

**Name of the Course: B.Com (ABS 204) Advance Accounting**

**Course Outcome:** After studying this course, a student will able to –

- CO1: to understand the basic of accounting, its concepts and principles of Amalgamation of Companies.  
CO2: learn the journal and ledgers of Liquidation of Companies  
CO3: instil the knowledge about accounting procedures, methods and techniques.  
CO4: examine the accounts of companies per the Companies Act 2013  
CO5: assess the accounts of Electricity Supply Companies. Final Accounts of Banking Companies and General Insurance Companies

**Name of the Course: B.Com (ABS 205) Cost Accounting**

**Course Outcome:** After studying this course, a student will able to –

- CO1: imbibe conceptual knowledge of cost accounting.  
CO2: differentiate methods of schedule costs per unit of production.  
CO3: select the costs according to their impact on business.  
CO4: identify &interpret the specifics of different costing methods.  
CO5: demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement systems.

**Name of the Course: B.Com (ABS 206) Financial Management**

**Course Outcome:** After studying this course, a student will able to –

- CO1: understand the basic of financial management, its concepts and principles used to produce financial decisions.  
CO2: aware about capital structure and theories of capital structure & the cost of capital in wide aspects.  
CO3: differentiate between various theories of financial management  
CO4: facilitate the idea and meaning of material control, break even and capital budgeting  
CO5: judge between long term financing decisions and working capital financing decisions

**Name of the Course: B.Com (ABS 207) Industry Visit Report**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** get an insight of the industrial environment

**CO2:** ability to conduct research in the chosen fields

**CO3:** understanding of the importance of sustainability and cost-effectiveness.

**CO4:** ability to be a multi-skilled manager with good knowledge, management, leadership and entrepreneurship skills.

**CO5:** capability and enthusiasm for self-improvement through continuous professional development and life-long learning.

**Semester/Year: III / II**

**Name of the Course: B.Com (ABS 301) Business Communication**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** identify the basic principles & aspects of Business Communication.

**CO2:** understand various communication models and barriers to effective communication.

**CO3:** be equipped with the knowledge of proceeding with all types of written business correspondence

**CO4:** develops writing different types of Business letters and would also learn basic skills to face interviews

**CO5:** become smart and self esteemed personality.

**Name of the Course: B.Com (ABS 302) Macro Economics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the behaviour of Indian and World economy.

**CO2:** apply economic thinking and analysis in context of National economies, monetary and fiscal policy and variables and indicators of macro-economic health

**CO3:** Compare various key macroeconomic indicators of GDP, unemployment, and inflation, then how to apply these concepts to analyse economic policy and behaviour

**CO4:** Determine economic variables including choice and scarcity; supply and demand; elasticity; applications of supply and demand; elasticity; GDP and economic growth; unemployment and inflation; the aggregate demand-aggregate supply model; Keynesian economics and neoclassical economics; the income-expenditure model; fiscal policy; money and banking; monetary policy; policy applications; exchange rates and international finance.

**CO5:** Assemble & execute various macro economic theories in studies as well in real world together better information of finance to generate better employment opportunities for an individual.

**Name of the Course: B.Com (ABS 303) Principles & Practise of Auditing**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the environment and types relating to the auditing function, steps and terminology.

**CO2:** know how to prepare and use working papers, such as checklists & evaluate internal controls

**CO3:** apply auditing practices to different nature of Concerns

**CO4:** able to draft business reports and letters

**CO5:** equipped to assess the audit of sole proprietorship and partnership concerns financial statements

**Name of the Course: B.Com (ABS 304) Corporate Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Have a solid foundation in accounting and reporting requirements of the Companies Act and relevant Indian Accounting Standards.

**CO2:** Have a comprehensive understanding of the advanced issues in accounting for assets, liabilities and owner's equity.

**CO3:** enable to solve Account for mergers and amalgamations, Value goodwill and shares under various methods.

**CO4:** the treatment regarding issue of bonus shares and treatment of prior period profits

**CO5:** apprise the accounting of various companies.

**Name of the Course: B.Com (ABS 305) Cost Analysis & Control**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the basic of Cost Analysis for Management, its concepts and principles used to produce financial statement.

**CO2:** grasp the wide applicability of the controlling and analysing tools

**CO3:** ascertain the importance of the costing techniques to find solution of the complex problem

**CO4:** comprehend the costing techniques to analysis and controlling techniques

**CO5:** able to take various marketing, pricing and production decisions based on cost

**Name of the Course: B.Com (ABS 306) Quantitative Techniques**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the basic of quantitative techniques, its concepts and principles

**CO2:** apply mathematical models to solve business problems

**CO3:** appreciate the value of mathematical reasoning in day to day basis

**CO4:** familiarity with linear equation models to minimize the cost

**CO5:** apprise the importance of the costing techniques to find solution of the complex problem

**Semester/Year: IV / II**

**Name of the Course: B.Com (ABS 401) Business Ethics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the principles of moral decision-making in global business & identify the trade-offs that face an ethical manager.

**CO2:** develop the thinking towards how competitive advantage maps on to corporate social responsibility.

**CO3:** examine and discuss competing positions on a range of ethical issues facing business and society.

**CO4:** inculcate an environment of ethical management and ethical leadership that drives the organization.

**CO5:** become an ethical manager

**Name of the Course: B.Com (ABS 402)**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the broad features, set up and classification of Indian financial system

**CO2:** Effectively narrate the kinds and components of money with its regulatory system; be aware of the functions, objectives and limitations of commercial banks.

**CO3:** know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.

**CO4:** Understand the conditions of financial markets and its impact in the economy.

**CO5:** Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.

**Name of the Course: B.Com (ABS 403) Management Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** to understand the basic of management accounting, its concepts and principles used to analyze financial statements.

**CO2:** have an insight on financial statement analysis in practical point of view.

**CO3:** develop the know-how and concept of marginal costing with practical problems.

**CO4:** Apply and analyze different types of management accounting tools through the preparation of statements.

**CO5:** Apply management accounting and its objectives in facilitating decision making.

**Name of the Course: B.Com (ABS 404) Project Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the basics of Project Management, its concepts and types.

**CO2:** Enable them to develop project formulation and preparation of project report

**CO3:** equip the students for project appraisal and corrective measures

**CO4:** understand more about project finance and its source and techniques numerically.

**CO5:** develop a cognitive thinking on the project decisions and qualities of project manager.

**Name of the Course: B.Com (ABS 405) Income Tax law & Practise**

**Course Outcome:** After studying this course, a student will be able to –



- CO1: remember the introduction to the basic of Indian Tax Procedure, its concepts and principles used to produce tax adjustments  
CO2: familiarize the different know-how and heads of income with its components  
CO3: differentiate various categories of income of n individuals  
CO4: assess the tax of an individual under different heads and deductions  
CO5: compute the tax returns and assessments.

**Name of the Course: B.Com (ABS 406) Cost & Management Audit**

**Course Outcome:** After studying this course, a student will able to –

- CO1: remember the concepts of management audit and demonstrate its usefulness  
CO2: Ensure uniformity and maintain cost records as per Generally Accepted Cost Accounting Principles  
CO3: Understand the usefulness of cost audit and interpret for stakeholders view  
CO4: Recommend desired course of action for optimal utilization of scarce resources which can lead to improve the productivity  
CO5: Focus on basic cost information, appropriately computed cost centre wise, system based cost data support for decision making processes

**Semester/Year: V / III**

**Name of the Course: B.Com (ABS 501) Environment Management**

**Course Outcome:** After studying this course, a student will able to –

- CO1: recall the introduction to the basic of Environmental Management, its concepts and principles  
CO2: to get knowledge of Energy Management in current scenario.  
CO3: understand disaster management and its role in present complexities  
CO4: comprehend the environment needs, problems and develop sustainable development  
CO5: Recommend desired course of action for optimal utilization of scarce resources of the planet.

**Name of the Course: B.Com (ABS 502) Company Law**

**Course Outcome:** After studying this course, a student will able to –

- CO1: update the knowledge of provisions of the Companies Act of 2013.  
CO2: impart the provisions and procedures under company law for different types of companies.  
CO3: acquaint the students with the duties and responsibilities of Key Managerial Personnel, directors and company secretary  
CO4: apprise the students of new concepts involving in company law regime  
CO5: Recommend desired course of action for formation, meetings, winding up of companies.

**Name of the Course: B.Com (ABS 503) Business Budgeting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** remember the basic of Business Budgets and Budgeting, its concepts and principles used to produce financial statement.

**CO2:** to prepare Types of Budgets, Cash Budgeting and Business forecasting

**CO3:** grasp the wide applicability of the budget and budgetary tools

**CO4:** develop the budgetary reporting system.

**CO5:** Recommend desired course of action for optimal utilization of resources which can lead to improve the efficiency.

**Name of the Course: B.Com (ABS 504) Entrepreneurship & Skill Development**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the development of entrepreneurship as a field of study and as a profession

**CO2:** develop the entrepreneurial process

**CO3:** imbibe the business decisions involved in starting a new business venture & the role of government in promoting entrepreneurship

**CO4:** analyze new concept/product/service ideas as an entrepreneur

**CO5:** appraise the creative process of opportunity identification and screening.

**Name of the Course: B.Com (ABS 505) Goods & Service Tax**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** remember the compliances of GST for their businesses or prospective businesses

**CO2:** develop specialized and updated knowledge in the area of GST in a systematic manner

**CO3:** differentiate between indirect taxation system, VAT and GST

**CO4:** to work in Corporate Sector in the area of Taxation as Finance Executive or Finance Manager/ Entrepreneurs

**CO5:** Enhancing analytical and problem solving skills for decision making

**Name of the Course: B.Com (ABS 506) Security Analysis & Portfolio Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the various alternatives available for investment

**CO2:** Learn to measure risk and return. Find the relationship between risk and return.

**CO3:** Gain knowledge of the various strategies followed by investment practitioners.

**CO4:** identify portfolio theory and study various methods of modelling the risk associated with stock investment such as the capital asset pricing model and arbitrage pricing theory.

**CO5:** recommend various strategies of investment based upon Fundamental analysis, technical analysis and efficient market analysis.

**Name of the Course: B.Com (ABS 507) Summer Training Report**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Explore career alternatives prior to graduation

**CO2:** Develop work habits and attitudes necessary for job success

**CO3:** Develop communication, interpersonal and other critical skills in the job interview process

**CO4:** Assess interests and abilities in their field of study

**CO5:** Acquire employment contacts leading directly to a full-time job following graduation from college

### **Semester/Year: VI / III**

#### **Name of the Course: B.Com (ABS 601) Marketing Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the basic concept of marketing /concepts &philosophies.

**CO2:** know the relevance of marketing in modern competitive world

**CO3:** familiarize students about product and its classifications/new product development

**CO4:** understand marketing philosophy and generating ideas for marketing research for consumer satisfaction

**CO5:** develop an analytical ability to plan for various marketing strategy

#### **Name of the Course: B.Com (ABS 602) Management of Financial Services**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the types, importance and advantages of various financial institutions in the country. Evaluate how their functioning affects the economic development.

**CO2:** Gain an in-depth knowledge about the promotional as well as regulatory institutions like the Reserve Bank of India and Securities and Exchange Board of India.

**CO3:** Analyse the role and functions of commercial banks and the need and importance of rural banking in India.

**CO4:** Demonstrate knowledge about the recent trends in banking and participate in the capital market through investment in mutual funds.

**CO5:**Learn about the International scenario in banking by knowing about the chief international financial institutions and their functioning.

#### **Name of the Course: B.Com (ABS 603) E-Commerce**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the concept of E-Commerce and Describe the opportunities and challenges offered by E-Commerce

**CO2:** Able to handle electronic payment technology and requirements for internet based payments

**CO3:** differentiate the categories of E-Commerce and understand the different applications of ECommerce

**CO4:** understand and identify security issues of E-Commerce

**CO5:** justify concept of WEB Based Business &understand the M-Commerce applications

**Name of the Course: B.Com (ABS 604) Business Research Methods**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Demonstrate knowledge of research processes & perform literature reviews using print and online databases

**CO2:** describe, compare, and contrast descriptive and inferential statistics

**CO3:** identify, explain, compare, and prepare the key elements of a research proposal/report

**CO4:** compare and contrast quantitative and qualitative research paradigms

**CO5:** demonstrate how educational research contributes to the research proposal

**Name of the Course: B.Com (ABS 605) Financial Reporting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the need, importance and legalities with respect to business financial reporting i.e. Published financial statements.

**CO2:** Develop the ability to understand and prepare accounts as per the Indian Financial reporting standards.

**CO3:** Understand the International financial reporting standards ( IFRS) in various facets of financial reporting, the role of Indian Institute of Chartered Accountants.

**CO4:** Be aware about the recent changes in financial reporting practices like the use of value added reporting, reporting of CSR etc.

**CO5:** Be able to evaluate and critically examine Human Resource Accounting, social accounting etc.

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**Name of the Course: B.Com (ABS 606) Corporate Tax**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the rules imposed upon employers in relation to employee taxation

**CO2:** explain and apply the system of corporation tax, self assessment, capital gains and VAT

**CO3:** identify and evaluate the impact of various aspects on a company's taxation

**CO4:** identify and evaluate the impact of different tax planning scenarios.

**Name of the Course: B.Com (ABS 607) Report on Recent Trends in Finance**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the contemporary issue on finance

**CO2:** explain and apply the reasons of the applicability of such financial issue

# **B.Com (Hons.) BADM**

**1. Name of the Program: B.Com (Hons.)**

**2. Program Outcomes:**

After completing the three year graduation in B.Com (Hons), a student will able to -

**PO 1:** Gain in-depth knowledge in the fundamentals of Commerce and Finance.

**PO 2:** Develop an holistic outlook towards the contemporary issues of commerce and business at national and global level through effective learning

**PO 3:** Transform themselves as Creative, responsive, dutiful business analysts for companies, capital markets and commodity markets, also, researchers, consultants and teachers, with core competencies.

**3. Name of the Specific Program : B.Com (Hons.) in Business Administration**

**4. Program Specific Outcomes:**

After completing the three year graduation in B.Com (Hons) in **Business Administration (BADM)**, a student will able to -

**PSO1:** Enrich themselves with basic knowledge of business organization and its functions.

**PSO2:** get a deep insight into various aspects and tools of marketing by giving them exposure to consumer behavior, retail management, marketing of services, recent trends in marketing, product and brand management

**PSO3:** trained in Human Resource Management and techniques. Operations Management- including factory layout, inventory management and quality control techniques

**PSO4:** insight about the International business and economics

**PSO5:** Have perspectives and concept in the field of Strategic management- strategy formation, implementation and organizational control

**PSO6:** learn relevant managerial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business

**PSO7:** recognise features and roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making

**PSO8:** have great scope for employment as well as self-employment dealing with variety of innovative products and services

## 5. Course Outcomes

### Semester/Year: I / I

#### **Name of the Course: B.Com (BAM 101) Fundamental of Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** conceptualise the nature and purpose of financial statements in relationship—to decision making.

**CO2:** Develop the ability to use a basic accounting system to create (record, classify, and summarize) the data needed to solve a variety of business problems

**CO3:** build the ability to use accounting concepts, principles, and frameworks to analyze and effectively communicate information to a variety of audiences

**CO4:** Examines and prepares the financial statement and validate financial performance

**CO5:** generates the ability to use accounting information to solve a variety of accounting problems

#### **Name of the Course: B.Com (BAM 102) Business Economics**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** identify the basic of business economics, its concepts and principles used to relate with business.

**CO2:** understand the internal and external decisions to be made by managers.

**CO3:** analyze the demand and supply conditions and assess the position of a company

**CO4:** design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets

**CO5:** appraise real-world business problems with a systematic business economics theoretical framework

#### **Name of the Course: B.Com (BAM 103) Principles of Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the basic nature, functions and scope of management.

**CO2:** Demonstrate the roles, skills and functions of management.

**CO3:** Conceptualize the significance of various techniques of management.

**CO4:** Exhibit effective decision-making skills, employing analytical and critical thinking ability.

**CO5:** Analyze effective application of PoM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

#### **Name of the Course: B.Com (BAM 104) Computer Application**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** familiarise with the basics of computers & windows and Microsoft Office

**CO2:** Identify categories of programs, system software and applications. Organize and work with files and folders

**CO3:** Utilize the Internet Web resources and evaluate on-line e-business system

**CO4:** Solve common business problems using appropriate Information Technology applications and systems

**CO5:** Justify technical knowledge and perform specific technical skills.

**Name of the Course: B.Com (BAM 105) Marketing Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the basic concept of marketing / concepts & philosophies.

**CO2:** know the relevance of marketing in modern competitive world

**CO3:** familiarize students about product and its classifications/new product development

**CO4:** understand marketing philosophy and generating ideas for marketing research for consumer satisfaction

**CO5:** develop an analytical ability to plan for various marketing strategy

**Name of the Course: B.Com (BAM 106) Business Organisation**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** knowledge about the process of setting up business enterprise and consideration required for starting new business.

**CO2:** aware about the source of finance raised by the enterprise for starting new business.

**CO3:** Identify the basic fundamentals of the business environment, organisational theory and marketing, including capacity to recognise and use relevant terminology.

**CO4:** Describe the processes underlying diversity within an organization.

**CO5:** Analyze effective application of knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

**Semester/Year: II / I**

**Name of the Course: B.Com (BAM 201) Financial Accounting**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the incomplete records accounting, its concepts and principles used to produce financial statement.

**CO2:** to learn the higher concepts of branch and departmental accounting and comprehend it

**CO3:** instill the knowledge about accounting procedures, methods and techniques.

**CO4:** understand the fundamental of company accounts –issue of shares and debentures its entries and balance sheet.

**CO5:** interpret the financial performance of the firm and company

**Name of the Course: B.Com (BAM 202) Economic Environment**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic of business, its concepts and principles and its relation with economic environment.

**CO2:** summarize the various macroeconomic forces in which business operates.

**CO3:** apply the various policies in real life business problems.

**CO4:** Outline how an entity operates in a economic environment.

**CO5:** broaden the cognitive thinking as per the economic dimensions

**Name of the Course: B.Com (BAM 203) Business Communication**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the basic principles & aspects of Business Communication.



**CO2:** understand various communication models and barriers to effective communication.

**CO3:** be equipped with the knowledge of proceeding with all types of written business correspondence

**CO4:** develops writing different types of Business letters and would also learn basic skills to face interviews

**CO5:** become smart and self esteemed personality.

**Name of the Course: B.Com (BAM 204) Legal Aspects of Business**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Demonstrate an understanding of the Legal Environment of Business.

**CO2:** understanding of legality and Statute of Frauds in contracts & mercantile laws.

**CO3:** apply the various provisions of Sales of Goods Act, Consumer Protection Act and Partnership Act.

**CO4:** use analytical skills in case study analysis.

**CO5:** Communicate effectively using standard business and legal terminology

**Name of the Course: B.Com (BAM 205) Consumer Behaviour**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Identify the major influences in consumer behaviour

**CO2:** Distinguish between different consumer behaviour influences and their relationships

**CO3:** Establish the relevance of consumer behaviour theories and concepts to marketing decisions

**CO4:** Implement appropriate combinations of theories and concepts

**CO5:** Recognise social and ethical implications of marketing actions on consumer behaviour

**Name of the Course: B.Com (BAM 206) International Business**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** explain how international factors affect domestic concerns

**CO2:** understand regional economic integration and economic and political integration

**CO3:** identify the main institutions that shape the global marketplace

**CO4:** implement the key legal issues related to businesses operating in other countries

**CO5:** enhance their cognitive knowledge of global issues; interpersonal skills with individuals from various cultures, and social responsibility awareness on global issue

**Name of the Course: B.Com (BAM 207) Industry Visit Report**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** get an insight of the industrial environment

**CO2:** ability to conduct research in the chosen fields

**CO3:** understanding of the importance of sustainability and cost-effectiveness.

**CO4:** ability to be a multi-skilled manager with good knowledge, management, leadership and entrepreneurship skills.

**CO5:** capability and enthusiasm for self-improvement through continuous professional development and life-long learning.

## **Semester/Year: III / II**

### **Name of the Course: B.Com (BAM 301) Business Statistics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** describe and understand the key terminology, tools and techniques used in business statistical analysis and able to recall statistical concepts.

**CO2:** critically understands the underlying usage of Central Tendency of data & dispersion of Data.

**CO3:** understand, critically summarize and illustrate Index Numbers

**CO4:** discuss critically the uses and limitations of Correlation and Regression

**CO5:** solve a range of problems using the techniques covered and Conduct Basic Statistical Analysis of Time Series and Association of Attributes.

### **Name of the Course: B.Com (BAM 302) Macro Economics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the behaviour of Indian and World economy.

**CO2:** apply economic thinking and analysis in context of National economies, monetary and fiscal policy and variables and indicators of macro-economic health

**CO3:** Compare various key macroeconomic indicators of GDP, unemployment, and inflation, then how to apply these concepts to analyse economic policy and behaviour

**CO4:** Determine economic variables including choice and scarcity; supply and demand; elasticity; applications of supply and demand; elasticity; GDP and economic growth; unemployment and inflation; the aggregate demand-aggregate supply model; Keynesian economics and neoclassical economics; the income-expenditure model; fiscal policy; money and banking; monetary policy; policy applications; exchange rates and international finance.

**CO5:** Assemble; execute various macro economic theories in studies as well in real world together better information of finance to generate better employment opportunities for an individual.

### **Name of the Course: B.Com (BAM 303) Human Resource Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs

**CO2:** Analyze the role of recruitment and selection in relation to the organization's business and HRM objectives

**CO3:** demonstrating the appropriate use of job descriptions, application forms and related staffing tools such as internet recruiting

**CO4:** Develop, analyze and apply advanced training strategies and specifications for the delivery of training programs

**CO5:** justify the responsibilities of management, HRM specialists, managers, and employees in managing the employment relationship in a unionized or a non-unionized environment

### **Name of the Course: B.Com (BAM 304) Product & Brand Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** learn the fundamental concepts of product and brand development and management

**CO2:** Use the brand positioning framework to develop a brand, keep it relevant, expand a brand internationally, and reposition a brand

**CO3:** Recognize the importance of using teams and organization to coordinate multiple interdisciplinary tasks in order to create and manage products within an organization.

**CO4:** Use portfolio analysis and the product life cycle to understand how a firm manages its product mix.

**CO5:** Apply an understanding of the product manager's role in product pricing, sales, and promotion.

**Name of the Course: B.Com (BAM 305) Operation Management**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** have understanding of Production and Operation Management and nature of manufacturing systems.

**CO2:** examine the factors for selection of Plant Layout that facilitate decision making.

**CO3:** determine the various roles of production planning and control for increasing operational efficiency.

**CO4:** determine various inventory related decisions and various costs associated with it.

**CO5:** appraise the role of various quality management techniques in operation management.

**Name of the Course: B.Com (BAM 306) Marketing of Services**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Discuss how the services sector operates in developed economies

**CO2:** Define and illustrate the main components of services marketing theory

**CO3:** Develop an understanding of the roles of relationship marketing and customer service in adding value to the customer's perception of a service

**CO4:** Critically appraise the way in which this theory can be practically applied in the service sector.

**CO5:** Recognise how services marketing principles can be used as a conceptual framework to help managers identify and solve marketing problems

**Semester/Year: IV / II**

**Name of the Course: B.Com (BAM 401) Management Accounting**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** to understand the basic of management accounting, its concepts and principles used to analyze financial statements.

**CO2:** have an insight on financial statement analysis in practical point of view.

**CO3:** develop the know-how and concept of marginal costing with practical problems.

**CO4:** Apply and analyze different types of management accounting tools through the preparation of statements.

**CO5:** Apply management accounting and its objectives in facilitating decision making.

**Name of the Course: B.Com (BAM 402) Financial Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the basic of financial management, its concepts and principles used to produce financial decisions.

**CO2:** aware about capital structure and theories of capital structure & the cost of capital in wide aspects.

**CO3:** differentiate between various theories of financial management

**CO4:** facilitate the idea and meaning of material control, break even and capital budgeting

**CO5:** judge between long term financing decisions and working capital financing decisions

**Name of the Course: B.Com (BAM 403) Business Ethics**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** understand the principles of moral decision-making in global business & identify the trade-offs that face an ethical manager.

**CO2:** develop the thinking toward show competitive advantage maps on to corporate social responsibility.

**CO3:** examine and discuss competing positions on a range of ethical issues facing business and society.

**CO4:** inculcate a environment of ethical management and ethical leadership that drives the organization.

**CO5:** become an ethical manager

**Name of the Course: B.Com (BAM 404) Industrial Relations**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** an understanding of industrial relations institutions such as employer associations, trade unions and industrial tribunals

**CO2:** Apply the essential concepts of industrial relations and their interrelationship at the personal, organisational and national levels.

**CO3:** develop principles of employment law; practical skills in negotiation, advocacy and workplace bargaining

**CO4:** Investigate solutions to industrial relations problems based on research and assessment of current practices

**CO5:** Communicate your knowledge of industrial relations in both written and verbal formats reactive to both audience and purpose

**Name of the Course: B.Com (BAM 405) Retail Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the impact of retailing on the economy

**CO2:** Comprehend retailing's role in society and, conversely, society's impact on retailing

**CO3:** Identify various retail opportunities and evaluate the strategies associated with each type of opportunity.

**CO4:** Distinguish and characterize the factors and management tools that retailers consider and use when developing their merchandise mix.

**CO5:** Know the responsibilities of retail personnel in the numerous career positions available in the retail field

**Name of the Course: B.Com (BAM 406) Outsourcing Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the conceptual framework of outsourcing and its impact on the economy

**CO2:** Identify various outsourcing opportunities and evaluate the strategies associated with each type of opportunity

**CO3:** analyze the contribution of outsourcing to the product value chain

**CO4:** explore debates surrounding outsourcing and managerial prerogatives

**CO5:** Recognise how outsourcing principles can be used as a conceptual framework to help managers identify and solve marketing problems

### **Semester/Year: V / III**

#### **Name of the Course: B.Com (BAM 501) Indian Financial System**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the broad features, set up and classification of Indian financial system

**CO2:** Effectively narrate the kinds and components of money with its regulatory system; be aware of the functions, objectives and limitations of commercial banks.

**CO3:** know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.

**CO4:** Understand the conditions of financial markets and its impact in the economy.

**CO5:** Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.

#### **Name of the Course: B.Com (BAM 502) Income Tax Law & Practise**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** remember the introduction to the basic of Indian Tax Procedure, its concepts and principles used to produce tax adjustments

**CO2:** familiarize the different know-how and heads of income with its components

**CO3:** differentiate various categories of income of individuals

**CO4:** assess the tax of an individual under different heads and deductions

**CO5:** compute the tax returns and assessments.

#### **Name of the Course: B.Com (BAM 503) Company Law**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** update the knowledge of provisions of the Companies Act of 2013.

**CO2:** impart the provisions and procedures under company law for different types of companies.

**CO3:** acquaint the students with the duties and responsibilities of Key Managerial Personnel, directors and company secretary

**CO4:** apprise the students of new concepts involving in company law regime

**CO5:** Recommend desired course of action for formation, meetings, winding up of companies.

#### **Name of the Course: B.Com (BAM 504) Entrepreneurship & Skill Development**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** Understand the development of entrepreneurship as a field of study and as a profession

- CO2: develop the entrepreneurial process
- CO3: imbibe the business decisions involved in starting a new business venture & the role of government in promoting entrepreneurship
- CO4: analyze new concept/product/service ideas as an entrepreneur
- CO5: appraise the creative process of opportunity identification and screening.

**Name of the Course: B.Com (BAM 505) Principles & Practise of Insurance**

**Course Outcome:** After studying this course, a student will able to –

- CO1: identify what insurance is, why insurance works and how to determine insurance needs
- CO2: explain insurance operation, including functions of insurance, insurance markets, insurance regulations and the use of insurance as a tool to avoid losses and reduce risk
- CO3: familiarise themselves with major insurance products, such as life insurance, health insurance, property and liability insurance
- CO4: compare various kinds of insurance plans as well as the contract selection criteria from a cost-benefit point of view.
- CO5: Communicate your knowledge of insurance in both written and verbal formats reactive to both audience and purpose.

**Name of the Course: B.Com (BAM 506) Strategic Management**

**Course Outcome:** After studying this course, a student will able to –

- CO1: appreciate the role and importance of strategic management in today's business environment.
- CO2: identify, examine and differentiate between the vision and mission statements of companies, the goals, objectives, strategies, tactics, policies etc.
- CO3: develop a deep understanding of the external as well as internal environment in which businesses exist.
- CO4: evaluate various functional strategic alternatives and also develop them.
- CO5: With the help of case studies students shall understand the meaning of strategic control and appreciate how corporates are practically strategizing their businesses with mergers, acquisitions etc.

**Name of the Course: B.Com (BAM 507) Summer training Report**

**Course Outcome:** After studying this course, a student will able to –

- CO1: Explore career alternatives prior to graduation
- CO2: Develop work habits and attitudes necessary for job success
- CO3: Develop communication, interpersonal and other critical skills in the job interview process
- CO4: Assess interests and abilities in their field of study
- CO5: Acquire employment contacts leading directly to a full-time job following graduation from college

**Semester/Year: VI / III**

**Name of the Course: B.Com (BAM 601) Project Management**

**Course Outcome:** After studying this course, a student will able to –

- CO1: remember the basics of Project Management, its concepts and types.

**CO2:** Enable them to develop project formulation and preparation of project report  
**CO3:** equip the students for project appraisal and corrective measures  
**CO4:** understand more about project finance and its source and techniques numerically.  
**CO5:** develop a cognitive thinking on the project decisions and qualities of project manager.

**Name of the Course: B.Com (BAM 602) Principle & Practise of Auditing**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** understand the environment and types relating to the auditing function, steps and terminology.  
**CO2:** know how to prepare and use working papers, such as checklists & evaluate internal controls  
**CO3:** apply auditing practices to different nature of Concerns  
**CO4:** able to draft business reports and letters  
**CO5:** equipped to assess the audit of sole proprietorship and partnership concerns financial statements

**Name of the Course: B.Com (BAM 603) Organisation Behaviour**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** aware about the application of psychological concepts such as Personality, Learning, Motivation, Leadership, Attitude, Leadership in Organizational context.  
**CO2:** help the students to develop cognizance of the importance of human behavior.  
**CO3:** enable students to describe how people behave under different conditions and understand why people behave as they do.  
**CO4:** help the students to acquire and develop skill to take rational decisions in the process of O.B.  
**CO5:** Analyze individual and group behavior, and understand the implications of organizational behavior on the process of management.

**Name of the Course: B.Com (BAM 604) Business Research Methods**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Demonstrate knowledge of research processes & perform literature reviews using print and online databases  
**CO2:** describe, compare, and contrast descriptive and inferential statistics  
**CO3:** identify, explain, compare, and prepare the key elements of a research proposal/report  
**CO4:** compare and contrast quantitative and qualitative research paradigms  
**CO5:** justify how educational research contributes to the research proposal

**Name of the Course: B.Com (BAM 605) E-Commerce**

**Course Outcome:** After studying this course, a student will able to –

**CO1:** Understand the concept of E-Commerce and Describe the opportunities and challenges offered by E-Commerce  
**CO2:** Able to handle electronic payment technology and requirements for internet based payments  
**CO3:** differentiate the categories of E-Commerce and understand the different applications of ECommerce  
**CO4:** understand and identify security issues of E-Commerce

**CO5:** justify concept of WEB Based Business & understand the M-Commerce applications

**Name of the Course: B.Com (BAM 606) Environment Management**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** recall the introduction to the basic of Environmental Management, its concepts and principles

**CO2:** to get knowledge of Energy Management in current scenario.

**CO3:** understand disaster management and its role in present complexities

**CO4:** comprehend the environment needs, problems and develop sustainable development

**CO5:** Recommend desired course of action for optimal utilization of scarce resources of the planet.

**Name of the Course: B.Com (BAM 607) Report on Recent Trends in Marketing**

**Course Outcome:** After studying this course, a student will be able to –

**CO1:** identify the contemporary issue on marketing

**CO2:** explain and apply the reasons of the applicability of such marketing issue



**MIBA**

<b>PROGRAM NAME</b>	<b>MBA</b>
<b>Program Outcomes</b>	<p>Students will have understanding of :</p> <ul style="list-style-type: none"> <li>• To nurture entrepreneurial skills among young generation and make them effective change agents</li> <li>• Understand ethical issues and dilemmas that businesses often face.</li> <li>• Cultivate the skills required to work and lead effectively in a team.</li> <li>• Demonstrate a global perspective and an awareness of how to manage cultural differences to generate businesses.</li> </ul>

<b>SPECIFIC PROGRAM NAME</b>	<b>MBA</b>
<b>Specific Program Outcomes</b>	<ul style="list-style-type: none"> <li>• Develop professional interaction and communication abilities.</li> <li>• Inculcate practices for effective management and establish the ability to lead in turbulent environment.</li> <li>• Relate suitable frameworks for assessing and forming effective managerial responses for agile organizations.</li> <li>• Understand the concepts of Information Technology (IT) and its effective implementation to improve organizational performance.</li> </ul>

<b>Course Nomenclature</b>	<b>MANAGEMENT ACCOUNTING</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic accounting concepts including the recording of transactions and preparation and analysis of financial statement</li> <li>2. Examine the different types of financial statement to provide the meaningful information to external and internal users.</li> <li>3. Evaluate and interpret ratios to assess the company's profitability, liquidity, and solvency.</li> <li>4. Apply Management and Cost accounting concepts to take effective management decisions.</li> </ol>
<b>Course Code</b>	<b>MBA-111</b>

<b>Course Nomenclature</b>	<b>PRINCIPLES AND PRACTICES OF MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic nature, levels and functions of management.</li> <li>2. Develop the knowledge regarding Planning and Organizing and conceptualize various techniques used for Staffing and Direction.</li> <li>3. Acquire knowledge about various theories and concepts pertaining to Leadership and Motivation.</li> <li>4. Understand the control procedures and techniques used by managers, along with the latest trends in management.</li> </ol>
<b>Course Code</b>	<b>MBA-112</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL BEHAVIOUR AND DESIGN</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Develop a general understanding of the concept and basic nature of Organizational Behavior.</li> <li>2. Acquire knowledge regarding the concepts of Personality, Learning, Attitude and Perception.</li> <li>3. Conceptualize various aspects related to various aspects related to Group Behavior and Conflict Management.</li> <li>4. Understand the concept of Organizational Design and mechanism of Managing Change within an organization.</li> </ol>
<b>Course Code</b>	<b>MBA-113</b>

<b>Course Nomenclature</b>	<b>QUANTITATIVE TECHNIQUES FOR MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic objectives of operation research and the application of measures of central tendencies.</li> <li>2. Design the formulation and solution of Linear programming problems.</li> <li>3. Apply the different probability distributions and their applications.</li> <li>4. Critically examine different decision making environment and the best technique to be use in different situations.</li> </ol>
<b>Course Code</b>	<b>MBA-114</b>

<b>Course Nomenclature</b>	<b>MANAGERIAL ECONOMICS</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to:

	<ol style="list-style-type: none"> <li>1. Understand basic concepts of managerial economics.</li> <li>2. Recognize the production function as relating inputs to outputs relate the cost structure of the firm to both the production function and cost-minimizing behavior, identify various types of cost, establishing relationship between various costs.</li> <li>3. Critically assessthe market structure of Perfect Competition and Imperfect Competition in terms of its key assumptions, determine price and quantity outcomes for firms and industry.</li> <li>4. Understand the concepts of National Income, Business Cycle, and Inflation, Tools of Monetary and Fiscal Policy.</li> </ol>
<b>Course Code</b>	<b>MBA-115</b>

<b>Course Nomenclature</b>	<b>BUSINESS COMMUNICATION</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand basic principles and legal aspects of Business Communication.</li> <li>2. Explain various communication models and barriers to effective communication.</li> <li>3. Identify and summarize the essentials of effective presentation</li> <li>4. Develop the mechanics of writing Business letters and Correspondence.</li> </ol>
<b>Course Code</b>	<b>MBA-116</b>

<b>Course Nomenclature</b>	<b>COMPUTER APPLICATION IN MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand basic components of computer along with type of software used for professional as well as day today life.</li> <li>2. Critically assess different tools of MS Office.</li> <li>3. Reflect on the practical implementation of data communication concepts, networks and IT outsourcing.</li> <li>4. Identify various models of database management system.</li> <li>5. Take the advantage of computing power in office.</li> </ol>
<b>Course Code</b>	<b>MBA- 117</b>

<b>Course Nomenclature</b>	<b>ENVIRONMENTAL AND DISASTER MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the Environmental Management, and the Implications of Human Population Growth.</li> <li>2. Acquaint with the Concept of Ecosystem and would develop an understanding about the Environmental Management System.</li> <li>3. Analyze and implement the different Environmental Management and Valuation techniques.</li> <li>4. Plan and compose tactics for managing Disaster.</li> </ol>

<b>Course Code</b>	<b>MBA-118</b>
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<b>Course Nomenclature</b>	<b>HUMAN RESOURCE MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Incorporate themselves in the changing environment of HRM.</li> <li>2. Apply right recruitment and selection process in business scenario.</li> <li>3. Understand the compensation management and the different incentives applicable at various levels of management.</li> <li>4. Analyze the training needs, apply the right training method and evaluate the same.</li> <li>5. Give due importance to Employee health and Safety and understand the importance of Employee participation and Relations.</li> </ol>
<b>Course Code</b>	<b>MBA-211</b>

<b>Course Nomenclature</b>	<b>CORPORATE FINANCE</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the financial environment in which a company operates and get knowledge of the procurement and utilization of funds in order to maintain an adequate cash flow in the business.</li> <li>2. Identify the concept of dividend and critically assess the various factors which affect the dividend decision.</li> <li>3. Analyze the requirement of working capital for the business operations and manage the debtors, stock and cash accordingly.</li> <li>4. Develop a relationship between risk and return of the securities and the combination of debt and equity in the capital structure of the company to make effective financial decisions.</li> </ol>
<b>Course Code</b>	<b>MBA- 212</b>

<b>Course Nomenclature</b>	<b>MARKETING MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Critically assess role and functions that marketing can play in business strategy.</li> <li>2. Develop the knowledge regarding factors affecting consumer &amp; industrial buying behavior and segmentation, targeting and positioning.</li> <li>3. Conceptualize about various concepts related to product management and pricing strategies.</li> <li>4. Create distribution and promotional strategies for both products as well as for services</li> </ol>
<b>Course Code</b>	<b>MBA-213</b>

<b>Course Nomenclature</b>	<b>OPERATIONS &amp; PRODUCTION MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the fundamentals of operations function and Production &amp; Operation Management.</li> <li>2. Equipped with the Concept of Facility location and Facility Layout Planning and would be able to make strategic decisions.</li> <li>3. Understand the Production planning and Inventory Management techniques.</li> <li>4. Implement Quality Management and various tools for enhancing Quality.</li> </ol>
<b>Course Code</b>	<b>MBA- 214</b>

<b>Course Nomenclature</b>	<b>RESEARCH METHODOLOGY</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic fundamentals of research.</li> <li>2. Assess the appropriateness of different kinds of research designs and methodology.</li> <li>3. Determine the essentials of sampling techniques and data collection methods used in research.</li> <li>4. Apply data analysis-and hypothesis testing procedures and interpret research work.</li> </ol>
<b>Course Code</b>	<b>MBA-215</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL BUSINESS MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to international business and about various international institutes and their working.</li> <li>2. Differentiate&amp;compare different international trade theories business need to be applied.</li> <li>3. Determine various factors to be considered before going for international business.</li> <li>4. Knowledge about various HR and financial polices adopted in international business.</li> </ol>
<b>Course Code</b>	<b>MBA-216</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT INFORMATION SYSTEMS</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to information systems</li> </ol>

	<p>at various levels of Management.</p> <ol style="list-style-type: none"> <li>2. Critically assess the role of Enterprise communication and collaboration systems.</li> <li>3. Reflect on the practical implementation of information systems and the role of information and business support system.</li> <li>4. Create the business strategy by the use of ERP and IT Outsourcing.</li> </ol>
<b>Course Code</b>	<b>MBA-217</b>

<b>Course Nomenclature</b>	<b>INDIAN ETHOS AND BUSINESS VALUES</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Critically assess role of Indian ethos in Management.</li> <li>2. Interpret the knowledge of Management lessons from the ancient scriptures.</li> <li>3. Evaluate and apply key concepts related to Business Ethics and Values.</li> <li>4. Reflect the knowledge of practices used for managing ethics and values in the organizations.</li> <li>5. Understand the Ethical Issues pertaining to various functional areas of management- HRM, Marketing, Production and Operations management, IT and Finance.</li> </ol>
<b>Course Code</b>	<b>MBA-218</b>

<b>Course Nomenclature</b>	<b>STRATEGIC MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to :</p> <ol style="list-style-type: none"> <li>1. Understand the conceptual framework of strategic management.</li> <li>2. Apply SWOT Analysis and select the feasible strategic alternative.</li> <li>3. Develop and implement strategies that position the firm most favorably in relation to competition.</li> <li>4. Evaluate strategic plans in terms of its feasibility and suitability.</li> </ol>
<b>Course Code</b>	<b>MBA-311</b>

<b>Course Nomenclature</b>	<b>ENTREPRENEURSHIP &amp; MANAGERIAL SKILL DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Gain an insight of concept and theories of entrepreneurship.</li> <li>2. Familiarized with initiatives undertaken by Government for entrepreneurship development.</li> <li>3. Conceptualize and develop a Business Plan.</li> <li>4. Manage and run Small and Medium Enterprises.</li> <li>5. Understand causes, prevention and remedies of Industrial Sickness.</li> </ol>

<b>Course Code</b>	<b>MBA-312</b>
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<b>Course Nomenclature</b>	<b>SPECIALIZATION COMPREHENSIVE VIVA</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. Understanding fundamental aspects of any management situation.</li> <li>2. Able to deal with the management problem.</li> <li>3. Gain confidence and inter-personal skills.</li> </ul>
<b>Course Code</b>	<b>MBA -313</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL SUMMER TRAINING PROJECT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. Explore career alternatives prior to post graduation.</li> <li>2. Identify and understand the practices and protocols of the particular company and industry.</li> <li>3. Develop work habits and attitudes necessary for career.</li> <li>4. Develop communication, interpersonal and other critical skills in the job interview process.</li> <li>5. Refine and reassess own career goals as a result of the experience.</li> </ul>
<b>Course Code</b>	<b>MBA -314</b>

<b>Course Nomenclature</b>	<b>PROJECT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to project and the different stages of a project life.</li> <li>2. Reflect on the practical implementation the different methods of project feasibility analysis.</li> <li>3. Judge&amp;analyzing a project on financial grounds.</li> <li>4. Build understanding regarding Project Quality Management and choose different selection and training methods used in Project Management.</li> </ul>
<b>Course Code</b>	<b>MBA -411</b>

<b>Course Nomenclature</b>	<b>BUSINESS AND LEGAL ENVIRONMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course</b>	By the end of this course students will be able to:



<b>Outcomes</b>	<ol style="list-style-type: none"> <li>1. Understand the elements of Business Environment and identify tools for scanning the Environment.</li> <li>2. Identify the role of Political Environment, Economic Environment and Government Policies on business.</li> <li>3. Identify the complexities of the legal system, its processes which must be abided by business.</li> <li>4. Acquaint with the latest amendments made in Companies Act, 2013.</li> <li>5. Understand fundamental concepts of contract and contract language to do the business fairly &amp; legally.</li> </ol>
<b>Course Code</b>	<b>MBA-412</b>

<b>Course Nomenclature</b>	<b>SPECIALIZATION COMPREHENSIVE VIVA</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Simulate theoretical knowledge to deal with the practical management situations.</li> <li>2. Able to face the fierce competitive industrial environment.</li> </ol>
<b>Course Code</b>	<b>MBA -413</b>

<b>Course Nomenclature</b>	<b>HUMAN RESOURCE DEVELOPMENT SYSTEM &amp; STRATEGIES</b>
<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Critically assess role that Human Resource Development System can play in Management.</li> <li>2. Develop the knowledge of basic functions of Human Resource Management and various principles and practices of HRD.</li> <li>3. Understand the concept and analysis of HRD needs at various levels and knowledge of various techniques of designing and evaluating HRD programs in the organizations.</li> <li>4. Evaluate and apply HRD in different industrial settings.</li> </ol>
<b>Course Code</b>	<b>MBA-H001</b>

<b>Course Nomenclature</b>	<b>MANPOWER PLANNING &amp; MANAGEMENT</b>
<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand conceptual framework of Manpower Planning.</li> <li>2. Apply models and methods used in Human Resource Forecasting.</li> <li>3. Analyze concepts of Career Management and Internal Mobility.</li> <li>4. Explain the concept of Executive Development Programs.</li> </ol>

	5. Illustrate the application of HRIS, HR Accounting and Auditing.
<b>Course Code</b>	<b>MBA-H002</b>

<b>Course Nomenclature</b>	<b>TRAINING AND DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the conceptual framework of Training and Development of employees.</li> <li>2. Develop the knowledge of designing and implementing Training Program for the employees.</li> <li>3. Evaluate the effectiveness of training programs.</li> <li>4. Explain the functions and types of training institutions.</li> <li>5. Illustrate the emerging trends in the field of Training and Development.</li> </ol>
<b>Course Code</b>	<b>MBA-H003</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL HUMAN RESOURCE</b>
<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Conceptual framework of International Human Resource Management and differentiate Domestic and International HRM.</li> <li>2. Choose and utilize various approaches to International Compensation and Performance Management.</li> <li>3. Judge different types of Expatriate, their carrier development opportunities In International Human Resource.</li> <li>4. Develop and gain the knowledge about managing cross-cultural dynamics in MNCs with different models.</li> </ol>
<b>Course Code</b>	<b>MBA- H004</b>

<b>Course Nomenclature</b>	<b>ORGANISATIONAL CHANGE &amp; DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the concept and techniques of Organizational Development.</li> <li>2. Develop the knowledge about various models of Change and Competencies &amp; Role of Organizational Development Practitioner.</li> <li>3. Design and plan different types of Organizational Development Interventions.</li> <li>4. Illustrate the concepts of Organization Design and Change Management.</li> <li>5. Analyze effectiveness of Organization Culture and types of Change.</li> </ol>
<b>Course Code</b>	<b>MBA-H005</b>

<b>Course Nomenclature</b>	<b>COMPENSATION AND PERFORMANCE MANAGEMENT</b>
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<b>Year/Semester</b>	<b>II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the concept of Strategic compensation and Compensation Policies, plans and strategies.</li> <li>2. Develop the knowledge about determining Compensation and Government Regulations pertaining to Compensation.</li> <li>3. Assess different types of Compensation Plans and Strategies.</li> <li>4. Understand the concept and process of Performance Measurement and Appraisal.</li> <li>5. Develop the knowledge about prerequisites and process of Performance Management.</li> </ol>
<b>Course Code</b>	<b>MBA-H006</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL RELATIONS</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to Approaches &amp; Principles of good industrial relations, Paradigm Shift in IR.</li> <li>2. Build &amp; Utilize the concept and legislations pertaining to Trade Unions and Employers' Association.</li> <li>3. Equipped with the knowledge of legal mechanism and practices of managing Industrial Disputes.</li> <li>4. Understand the important provisions and administration of various Labor Laws.</li> </ol>
<b>Course Code</b>	<b>MBA-H007</b>

<b>Course Nomenclature</b>	<b>COMPETENCY MAPPING AND TALENT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the concept of Competency Mapping.</li> <li>2. Develop the knowledge regarding the process and prerequisites of Competency Mapping.</li> <li>3. Apply various tools and techniques of Competency Assessment.</li> <li>4. Critically evaluate the development and usage of Competency Models.</li> </ol>
<b>Course Code</b>	<b>MBA -H008</b>

<b>Course Nomenclature</b>	<b>CONSUMER BEHAVIOR</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the importance of consumer behavior in changing the</li> </ol>

	<p>attitude of Consumer.</p> <ol style="list-style-type: none"> <li>2. Develop the knowledge about methodology of conduction of market research.</li> <li>3. Reflect on the psychological factors that influence consumer buying behavior.</li> <li>4. Create marketing strategies with various models related to consumer behavior.</li> </ol>
<b>Course Code</b>	<b>MBA-M001</b>

<b>Course Nomenclature</b>	<b>ADVERTISING AND BRAND MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand various forms of advertising and different types of media.</li> <li>2. Learn the factors influencing advertising budget.</li> <li>3. Conceptualize and develop an ad campaign.</li> <li>4. Learn and apply concepts related to branding like brand extension, revitalizing a brand, brand hierarchy etc.</li> </ol>
<b>Course Code</b>	<b>MBA-M002</b>

<b>Course Nomenclature</b>	<b>RETAIL MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand various retail formats along with their characteristics.</li> <li>2. Critically assess the role of store locations and store layouts.</li> <li>3. Reflect on the practical implementation of buying plans, retail audits and retail communication mix</li> <li>4. Create strategies which are beneficial for store operations and store employees.</li> </ol>
<b>Course Code</b>	<b>MBA-M003</b>

<b>Course Nomenclature</b>	<b>MARKETING OF SERVICES</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Develop an understanding regarding marketing concepts and principles to understand the unique challenges and opportunities of services marketing</li> <li>2. Develop insights about the foundations of services marketing, customer expectations and perceptions of services</li> <li>3. Appraise the components of marketing mix for service sector and understand the gap existing in the service delivery processes and service Quality.</li> <li>4. Build blueprint for the services sector and a knowledge base to design</li> </ol>

	necessary strategies for service excellence.
<b>Course Code</b>	<b>MBA-M004</b>

<b>Course Nomenclature</b>	<b>RURAL MARKETING</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand basic nature and difference of rural and urban marketing.</li> <li>2. Develop the knowledge regarding factors affecting rural consumer buying behavior and segmentation, targeting and positioning.</li> <li>3. Determine product management, pricing strategies and modes of distribution in context of rural market.</li> <li>4. Design promotional campaign for rural buyer.</li> </ol>
<b>Course Code</b>	<b>MBA-M005</b>

<b>Course Nomenclature</b>	<b>SALES AND DISTRIBUTION MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Determine marketing concepts and principles associated with the unique challenges and opportunities of personal selling, roles and duties of a sales manager.</li> <li>2. Organize insights about the foundations of setting targets, territory and quotas for sales force to contribute company's objectives.</li> <li>3. Plan and design various policies to motivate and retain sales team.</li> <li>4. Explain fundamentals of distribution management and differentiate distribution design, develop, and manage sales and distribution in the changing business scenario.</li> </ol>
<b>Course Code</b>	<b>MBA-M006</b>

<b>Course Nomenclature</b>	<b>CUSTOMER RELATIONSHIP MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Realize the benefits of CRM in present competitive scenario.</li> <li>2. Learn programs and strategies that can be applied for enhancing customer relationship management in an organization.</li> <li>3. Understand the role of Information Technology in CRM.</li> <li>4. Understand the application of CRM strategies in different sectors.</li> </ol>
<b>Course Code</b>	<b>MBA-M007</b>

<b>Course Nomenclature</b>	<b>INTEGRATED MARKETING COMMUNICATION</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course</b>	By the end of this course students will be able to:

<b>Outcomes</b>	<ol style="list-style-type: none"> <li>1. Understand concept and importance of integrated marketing communication.</li> <li>2. Learn the factors affecting message and media strategy.</li> <li>3. Understand the functions of Ad agency and methods compensation for Ad agency.</li> <li>4. Understand the inter-relationship between different elements of promotion-mix.</li> <li>5. Develop effective promotional strategy suitable in different sectors that satisfies ethical issues.</li> </ol>
<b>Course Code</b>	<b>MBA-M008</b>

<b>Course Nomenclature</b>	<b>FINANCIAL RESTRUCTURING</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts of corporate restructuring to conduct the business operations in an efficient, effective and competitive manner.</li> <li>2. Understand the forms of financial restructuring and critically assess the merger and acquisitions strategies played by the organization to increase the market share and taking the advantage of diversification.</li> <li>3. Analyze the legal provisions such as Companies Act, Competition Act, SEBI and Income Tax Act concerning Merger &amp; Acquisitions.</li> <li>4. Apply accounting methods of valuation for Merger and acquisitions to assess the cost, earning price per share, market value of the firm.</li> </ol>
<b>Course Code</b>	<b>MBA-F001</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT OF FINANCIAL SERVICES &amp; INSTITUTIONS</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the structure of Indian financial system.</li> <li>2. Acquaint the concept of Leasing and Hire Purchase</li> <li>3. Understand the structure of Mutual Fund and venture capital organizations.</li> <li>4. Analyze the working and significance of credit rating agencies.</li> </ol>
<b>Course Code</b>	<b>MBA-F002</b>

<b>Course Nomenclature</b>	<b>SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key the basic concepts and terminologies of Stock markets and Indices.</li> <li>2. Equipped with the tools of measuring risks and establishing relationships between risk and return.</li> <li>3. Develop the understanding of CAPM &amp; APT models and their</li> </ol>

	<p>difference.</p> <p>4. Design and Develop efficient portfolio using different models and evaluate it.</p>
<b>Course Code</b>	<b>MBA-F003</b>

<b>Course Nomenclature</b>	<b>FINANCIAL DERIVATIVES</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand basics of Derivatives.</li> <li>2. Apply the concept of interest rate derivatives.</li> <li>3. Evaluate working of currency derivatives.</li> <li>4. Critically examine some other types of derivatives like Swaps, Exotic Options.</li> </ol>
<b>Course Code</b>	<b>MBA-F004</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT CONTROL SYSTEM</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify elements of Control system in management and various function of controller.</li> <li>2. Understand how management control system is applicable in different sectors.</li> <li>3. Examine and apply key concepts of performance measurement and responsibility accounting.</li> <li>4. Analyze and prepare different types of budget in order to make control system effective and also get the knowledge of Auditing.</li> </ol>
<b>Course Code</b>	<b>MBA-F005</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL FINANCIAL MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts of International Financial Management and differentiate between Domestic V/s International Financial Management.</li> <li>2. Idea about evaluation of IMS and different instruments of capital market.</li> <li>3. Build &amp; examine Exchange Rate Mechanism and foreign exchange market.</li> <li>4. Utilize different instruments in international financial market and Remember different International Financial Institutions working at international level.</li> </ol>
<b>Course Code</b>	<b>MBA-F006</b>

<b>Course Nomenclature</b>	<b>CORPORATE TAX MANAGEMENT</b>
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<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and examine the basic concept of tax and its applicability.</li> <li>2. Critically assess the various deductions available to Individual, Hindu Undivided Family and Company under u/s 10 and u/s 80 with the ultimate aim of minimizing the corporate tax liability.</li> <li>3. Determine total taxable income of individual and company from the various heads.</li> <li>4. Understand and compute Goods and Service Tax and its impact on the existing taxation system.</li> </ol>
<b>Course Code</b>	<b>MBA-F007</b>

<b>Course Nomenclature</b>	<b>INVESTMENT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts about Investment, challenges and opportunities for investors and various approaches related with investment decision.</li> <li>2. Apply the money market instruments while trading in the market.</li> <li>3. Analyze and solve the strategic issues involved in asset allocation to make effective investment allocation decisions based on available evidence and analysis.</li> <li>4. Examine and estimate the cash flow, cost of capital before doing investment.</li> <li>5. Analyze internal and external factors and develop investment policy for institutional and individual investors.</li> </ol>
<b>Course Code</b>	<b>MBA-F008</b>

<b>Course Nomenclature</b>	<b>E- BUSINESS</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic requirements of a commercial website along with risks associated with it.</li> <li>2. Critically assess digital token based electronic payment systems</li> <li>3. Reflect on the practical implementation of techniques that are used to protect data that floats over network.</li> <li>4. Analyze changing dynamics in banking and retail sector.</li> <li>5. Create strategies for online business.</li> </ol>
<b>Course Code</b>	<b>MBA-IT001</b>

<b>Course Nomenclature</b>	<b>DATA COMMUNICATION AND NETWORKING</b>
<b>Year/Semester</b>	<b>II/ IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to:



	<ol style="list-style-type: none"> <li>1. Understand the basic components of data communication system and various transmission modes.</li> <li>2. Critically assess various channels of data transmission along with transmission impairments.</li> <li>3. Reflect on the practical implementation of networks and the devices that are associated with the networks.</li> <li>4. Synthesize and identify application areas of data communication and networking.</li> </ol>
<b>Course Code</b>	<b>MBA-IT002</b>

<b>Course Nomenclature</b>	<b>SYSTEM ANALYSIS &amp; DESIGN</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to information systems at various levels of Management.</li> <li>2. Critically assess the role of feasibility reports for system implementation.</li> <li>3. Reflect on the practical implementation of the tools required for representing the working flow of Information Systems.</li> <li>4. Understand the importance of Disaster Management Plan.</li> </ol>
<b>Course Code</b>	<b>MBA- IT003</b>

<b>Course Nomenclature</b>	<b>ENTERPRISE RESOURCE PLANNING</b>
<b>Year/Semester</b>	<b>II/ IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the importance of Enterprise Resource Planning.</li> <li>2. Critically assess the methodology and frame required for implementing ERP.</li> <li>3. Reflect on the practical implementation of cross functional integrated ERP Systems.</li> <li>4. Understand the importance of extended ERP Systems.</li> </ol>
<b>Course Code</b>	<b>MBA- IT004</b>

**MBA**

**Dual Specialization**

<b>PROGRAM NAME</b>	<b>MBA</b>
<b>Program Outcomes</b>	<p>Students will have understanding of :</p> <ul style="list-style-type: none"> <li>• To nurture entrepreneurial skills among young generation and make them effective change agents</li> <li>• Understand ethical issues and dilemmas that businesses often face.</li> <li>• Cultivate the skills required to work and lead effectively in a team.</li> <li>• Demonstrate a global perspective and an awareness of how to manage cultural differences to generate businesses.</li> </ul>

<b>SPECIFIC PROGRAM NAME</b>	<b>MBA(Dual Specialization)</b>
<b>Specific Program Outcomes</b>	<ul style="list-style-type: none"> <li>• Establish professionalism, self-awareness, leadership and effective communication skills.</li> <li>• By integration of theory and practice in multi-functional framework to handle complex management issues through Project Work &amp; Field Assignment, the student will progressively possess knowledge and skills to solve business problems.</li> </ul>

<b>Course Nomenclature</b>	<b>MANAGEMENT ACCOUNTING</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic accounting concepts including the recording of transactions and preparation and analysis of financial statement</li> <li>2. Examine the different types of financial statement to provide the meaningful information to external and internal users.</li> <li>3. Evaluate and interpret ratios to assess the company's profitability, liquidity, and solvency.</li> <li>4. Apply Management and Cost accounting concepts to take effective management decisions.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-111</b>

<b>Course Nomenclature</b>	<b>PRINCIPLES AND PRACTICES OF MANAGEMENT</b>
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<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the concepts related to Business 2. Demonstrate the roles, skills and functions of management. 3. Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. 4. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities..
<b>Course code</b>	<b>MBA (D)-112</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL BEHAVIOR AND DESIGN</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. After completion of Unit I, the students would get a general understanding of the concept and basic nature of Organizational Behavior. 2. After completion of Unit II, the students would develop the knowledge regarding the concepts of Personality, Learning, Attitude and Perception. 3. Conceptualize various aspects related to Group Behavior, group cohesiveness and Dynamics to work in team. 4. Apply knowledge to manage Conflicts, Stress and Politics at the workplace. 5. Understand the concept of Organizational Design and mechanism of Managing Change within an organization.
<b>Course Code</b>	<b>MBA (D)-113</b>

<b>Course Nomenclature</b>	<b>QUANTITATIVE TECHNIQUES FOR MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the basic objectives of operation research and the application of measures of central tendencies. 2. Equipped with the application of Correlation and regression and would develop an understanding about the basic forecasting techniques. 3. Apply the different probability distributions and their applications. 4. Differentiate between different decision making environment and the best technique to be use in different situations. 5. Design the formulation and solution of Linear programming problems.
<b>Course Code</b>	<b>MBA (D)-114</b>

<b>Course Nomenclature</b>	<b>MANAGERIAL ECONOMICS</b>
<b>Year/Semester</b>	<b>I/I</b>

<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Acquaint with the broader study of economics and management in order to take managerial decisions.</li> <li>2. Understand the concepts of market demand and supply management.</li> <li>3. Recognize the production function as relating inputs to outputs relate the cost structure of the firm to both the production function and cost-minimizing behavior, identify various types of cost, establishing relationship between various costs.</li> <li>4. Analyze the different market structure of Perfect Competition and Imperfect Competition in terms of its key assumptions; determine price and quantity outcomes for firms and industry.</li> <li>5. Understand the National Income, Business Cycle, Inflation, Tools of Monetary and Fiscal Policy.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-115</b>

<b>Course Nomenclature</b>	<b>BUSINESS COMMUNICATION</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate the basic principles and legal aspects of Business Communication.</li> <li>2. Develop knowledge regarding various types and medium of communication.</li> <li>3. Understand various communication models and barriers to effective communication.</li> <li>4. Knowledge of proceeding with all types of written business correspondence.</li> <li>5. Aware of the fundamentals of writing different types of Business letters and would also learn basic skills to face interviews.</li> </ol>
<b>Course Code</b>	<b>MBA(D)-116</b>

<b>Course Nomenclature</b>	<b>INFORMATION TECHNOLOGY IN MANAGEMENT</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand basic concepts of computers along with benefits of IT outsourcing.</li> <li>2. Identify different type of software and their applications in professional and day today life.</li> <li>3. Solve business problems by using basic tools of MS Office.</li> <li>4. Reflect on the practical implementation of networks and the devices that are associated with the networks.</li> <li>5. Create business strategies by using information systems.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-117</b>

<b>Course Nomenclature</b>	<b>ENVIRONMENTAL AND DISASTER MANAGEMENT</b>
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<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the Environmental Management, and the Implications of Human Population Growth.</li> <li>2. Acquaint with the Concept of Ecosystem and would develop an understanding about the Environmental Management System.</li> <li>3. Analyze and implement the different Environmental Management and Valuation techniques.</li> <li>4. Plan and compose tactics for managing Disaster.</li> </ol>
<b>Course Code</b>	<b>MBA(D)-118</b>

<b>Course Nomenclature</b>	<b>INDUTRIAL PROJECT /INDUSTRIAL VISIT- I</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand different functional areas of company</li> <li>2. Simulate theory knowledge gain by the students during the semester with the practical aspects which are necessary for a student to be fit to face the fierce competitive industrial environment.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-119</b>

<b>Course Nomenclature</b>	<b>HUMAN RESOURCE MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Conceptualize importance and functions of Human Resource Management in the organizations.</li> <li>2. Develop the knowledge of procedures and practices involved in Human Resource Procurement.</li> <li>3. Understand the concepts of training, developing and appraising the employees.</li> <li>4. Equipped with the knowledge regarding various elements of Compensation System in the organizations along with an overview of dynamics of Industrial Relations.</li> <li>5. Aware of the latest trends and practices pertaining to Human Resource Management.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-211</b>

<b>Course Nomenclature</b>	<b>CORPORATE FINANCE</b>
<b>Year/Semester</b>	<b>I/II</b>

<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the financial environment in which a company operates and get knowledge of the procurement and utilization of funds in order to maintain an adequate cash flow in the business.</li> <li>2. Identify the concept of dividend and critically assess the various factors which affect the dividend decision.</li> <li>3. Analyze the requirement of working capital for the business operations and manage the debtors, stock and cash accordingly.</li> <li>4. Develop a relationship between risk and return of the securities and the combination of debt and equity in the capital structure of the company to make effective financial decisions.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-212</b>

<b>Course Nomenclature</b>	<b>OPERATIONS &amp; PRODUCTION MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the fundamentals of operations function and Production &amp; Operation Management.</li> <li>2. Acquaint with the Concept of Facility location and Facility Layout Planning and would be able to make strategic decisions.</li> <li>3. Understand the Production planning and Inventory Management techniques.</li> <li>4. Implement Quality Management and various tools for enhancing Quality.</li> <li>5. Acquaint with the Maintenance and Work Study.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-213</b>

<b>Course Nomenclature</b>	<b>RESEARCH METHODOLOGY</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic fundamentals of research.</li> <li>2. Assess the appropriateness of different kinds of research designs and methodology.</li> <li>3. Determine the essentials of sampling techniques and data collection methods used in research.</li> <li>4. Demonstrate and apply data analysis-and hypothesis testing procedures.</li> <li>5. Interpret research work and formulate research synopsis and report.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-214</b>

<b>Course Nomenclature</b>	<b>MARKETING MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>

<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Critically assess role and functions that marketing can play in business strategy.</li> <li>2. Develop the knowledge regarding factors affecting consumer &amp; industrial buying behavior and buying process.</li> <li>3. Conceptualize the essentials and importance of segmentation, targeting and positioning; Plan and compose tactical marketing decisions as a group considering effective product, pricing, distribution and promotion decisions as necessary to meet the needs of a client brief.</li> <li>4. Create marketing strategies for both products as well as for services</li> </ol>
<b>Course Code</b>	<b>MBA (D)-215</b>

<b>Course Nomenclature</b>	<b>DATA COMMUNICATION AND NETWORKING</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic components of data communication system and various transmission modes.</li> <li>2. Critically assess various channels of data transmission along with transmission impairments.</li> <li>3. Reflect on the practical implementation of networks and the devices that are associated with the networks.</li> <li>4. Synthesize and identify application areas of data communication and networking.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-216</b>

<b>Course Nomenclature</b>	<b>ENTREPRENEURSHIP &amp; MANAGERIAL SKILL DEVELOPMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Gain an insight of concept and theories of entrepreneurship.</li> <li>2. Familiarized with initiatives undertaken by Government for entrepreneurship development.</li> <li>3. Conceptualize and develop a Business Plan.</li> <li>4. Manage and run Small and Medium Enterprises.</li> <li>5. Understand causes, prevention and remedies of Industrial Sickness.</li> </ol>
<b>Course Code</b>	<b>MBA(D)-217</b>

<b>Course Nomenclature</b>	<b>INDIAN ETHOS AND BUSINESS VALUES</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Critically assess role of Indian ethos in Management.</li> <li>2. Interpret the knowledge of Management lessons from the ancient scriptures.</li> <li>3. Evaluate and apply key concepts related to Business Ethics and Values.</li> </ol>



	<p>4. Reflect the knowledge of practices used for managing ethics and values in the organizations.</p> <p>5. Understand the Ethical Issues pertaining to various functional areas of management- HRM, Marketing, Production and Operations management, IT and Finance.</p>
<b>Course Code</b>	<b>MBA (D)-218</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL PROJECT / INDUSTRIAL VISIT -II</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand different functional areas of MNC dealing in international market.</li> <li>2. Simulate theory knowledge gain by the students during the semester with the practical aspects which are necessary for a student to be fit to face the fierce competitive industrial environment.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-219</b>

<b>Course Nomenclature</b>	<b>STRATEGIC MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of strategy and strategic intent.</li> <li>2. Analyze strategic micro and macro environmental issues and the tools used for environmental appraisal.</li> <li>3. Evaluate different strategic alternatives and choosing the feasible strategic option for the organization.</li> <li>4. Determine implementation plans to execute the chosen strategies and understand different issues in strategy implementation.</li> <li>5. Develop comprehensive understanding of corporate governance practices and Corporate Social Responsibility.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-311</b>

<b>Course Nomenclature</b>	<b>BUSINESS AND LEGAL ENVIRONMENT</b>
<b>Year/Semester</b>	<b>II/III</b>

<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the elements of Business Environment and identify tools for scanning the Environment. 2. Identify the role of Political Environment, Economic Environment and Government Policies on business. 3. Recognize the complexities of the legal system, its processes which must be abide by business. 4. Acquaint with the latest amendments made in Companies Act, 2013. 5. Understand fundamental concepts of contract and contract language to do the business fairly & legally.
<b>Course Code</b>	<b>MBA (D)-312</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL PROJECT / INDUSTRIAL VISIT -III</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand problem areas in context of different functional areas of MNC dealing in international market. 2. Simulate specialization knowledge gain by the students during the semester with the practical aspects which are necessary for a student to be fit to face the fierce competitive industrial environment.
<b>Course Code</b>	<b>MBA (D)-313</b>

<b>Course Nomenclature</b>	<b>E- BUSINESS</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the basic requirements of a commercial website along with risks associated with it. 2. Critically assess digital token based electronic payment systems 3. Reflect on the practical implementation of techniques that are used to protect data that floats over network. 4. Analyze changing dynamics in banking and retail sector. 5. Create strategies for online business.
<b>Course Code</b>	<b>MBA (D)-411</b>

<b>Course Nomenclature</b>	<b>PROJECT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>

<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Evaluate and apply key concepts related to project and the different stages of a project life. 2. Reflect on the practical implementation the different methods of project feasibility analysis. 3. Judge & analyzing a project on financial grounds. 4. Build understanding regarding Project Quality Management and choose different selection and training methods used in Project Management..
<b>Course Code</b>	<b>MBA (D)-412</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL PROJECT / INDUSTRIAL VISIT -III</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand problem areas in context of different functional areas of MNC dealing in international market. 2. Simulate specialization knowledge gain by the students during the semester with the practical aspects which are necessary for a student to be fit to face the fierce competitive industrial environment.
<b>Course Code</b>	<b>MBA (D)-413</b>

<b>Course Nomenclature</b>	<b>CONSUMER BEHAVIOR</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the importance of consumer behavior in changing the attitude of Consumer. 2. Develop the knowledge about methodology of conduction of market research. 3. Reflect on the psychological factors that influence consumer buying behavior. 4. Create marketing strategies with various models related to consumer behavior.
<b>Course Code</b>	<b>MBA(D)-M001</b>

<b>Course Nomenclature</b>	<b>ADVERTISING AND BRAND MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	The students would be able to: 1. Understand various forms of advertising and different types of media. 2. Learn the factors influencing advertising budget. 3. Conceptualize and develop an ad campaign. 4. Learn and apply concepts related to branding like brand extension, revitalizing a brand, brand hierarchy etc.
<b>Course Code</b>	<b>MBA (D)-M002</b>

<b>Course Nomenclature</b>	<b>RETAIL MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand various retail formats along with their characteristics.</li> <li>2. Critically assess the importance of store locations and store layouts.</li> <li>3. Reflect on the practical implementation of retail communication mix for achieving marketing objectives.</li> <li>4. Create strategies which are beneficial for store operations and store employees.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-M003</b>

<b>Course Nomenclature</b>	<b>MARKETING OF SERVICES</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Develop an understanding regarding marketing concepts and principles to understand the unique challenges and opportunities of services marketing</li> <li>2. Develop insights about the foundations of services marketing, customer expectations and perceptions of services</li> <li>3. Appraise the components of marketing mix for service sector and understand the gap existing in the service delivery processes and service Quality.</li> <li>4. Build blueprint for the services sector and a knowledge base to design necessary strategies for service excellence.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-M004</b>

<b>Course Nomenclature</b>	<b>SALES AND DISTRIBUTION MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Determine marketing concepts and principles associated with the unique challenges and opportunities of personal selling, roles and duties of a sales manager.</li> <li>2. Organize insights about the foundations of setting targets, territory and quotas for sales force to contribute company's objectives.</li> <li>3. Plan and design various policies to motivate and retain sales team.</li> <li>4. Explain fundamentals of distribution management and differentiate distribution design, develop, and manage sales and distribution in the changing business scenario.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-M005</b>

<b>Course Nomenclature</b>	<b>CUSTOMER RELATIONSHIP MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>

<b>Course Outcomes</b>	The students would be able to: 1. Realize the benefits of CRM in present competitive scenario. 2. Learn programs and strategies that can be applied for enhancing customer relationship management in an organization. 3. Understand the role of Information Technology in CRM. 4. Understand the application of CRM strategies in different sectors.
<b>Course Code</b>	<b>MBA (D)-M006</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL MARKETING</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	The students would be able to: 1. Understand the concept of industrial marketing and differentiate it with B2C. 2. Become familiar with buying process and factors affecting B2B process. 3. Take various decisions related to product deals in B2B sector. 4. Understand the pricing and distribution strategies followed in B2B. 5. Conduct appropriate promotional program and marketing control.
<b>Course Code</b>	<b>MBA (D)-M007</b>

<b>Course Nomenclature</b>	<b>INTEGRATED MARKETING COMMUNICATION</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	The students would be able to: 1. Understand concept and importance of Integrated marketing communication. 2. Learn the factors affecting message and media strategy. 3. Understand the functions of Ad agency and methods compensation for Ad agency. 4. Understand the inter-relationship between different elements of promotion-mix. 5. Develop effective promotional strategy suitable in different sectors that satisfies ethical issues.
<b>Course Code</b>	<b>MBA (D)-M008</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL MARKETING</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	The students would be able to: 1. Familiarized with environmental factors influencing international marketing decisions. 2. Understand the concepts of STP, product planning and promotion in international domain. 3. Learn the factors that affect price determination and different pricing strategies that can be applied in global context. 4. Familiarized with initiatives undertaken by Government measures

	and incentives for export promotion. 5. Understand role of various international financial institutions and foreign policy.
<b>Course Code</b>	<b>MBA (D)-M009</b>

<b>Course Nomenclature</b>	<b>PRODUCT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	The students would be able to: <ol style="list-style-type: none"> <li>1. Understand product concept along with various stages of product life cycle.</li> <li>2. Differentiate about classification of industrial and consumer goods.</li> <li>3. Plan and apply the concept of STP in practical way.</li> <li>4. Conceptualize stages of new product development along with strategies associated.</li> <li>5. Understand stages of Product Life Cycle along with strategies associated and implement it to decide marketing plan.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-M010</b>

<b>Course Nomenclature</b>	<b>STRATEGIC MARKETING</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	The students would be able to: <ol style="list-style-type: none"> <li>1. Gain an insight of concepts and theories of strategic marketing.</li> <li>2. Understand different factors affecting strategic competitiveness of a firm.</li> <li>3. Formulate and assess various strategic alternatives.</li> <li>4. Understand the strategy implementation process.</li> <li>5. Familiarized with strategic marketing evaluation techniques.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-M011</b>

<b>Course Nomenclature</b>	<b>HUMAN RESOURCE DEVELOPMENT SYSTEM AND STRATEGIES</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Critically assess role that Human Resource Development System can play in Management.</li> <li>2. Develop the knowledge of basic functions of Human Resource Management and various principles and practices of HRD.</li> <li>3. Understand the concept and analysis of HRD needs at various levels and knowledge of various techniques of designing and evaluating HRD programs in the organizations.</li> <li>4. Evaluate and apply HRD in different industrial settings.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H001</b>

<b>Course Nomenclature</b>	<b>HUMAN RESOURCE PLANNING</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand conceptual framework of Human Resource Planning. 2. Apply models and methods used in Human Resource Forecasting. 3. Analyze concepts of Career Management and Internal Mobility. 4. Explain the concept of Executive Development Programs. 5. Illustrate the application of HRIS, HR Accounting and Auditing.
<b>Course Code</b>	<b>MBA (D)-H002</b>

<b>Course Nomenclature</b>	<b>TRAINING AND DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the conceptual framework of Training and Development of employees. 2. Develop the knowledge of designing and implementing Training Program for the employees. 3. Explain the functions and types of training institutions. 4. Evaluate the effectiveness of training programs. 5. Illustrate the emerging trends in the field of Training and Development.
<b>Course Code</b>	<b>MBA (D)-H003</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL HUMAN RESOURCE</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Conceptual framework of International Human Resource Management and differentiate Domestic and International HRM. 2. Choose and utilize various approaches to International Compensation and Performance Management. 3. Judge different types of Expatriate, their carrier development opportunities In International Human Resource. 4. Develop and gain the knowledge about managing cross-cultural dynamics in MNCs with different models.
<b>Course Code</b>	<b>MBA (D)-H004</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the concept and techniques of Organizational Development.

	<ol style="list-style-type: none"> <li>2. Develop the knowledge about various models of Change and Competencies &amp; Role of Organizational Development Practitioner.</li> <li>3. Design and plan different types of Organizational Development Interventions.</li> <li>4. Illustrate the concepts of Organization Design and Change Management.</li> <li>5. Analyze effectiveness of Organization Culture and types of Change.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H005</b>

<b>Course Nomenclature</b>	<b>STRATEGIC COMPENSATION MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of Strategic compensation and Compensation Policies.</li> <li>2. Develop the knowledge about determining Compensation and Government Regulations pertaining to Compensation.</li> <li>3. Assess different types of Compensation Plans and Strategies.</li> <li>4. Relate Managing Performance with Reward System.</li> <li>5. Identify the issues in International Compensation Management.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H006</b>

<b>Course Nomenclature</b>	<b>INDUSTRIAL RELATIONS</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to Approaches &amp; Principles of good industrial relations, Paradigm Shift in IR.</li> <li>2. Build &amp; Utilize the concept and legislations pertaining to Trade Unions and Employers' Association.</li> <li>3. Equipped with the knowledge of legal mechanism and practices of managing Industrial Disputes.</li> <li>4. Understand the important provisions and administration of various Labor Laws.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H007</b>

<b>Course Nomenclature</b>	<b>COMPETENCY MAPPING AND TALENT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of Competency Mapping.</li> <li>2. Develop the knowledge regarding the process and prerequisites of Competency Mapping.</li> </ol>



	<ol style="list-style-type: none"> <li>3. Apply various tools and techniques of Competency Assessment.</li> <li>4. Critically evaluate the development and usage of Competency Models.</li> <li>5. Describe Talent Management Strategies used in organizations.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H008</b>

<b>Course Nomenclature</b>	<b>STRATEGIC HUMAN REOURCE MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of Strategic Human Resource Management.</li> <li>2. Formulate Human Resource Strategies effectively.</li> <li>3. Implement HR Strategy for effective utilization of workforce.</li> <li>4. Assess various techniques used for HR evaluation.</li> <li>5. Identify emerging issues in Strategic HRM.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H009</b>

<b>Course Nomenclature</b>	<b>PERFORMANCE MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Design an organization's performance management process that is compliant with law and supports organizational mission and strategy.</li> <li>2. Develop the knowledge about prerequisites and process of Performance Management.</li> <li>3. Understand the concept and process of Performance Measurement and Appraisal.</li> <li>4. Apply Performance Management System in an Organization.</li> <li>5. Understand the importance of Employee Development and application of Legal principles affecting Performance Management.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-H010</b>

<b>Course Nomenclature</b>	<b>EMPOWERMENT AND PARTICIPATIVE MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of Employee Empowerment.</li> <li>2. Identify different Forms of workers' participation.</li> <li>3. Illustrate the concept and process of Negotiation.</li> <li>4. Describe various approaches to Collective Bargaining.</li> <li>5. Compare Worker's Participation in Management in India with abroad.</li> </ol>

<b>Course Code</b>	<b>MBA (D)-H011</b>
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<b>Course Nomenclature</b>	<b>FINANCIAL RESTRUCTURING</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Evaluate and apply key concepts of corporate restructuring to conduct the business operations in an efficient, effective and competitive manner. 2. Understand the forms of financial restructuring and critically assess the merger and acquisitions strategies played by the organization to increase the market share and taking the advantage of diversification. 3. Analyze the legal provisions such as Companies Act, Competition Act, SEBI and Income Tax Act concerning Merger & Acquisitions. 4. Apply accounting methods of valuation for Merger and acquisitions to assess the cost, earning price per share, market value of the firm.
<b>Course Code</b>	<b>MBA (D)-F001</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT OF FINANCIAL SERVICES &amp; INSTITUTIONS</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	1. To understand the structure of Indian financial system. 2. Critically assess the structure of financial market with special reference to capital market. 3. To understand the concept of Leasing and Hire Purchase 4. To understand the structure of Mutual Fund and venture capital organizations. 5. To identify the working and significance of credit rating agencies.
<b>Course Code</b>	<b>MBA (D)-F002</b>

<b>Course Nomenclature</b>	<b>SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Evaluate and apply key the basic concepts and terminologies of Stock markets and Indices. 2. Equipped with the tools of measuring risks and establishing relationships between risk and return. 3. Develop the understanding of CAPM & APT models and their difference. 4. Design and Develop efficient portfolio using different models and evaluate it.
<b>Course Code</b>	<b>MBA (D)-F003</b>

<b>Course Nomenclature</b>	<b>FINANCIAL DERIVATIVES</b>
<b>Year/Semester</b>	<b>II/IV</b>

<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand basics of Derivatives. 2. Equipped with the detailed understanding of Options and its strategies. 3. Apply the concept of interest rate derivatives. 4. Evaluate working of currency derivatives. 5. Critically examine some other types of derivatives like Swaps, Exotic Options.
<b>Course Code</b>	<b>MBA (D)-F004</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL ACCOUNTING</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand basics of International Accounting. 2. Critically assess of International Information System and Preparing Financial Report. 3. Analysis and Interpretation of Foreign Financial Statements. 4. Understand about the various policies relation to Pension, Transfer, and International Account and would also be able to distinguish between the policies lead down by GAAP and IFRS. 5. Analyze the issues arises in International Accounting.
<b>Course Code</b>	<b>MBA(D)-F005</b>

<b>Course Nomenclature</b>	<b>INTERNATIONAL FINANCIAL MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Evaluate and apply key concepts of International Financial Management and differentiate between Domestic V/s International Financial Management. 2. Idea about evaluation of IMS and different instruments of capital market. 3. Build & examine Exchange Rate Mechanism and foreign exchange market. 4. Utilize different instruments in international financial market and Remember different International Financial Institutions working at international level.
<b>Course Code</b>	<b>MBA (D)-F006</b>

<b>Course Nomenclature</b>	<b>CORPORATE TAX MANAGENMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Evaluate and examine the basic concept of tax and its applicability. 2. Critically assess the various deductions available to Individual, Hindu Undivided Family and Company under u/s 10 and u/s 80 with the ultimate aim of minimizing the corporate tax liability. 3. Determine total taxable income of individual and company from the various heads.

	4. Understand and compute Goods and Service Tax and its impact on the existing taxation system.
<b>Course Code</b>	<b>MBA (D)-F007</b>

<b>Course Nomenclature</b>	<b>INVESTMENT MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts about Investment, challenges and opportunities for investors and various approaches related with investment decision.</li> <li>2. Apply the money market instruments while trading in the market.</li> <li>3. Analyze and solve the strategic issues involved in asset allocation to make effective investment allocation decisions based on available evidence and analysis.</li> <li>4. Examine and estimate the cash flow, cost of capital before doing investment.</li> <li>5. Analyze internal and external factors and develop investment policy for institutional and individual investors.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-F008</b>

<b>Course Nomenclature</b>	<b>FOREIGN EXCHANGE MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Build basic idea about Foreign Exchange Market and different exchange rate determinants.</li> <li>2. Evaluate and apply key concepts related to evaluation of IMS and various terms associated with IMS.</li> <li>3. Develop &amp; apply various techniques to interpret risk and tool to minimize those risks.</li> <li>4. Remember &amp; identify different rules and regulation need to be followed in Foreign Exchange market.</li> </ol>
<b>Course Code</b>	<b>MBA (D)-F009</b>

<b>Course Nomenclature</b>	<b>STRATEGIC COST MANAGEMENT AND CONTROL</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Build basic idea about Strategic cost management and its use in strategic management.</li> <li>2. Evaluate and apply key concepts of ABC analysis, with its different techniques.</li> <li>3. Determine different budgets and identify about different investment centers associated with cost management.</li> <li>4. Examine strategic performance based measurement system, Balanced Score Card Quality cost management necessary in cost control.</li> </ol>

<b>Course Code</b>	<b>MBA (D)-F010</b>
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<b>Course Nomenclature</b>	<b>MANAGEMENT CONTROL SYSTEM</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify elements of Control system in management and various function of controller.</li> <li>2. Understand how management control system is applicable in different sectors.</li> <li>3. Examine and apply key concepts of performance measurement and responsibility accounting.</li> <li>4. Analyze and prepare different types of budget in order to make control system effective and also get the knowledge of Auditing.</li> </ol>
<b>Course Code</b>	<b>MBA(D)-F011</b>

**MBA (HHM)**  
**Hospital & Healthcare Management**

<b>PROGRAM NAME</b>	<b>MBA</b>
<b>Program Outcomes</b>	<ul style="list-style-type: none"> <li>• The two-year full time Masters degree in Hospital &amp; Healthcare Management focuses on equipping students with the knowledge and skills required for the management of healthcare organizations. Be it Hospitals, Pharmaceuticals, IT, Insurance, Clinical research, Equipment, Manufacturing, Public healthcare establishment, Consultancies, NGOs, Wellness industry and others as may evolve.</li> <li>• The programme aims at adopting a synergistic blend of academic knowledge and practical intricacies of the field to create professionals adept at identifying practical problems and using time tested and emerging managerial techniques to arrive at the most appropriate solutions.</li> </ul>

<b>SPECIFIC PROGRAM NAME</b>	<b>MBA (Hospital &amp; Healthcare Management)</b>
<b>Specific Program Outcomes</b>	<ul style="list-style-type: none"> <li>• To help understand the latest concepts and techniques of management and their application in making the managerial roles of the participants efficient and effective.</li> <li>• To develop skills of analyzing, diagnosing and solving operational problems in the delivery of healthcare and hospital services.</li> <li>• To help learn about appropriate strategies for effective planning, implementation and evaluation of institutional and community based health and family welfare program.</li> <li>• To help learn the application of qualitative and quantitative analytical tools as applicable to health and hospital management related problems.</li> <li>• To help understand and appreciate methodologies of health/hospital management training and develop skills with focus on strategic responsibility for training and human resource development for health care delivery.</li> <li>• To enlarge the outlook and vision of participants about the larger background and context of health care and health management in their historical, sociological and cultural framework.</li> <li>• To help them to learn to promote the efficient and equitable allocation of resources and development of strategies to promote public health and cost-effective healthcare.</li> <li>• To understand application of scientific approach to reduce cost of care through better material and money management.</li> </ul>

<b>Course Nomenclature</b>	<b>MANAGEMENT ACCOUNTING</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic accounting concepts including the recording of transactions and preparation and analysis of financial statement</li> <li>2. Examine the different types of financial statement to provide the meaningful information to external and internal users.</li> <li>3. Evaluate and interpret ratios to assess the company's profitability, liquidity, and solvency.</li> <li>4. Apply Management and Cost accounting concepts to take effective management decisions.</li> </ol>
<b>Course Code</b>	<b>MBA (HHM)-111</b>

<b>Course Nomenclature</b>	<b>PRINCIPLES AND PRACTICES OF MANAGEMENT</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the basic nature, levels and functions of management.</li> <li>2. Develop the knowledge regarding Planning and Organizing and conceptualize various techniques used for Staffing and Direction.</li> <li>3. Acquire knowledge about various theories and concepts pertaining to Leadership and Motivation.</li> <li>4. Understand the control procedures and techniques used by managers, along with the latest trends in management.</li> </ol>
<b>Course Code</b>	<b>MBA (HHM)-112</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL BEHAVIOR AND DESIGN</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Develop a general understanding of the concept and basic nature of Organizational Behavior.</li> <li>2. Acquire knowledge regarding the concepts of Personality, Learning, Attitude and Perception.</li> <li>3. Conceptualize various aspects related to Group Behavior, group cohesiveness and Dynamics to work in team.</li> <li>4. Apply knowledge to manage Conflicts, Stress and Politics at the workplace.</li> <li>5. Understand the concept of Organizational Design and mechanism of Managing Change within an organization.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-113</b>



<b>Course Nomenclature</b>	<b>ESSENTIALS OF BIO STATISTICS</b>
<b>Year/Semester</b>	I/I
<b>Course outcomes</b>	<p>Upon successful completion of the course, the students would be able to :</p> <ol style="list-style-type: none"> <li>1. Understand the basic concepts of data analysis and statistical inference in the medical and health sciences.</li> <li>2. Interpret graphical displays and numerical summaries for both quantitative and categorical data that are relevant to medical and health sciences studies.</li> <li>3. Choose an appropriate statistical test to compare two samples and describe the assumptions underlying the use of these tests.</li> <li>4. Interpret key measures of bivariate association for relating factors to health outcomes.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-114</b>

<b>Course Nomenclature</b>	<b>HEALTH ECONOMICS</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Familiarize with central ethical principles that are considered when society makes decisions and influence public health.</li> <li>2. Summarize which health indices that can be used to combine different aspects of health and understand how to derive the societies cost for illness.</li> <li>3. Understand how you can explain and predict peoples' health related behavior and use this understanding to predict the consequences of different social actions.</li> <li>4. Tell which methods can be used to judge if a public health work should be recommended from an economic perspective.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-115</b>

<b>Course Nomenclature</b>	<b>BUSINESS COMMUNICATION</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate the basic principles and legal aspects of Business Communication.</li> <li>2. Develop knowledge regarding various types and medium of communication.</li> <li>3. Understand various communication models and barriers to effective communication.</li> <li>4. Knowledge of proceeding with all types of written business correspondence.</li> <li>5. Aware of the fundamentals of writing different types of Business letters and would also learn basic skills to face interviews.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-116</b>

<b>Course Nomenclature</b>	<b>INFORMATION TECHNOLOGY IN MANAGEMENT</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand basic concepts of computers along with benefits of IT outsourcing.</li> <li>2. Identify different type of software and their applications in professional and day today life.</li> <li>3. Solve business problems by using basic tools of MS Office.</li> <li>4. Reflect on the practical implementation of networks and the devices that are associated with the networks.</li> <li>5. Create business strategies by using information systems.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-117</b>

<b>Course Nomenclature</b>	<b>HOSPITAL MATERIALS, EQUIPMENT &amp; SUPPLY CHAIN MANAGEMENT</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Understand the fundamentals of healthcare supply chain management.</li> <li>2. Equipped with the Concept of Materials Management and would develop an understanding about the Purchasing system.</li> <li>3. Understand the different Inventory Control techniques.</li> <li>4. Implement Equipment Repair and Maintenance and get a sound knowledge of Inspection and Verification of Materials.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-118</b>

<b>Course Nomenclature</b>	<b>COMPREHENSIVE VIVA</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Familiarize with the functioning of public health departments E D P / I T Department, Reception, Billing &amp; Discharge, OPD Services, Pharmacy Services etc.</li> <li>2. Summarize health indices that can be used to combine different aspects of health</li> <li>3. Understand how you can explain and predict peoples' health related behavior and use this understanding to predict the consequences of different social actions.</li> <li>4. Tell which methods can be used to judge if a public health work should be recommended from an economic perspective.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-119</b>

<b>Course Nomenclature</b>	<b>HUMAN RESOURCE MANAGEMENT</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Incorporate themselves in the changing environment of HRM 2. Apply right recruitment and selection process in business scenario 3. Understand the compensation management and the different incentives applicable at various levels of management 4. Analyze the training needs, apply the right training method and evaluate the Same 5. Give due importance to Employee health and Safety and understand the importance of Employee participation and Relations.
<b>Course Code</b>	<b>MBA(HHM)-211</b>

<b>Course Nomenclature</b>	<b>COPORATE FINANCE</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the financial environment in which a company operates and get knowledge of the procurement and utilization of funds in order to maintain an adequate cash flow in the business. 2. Identify the concept of dividend and critically assess the various factors which affect the dividend decision. 3. Analyze the requirement of working capital for the business operations and manage the debtors, stock and cash accordingly. 4. Develop a relationship between risk and return of the securities and the combination of debt and equity in the capital structure of the company to make effective financial decisions.
<b>Course Code</b>	<b>MBA(HHM)-212</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL MANAGEMENT OF CLINICAL &amp; SUPERSPECIALITY SERVICES</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Familiarize with the hospital as an organization that can be run by the hospital administrator through his attributes qualities and skills by developing new strategies. 2. Conceptualize the roles, functions and layout protocols and procedures for the OPD, ICU & Casualty. 3. Understand the ward management skills, co-ordination & control required for the patient care. 4. Tell about the ambulance and rehabilitation services requirements according to the clinical services provided in the hospital and evaluate surgeries intervention in the OT and accordingly plan the SOPs to meet the zoning requirements.
<b>Course Code</b>	<b>MBA(HHM)-213</b>

<b>Course Nomenclature</b>	<b>RESEARCH METHODOLOGY</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the basic fundamentals of research. 2. Assess the appropriateness of different kinds of research designs and methodology. 3. Determine the essentials of sampling techniques and data collection methods used in research. 4. Demonstrate and apply data analysis-and hypothesis testing procedures. 5. Interpret research work and formulate research synopsis and report.
<b>Course Code</b>	<b>MBA(HHM)-214</b>

<b>Course Nomenclature</b>	<b>MARKETING MANAGEMENT</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Critically assess role and functions that marketing can play in business strategy. 2. Develop the knowledge regarding factors affecting consumer & industrial buying behavior and buying process. 3. Conceptualize the essentials and importance of segmentation, targeting and positioning; Plan and compose tactical marketing decisions as a group considering effective product, pricing, distribution and promotion decisions as necessary to meet the needs of a client brief. 4. Create marketing strategies for both products as well as for services
<b>Course Code</b>	<b>MBA(HHM)-215</b>

<b>Course Nomenclature</b>	<b>ESSENTIALS OF DEMOGRAPHY</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: 1. Understand the need for the population studies with the help of the census. 2. Do a comprehensive survey of the field of social demography the scientific study of population. 3. Understand the core social demographic variables (e.g., fertility, mortality, morbidity, migration), and how these variables influence population growth, composition, and structure. 4. Examine in relation to its sociological determinants and consequences and evaluate the relationship between population and

	issues such as urbanization, family change, population aging and health, economic growth, and the environment.
<b>Course Code</b>	<b>MBA(HHM)-216</b>

<b>Course Nomenclature</b>	<b>ENTREPRENEURSHIP &amp; MANAGERIAL SKILL DEVELOPMENT</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Gain an insight of concept and theories of entrepreneurship.</li> <li>2. Familiarized with initiatives undertaken by Government for entrepreneurship development.</li> <li>3. Conceptualize and develop a Business Plan.</li> <li>4. Manage and run Small and Medium Enterprises.</li> <li>5. Understand causes, prevention and remedies of Industrial Sickness.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-217</b>

<b>Course Title</b>	<b>DIAGNOSTIC, SUPPORT &amp; UTILITY SERVICES</b>
<b>Year/Semester</b>	I/II
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Conduct a quality control by following SOPs in the Lab and Blood bank that can be run by the hospital administrator through his attributes qualities and skills by developing new strategies.</li> <li>2. Conceptualize the roles, functions and layout protocols and procedures and radiation safety for the radiological department.</li> <li>3. Understand importance of CSSD and MRD for the patient care.</li> <li>4. Tell about the dietary and linen &amp; laundry services requirements according to the clinical services provided in the hospital and evaluate the hospital as per the audit and to understand the policies and procedures of the mortuary services.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-218</b>

<b>Course Nomenclature</b>	<b>COMPREHENSIVE VIVA</b>
<b>Year/Semester</b>	I/II
<b>Course Outcome</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Familiarize with the functioning of public health departments Laboratory Services, Imaging Services, Personnel/HR Dept., Laundry &amp; Linen Services, kitchen &amp; Dietary Services etc.</li> <li>2. Summarize health indices that can be used to combine different aspects of health</li> <li>3. Understand different dimensions of health.</li> <li>4. Tell which methods can be used to judge a public health work.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-219</b>

<b>Course Nomenclature</b>	<b>STRATEGIC MANAGEMENT</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"> <li>1. Understand the concept of strategy and strategic intent.</li> <li>2. Analyze strategic micro and macro environmental issues and the tools used for environmental appraisal.</li> <li>3. Evaluate different strategic alternatives and choosing the feasible strategic option for the organization.</li> <li>4. Determine implementation plans to execute the chosen strategies and understand different issues in strategy implementation.</li> <li>5. Develop comprehensive understanding of corporate governance practices and Corporate Social Responsibility.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-311</b>

<b>Course Nomenclature</b>	<b>QUALITY &amp; ACCREDITATION IN HEALTHCARE</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Understand the Quality principles given by Quality Gurus.</li> <li>2. Equipped with the Concept of Total Quality Management.</li> <li>3. Understand the Quality Certification systems.</li> <li>4. Conceptualize NABH Accreditation and get a sound knowledge NABL Accreditation.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-312</b>

<b>Course Nomenclature</b>	<b>1<sup>st</sup> PROJECT WORK PRESENTATION</b>
<b>Year/Semester</b>	II/III
<b>Course Outcome</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Plan hospital architectural plan.</li> <li>2. Understand the departmentation in the hospital workflow.</li> <li>3. Review the relationship of departmental projects in the hospital.</li> <li>4. Define medical customs and social patterns, understand supply of physicians, recognize the existence of proprietary hospitals.</li> <li>5. Propose the need of superspeciality services as per the organization.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-313</b>

<b>Course Title</b>	<b>HEALTH CARE DELIVERY SYSTEM &amp; POLICY</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	Upon successful completion of the course, the students would be able to: <ol style="list-style-type: none"> <li>1. Able to identify components and functions of multiple health care delivery systems to include accreditation, licensure, regulations, payment, and reimbursement systems.</li> </ol>

	<ol style="list-style-type: none"> <li>2. Describe routine institutional statistics, interpret health care data, prepare health care data for presentation purposes.</li> <li>3. Understand importance of different health agencies working with different countries to improve the health status of the world.</li> <li>4. Tell about the different National Health Programs according to the current health scenario in the country and able to describe the critical health policy issues in India and explain the future trends in health care.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HCM001</b>

<b>Course Nomenclature</b>	<b>HEALTH AND DEVELOPMENT</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Analyze how changes in the global political economy, including the promotion of free trade and other neoliberal policies, are affecting health and well-being.</li> <li>2. Evaluate how livelihoods and landscapes are being altered by these policies and practices and explore the health consequences of these changes.</li> <li>3. Analyze how structural inequalities of gender, age, ethnicity, and race contribute to health disparities in the context of globalization.</li> <li>4. Explore people's agency in the context of these global changes, particularly how human rights based approaches are being used to negotiate access to better health and treatment and effectively apply critical reading and writing skills.</li> </ol>
<b>Course Code</b>	<b>MBA (HHM)-HCM002</b>

<b>Course Nomenclature</b>	<b>HEALTHCARE DATA MANAGEMENT AND ANALYSIS</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Describe the tools and techniques used for data analytics in health care organizations.</li> <li>2. Understand the importance of basic data management in the hospital workflow.</li> <li>3. Review the relationship of departmental equipment with the data services provided in the hospital.</li> <li>4. Explain the SOPs that should be followed while performing radiation therapies and propose the need of security per the organization.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HCM003</b>

<b>Course Nomenclature</b>	<b>HOSPITAL MANAGEMENT INFORMATION SYSTEM</b>
<b>Year/Semester</b>	II/III

<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Describe general functions, purposes and benefits of health information systems and the evolution and adoption of health information systems.</li> <li>2. Compare health information systems in terms of their ability to support the requirements of a health care enterprise and explain the impact of electronic health records on reporting outcomes.</li> <li>3. Review workflow design and assessment, and their relationship to patient care, productivity and data analysis.</li> <li>4. Explain strategies to minimize major barriers to the adoption of electronic health records and explain the principles of health care data exchange and standards and propose the hardware, software, operating system and networking considerations necessary for effective data storage and use in health care organizations and utilize the tools and techniques for collecting, storing, securing, retrieving, and reporting health care data.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM001</b>

<b>Course Nomenclature</b>	<b>HOSPITAL FACILITY, SAFETY AND RISK MANAGEMENT</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Describe role of hospital in disaster management</li> <li>2. Understand the importance of basic engineering services in the hospital workflow.</li> <li>3. Review workflow design and assessment, and their relationship of departmental equipment with the services provided in the hospital.</li> <li>4. Explain the SOPs that should be followed while maintaining safety to the patients, doctors and other paramedical staff and propose the need of security and fire safety procedures and protocols as per the organization.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM002</b>

<b>Course Nomenclature</b>	<b>HOSPITAL PLANNING AND ADMINISTRATION</b>
<b>Year/Semester</b>	II/III
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Plan hospital architectural plan.</li> <li>2. Understand the departmentation in the hospital workflow.</li> <li>3. Able to review the relationship of departmental projects in the hospital.</li> <li>4. Define medical customs and social patterns, understand supply of physicians, recognize the existence of proprietary hospitals and propose the need of superspeciality services as per the organization.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM003</b>



<b>Course Nomenclature</b>	<b>HEALTH FINANCING AND INSURANCE</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate knowledge of insurance contracts and provisions, and the features of life and health insurance, and employee benefit plans.</li> <li>2. Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</li> <li>3. Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</li> <li>4. Create policy and processes, and execute decisions in compliance with the legal, regulatory and ethical considerations inherent in managing healthcare systems and organizations, and structure and how these considerations impact all aspects of healthcare delivery and integrate concepts of ethics, privacy, law and regulation to achieve optimal organizational effectiveness while adhering to personal and professional values in all elements of healthcare delivery.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-411</b>

<b>Course Nomenclature</b>	<b>PROJECT MANAGEMENT</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and apply key concepts related to project and the different stages of a project life.</li> <li>2. Reflect on the practical implementation the different methods of project feasibility analysis.</li> <li>3. Judge &amp; analyzing a project on financial grounds.</li> <li>4. Build understanding regarding Project Quality Management and choose different selection and training methods used in Project Management.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-412</b>

<b>Course Nomenclature</b>	<b>2nd PROJECT WORK PRESENTATION</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcome</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate some knowledge and understanding of the wider determinants of health and ill-health</li> <li>2. Understand the roles of people and agencies who undertake work in the promotion of public health</li> <li>3. Demonstrate an awareness of the debates and dilemmas that may arise from the promotion of public health.</li> <li>4. Describe different hazards and waste disposal management.</li> </ol>

	5. Identify the ethical considerations associated with planning, implementing, and evaluating health programs.
<b>Course Code</b>	<b>MBA(HHM)-413</b>

<b>Course Nomenclature</b>	<b>INTRODUCTION TO EPIDEMIOLOGY</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the criteria commonly used to evaluate causal relationships and evaluate the quality and comparability of data.</li> <li>2. Familiarize with the different national health programs running in India.</li> <li>3. Understand the major study designs for obtaining quantitative information relevant to population health research questions from surveillance, observational, community-based and controlled trial research studies and be able to select the most appropriate design for different hypotheses.</li> <li>4. Describe a public health problem in terms of magnitude, person, time and place, formulate and apply epidemiologic methodology to identify a specific public health problem, develop a hypothesis, and design a study to investigate the ISSU and interpret descriptive and inferential statistics resulting from data analysis and draw relevant conclusion.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HCM004</b>

<b>Course Nomenclature</b>	<b>PUBLIC HEALTH SYSTEM AND OUTREACH PROGRAMMES</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate some knowledge and understanding of the wider determinants of health and ill-health</li> <li>2. Understand the roles of people and agencies who undertake work in the promotion of public health</li> <li>3. Demonstrate an awareness of the debates and dilemmas that may arise from the promotion of public health.</li> <li>4. Describe different hazards and waste disposal management and identify the ethical considerations associated with planning, implementing, and evaluating health programs</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HCM005</b>

<b>Course Nomenclature</b>	<b>COMMUNITY HEALTH SERVICES</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Develop skills in assessment of an individual and develop rapport with family and community at large.</li> <li>2. Find out health needs of the clients &amp; family to provide family oriented health care in Urban and Rural Community.</li> <li>3. Attend different health clinics to know various laboratory investigations (simple investigations enlisted in the curriculum)</li> <li>4. Develop to practice health education at different settings in the Urban and Rural community and understand to write family health care study based on nursing process approach.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HCM006</b>

<b>Course Nomenclature</b>	<b>HEALTH LEGISLATION AND LEGAL ISSUES</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Distinguish and discuss the role of the federal government and the various state governments in promoting and protecting the health of citizens.</li> <li>2. Understand legal standards applicable to health care professionals and organizations.</li> <li>3. Analyze the role of the legal system in health policy and health care delivery in relation to different medical negligence acts and hospital waste management.</li> <li>4. Explain the PCPNDT act, narcotics act and organ transplantation act and identify, distinguish, and discuss the relationship between community health issues and individual health issues.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM004</b>

<b>Course Nomenclature</b>	<b>PATIENT CARE MANAGEMENT</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Discuss ethical principles pertaining to the provision of care</li> <li>2. Develop strategies for addressing situations of patient quality care.</li> <li>3. Demonstrate professional behavior by completing all requirements, including evaluations, in a timely manner.</li> <li>4. Demonstrate professionalism by behaving in a professional, courteous and respectful manner when engaged in patient activities or interacting with patient and relatives and identify the disaster management plan and implement it accordingly.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM005</b>

<b>Course Nomenclature</b>	<b>DISASTER MANAGEMENT IN HOSPITALS</b>
<b>Year/Semester</b>	II/IV
<b>Course Outcomes</b>	<p>Upon successful completion of the course, the students would be able to:</p> <ol style="list-style-type: none"> <li>1. Understand application of Disaster Concepts to Management, analyse Relationship between Development and Disasters, ability to categorize Disasters.</li> <li>2. Develop Preparedness plans for disaster response, Monitoring and evaluation plan for disaster response, Setting up of early warning systems for risk reductions.</li> <li>3. Demonstrate Emergency First Aid at Disaster Site, Emergency Medical Triage, Patient transport and logistic management, Medical/Hospital contingency planning.</li> <li>4. Develop Skills in Outbreak Investigation, Skills in surveillance system for emergency situations, Application of Hyogo frame work, Application of International Health Regulation and understand application of Sphere Standards Indian context, Interpretation of laws disaster management act in India, Acquainting with Disaster Response command system in respective states, Application of Best Practices from Case scenario Studies in India.</li> </ol>
<b>Course Code</b>	<b>MBA(HHM)-HM006</b>

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Computer and Systems Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. MCA
2. M.Tech (CS)
3. PGDCA
4. BCA
5. BCA - Cyber Security
6. Ph.D (CS)

**MCA**

**Name of the Program: MCA**

**Program/Program Specific Outcomes:**

After Completing the Master of Computer Applications (MCA) Students will be able to:

1. Demonstrate the ability to identify a business problem, isolate its key components, analyze and assess the salient issues, set appropriate criteria for decision making, and draw appropriate conclusions and implications for proposed solutions.
2. Analyze, design, develop and maintain the software application with latest technologies.
3. Explain how computing systems improve productivity, reliability & transparency of business, governance, education & research organizations.
4. Design a computing system to meet desired needs within realistic constraints such as safety, security and applicability and will be aware of ethics, values, sustainability and creativity aspects.
5. Inculcate employability and entrepreneur skills among students who can develop customized solutions for small to large Enterprises.
6. Articulate the relevance of latest computing technologies in shaping the life.

## Semester – I

**Course Name: Mathematical Foundation of Computer Science**

**Course Code: MCA-101**

**Course outcomes:**

After completion of the course students will be able to:

1. Identify logical notation and determine if the argument is or is not valid.
2. Understand the basic principles of sets and operations in sets and prove basic set equalities.
3. Apply counting principles to determine probabilities.
4. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
5. Demonstrate an understanding of relations and functions and be able to determine their properties.

**Course Name: Computer and ‘C’ Programming**

**Course Code: MCA-102**

**Course outcomes:**

After completion of the course students will be able to:

1. Understand the fundamentals of C programming and the use of pointers, structures and unions.
2. Illustrate the loops and decision making statements to solve the problem.
3. Build and implement different operations on arrays.
4. Use functions to solve the given problem.
5. Implement file operations in C programming for a given application.



**Course Name: Computer Organization & Architecture**

**Course Code: MCA-103**

**Course Outcomes:**

After completion of the course students will be able to:

1. Understand the architecture and functionality of central processing unit.
2. Use appropriate tools to design verify and test the CPU architecture.
3. Learn the concepts of parallel processing, pipelining and interprocessor communication.
4. Exemplify in a better way the I/O and memory organization.
5. Analyze some of the design issues in terms of speed, technology, cost, performance.
6. Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.

**Course Name: Database Management System**

**Course Code: MCA-104**

**Course outcomes:**

After completion of the course students will be able to:

1. Describe the fundamental elements of relational database management systems
2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
3. Design ER-models to represent simple database application scenarios.
4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
5. Improve the database design by normalization and will be familiar with basic recovery and concurrency control scheme.

**Course Name: Accounting and Financial Management**

**Course Code: MCA-105**

**Course outcomes:**

After completion of the course students will be able to:

1. Define bookkeeping and accounting
2. Explain the general purposes and functions of accounting
3. Explain the differences between management and financial accounting
4. Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses
5. Identify the main financial statements and their purposes.

**Course Name: Office Management Lab**

**Course Code: MCA-151**

**Course Outcomes:**

After completion of the course students will be able to:

1. Identify and recall the use of CUI and GUI based operating systems.
2. Summarize the working of various Application Softwares such as MS Word, MS Excel and MS PowerPoint.
3. Apply the various features and functionalities of MS Word, MS Excel and MS PowerPoint.
4. Design and develop various Word files, spreadsheets and PowerPoint presentations.

**Course Name: Programming in 'C' Lab**

**Course Code: MCA-152**

**Course outcomes:**

After completion of the course students will be able to:

1. Know concepts in problem solving and do programming in C language.
2. Write diversified solutions using C language.
3. Develop the use of the C programming language to implement various algorithms.
4. Develop the basic concepts and terminology of programming in general.
5. Introduce more advanced features of the C language.

**Course Name: DBMS Lab**

**Course Code: MCA-153**

**Course outcomes:**

After completion of the course students will be able to:

1. Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS.
2. Develop a clear understanding of the conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management
3. Attain a good practical understanding of the SQL.
4. Develop clear concepts about Relational Model.
5. Examine techniques pertaining to Database design practices • Prepare various database tables and joins them using SQL commands
6. Understand the basic concepts of Concurrency Control & database security
7. Understand the basic concept how storage techniques are used to backup data and maintain data access performance in peak hours
8. Evaluate options to make informed decisions that meet data storage, processing, and retrieval needs.

**Course Name: Communication & Soft Skills-I**

**Course Code: MCA-154**

**Course Outcomes:**

By the end of this course students will be able to-

1. Learn the vocabulary part to utilize that in their Communication Skills.
2. Develop the habit of listening, writing, speaking and reading to apply those in their carrier.
3. Identify Emotional intelligence and Brain Power and to utilize that at their work place.
4. Apply communication skills and soft skills in their respective work places.

## **Semester – II**

**Course Name: Data Structure Using C**

**Course Code: MCA-201**

**Course Outcomes:**

After completion of the course students will be able to:

1. Understand the basic data structures (such as an array-based list, linked list, stack, queue, binary search tree) and algorithms.
2. Acquire the knowledge to analyze, design, apply and use data structures and algorithms to solve engineering problems
3. Evaluate the solutions of problems by implementing them using the advance data structures.
4. Apply modern tool to solve engineering problems using C.
5. Synthesize algorithm or program code or segment that contains iterative constructs and analyze the code segment.

**Course Name: Computer Oriented Numerical and Statistical Techniques**

**Course Code: MCA-202**

**Course outcomes:**

After completion of the course students will be able to:

1. Recall theoretical knowledge for solving simple problems.
2. Understand the ability to test and evaluate the methods to get numerical solution to ODE.
3. Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems.
4. Compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method.
5. Apply method of interpolation and extrapolation for prediction.

**Course Name: Operating System**

**Course code: MCA-203**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the main components of an OS & describe the important computer system resources

functions and the types of Operating Systems.

2. Understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS and understand the factors in OS design. To understand deadlock and use bankers algorithm for the avoidance of the deadlock
3. Analyze and evaluate the behaviour of critical resources and semaphores and apply the techniques for achieving synchronization and coordination in an operating system. To understand memory allocation, page replacement algorithms and apply the page replacement algorithms for a set of frames. To analyze how files are stored in secondary storage and the different allocation
4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a secure OS.

**Course Name: Data Communication & Computer Networks**

**Course Code: MCA-204**

**Course Outcomes:**

After completion of the course students will be able to:

1. Explain the details about computer network, their application and advantages. It explains different transmission technology used for communication.
2. Explains the network security using firewall and different algorithm used for security purpose. It explains the issue related to the network that helps to better understand how we secure our network for threats.
3. Acquire knowledge of OSI model with their different protocols used at particular layers and different routing protocols.
4. Acquire knowledge of LAN, their use and simulated result generated by different measuring tools.
5. Illustrate different types of Ethernet used in network for transmission of data.

**Course Name: Environmental Science**

**Course Code: MCA -205**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
2. Articulate the basic structure, functions, and processes of key social systems affecting the environment.
3. Explain how perceptions of environmental problems, the problems themselves, and the proposed solutions are shaped by their historical, geographical, social, political, economic, and cultural contexts.
4. Apply knowledge of the sciences within an interdisciplinary context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, population, resource management, and loss of biodiversity.

**Course Name: Data Structures Using C Language Lab**

**Course Code: MCA-251**

**Course outcomes:**

After completion of the course, students will be able to:

1. Understand appropriate data structures as applied to specified problem definition.
2. Acquire knowledge about operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.
3. Evaluate Linear and Non-Linear data structures.
4. Implement appropriate sorting/searching technique for given problem.
5. Design advance data structure using Non-Linear data structure.
6. Determine and implement the complexity of given Algorithms.

**Course Name: Numerical & Statistical Techniques Lab**

**Course Code: MCA-252**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Learn fundamentals and concepts of statistical and optimization methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, skewness and kurtosis.
2. Learn important theorems, different formulae and practical applications of these statistical and optimization methods in the field
3. Understand the ability to test and evaluate the methods to get numerical solution to ODE.
4. Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems

**Course Name: Unix & Shell Programming Lab**

**Course Code: MCA-253**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the basic Unix structure, commands and utilities of the UNIX operating system and to work confidently in Unix/Linux environment and open systems.
2. Write simple and complex shell scripts to automate various tasks using shell programming.
3. Use simple and advanced filters and frame regular expressions.
4. Demonstrate the file and file and process related commands.

**Course Name: Communication & Soft Skills -II**

**Course Code: MCA-254**

**Course outcomes:**

After completion of the course, students will be able to:

1. Learn the basics of Communication such as purpose and barriers of Communication and Business writing.
2. Develop the habit of interpersonal and intercultural communication and apply those in their career.
3. Identify Group Dynamics and Leadership Skills and utilize that at their work place.
4. Apply communication skills and soft skills and different personality traits at their respective work places.



## Semester – III

### **Course Name: Object Oriented Programming**

Course Code: **MCA- 301**

#### **Course Outcomes:**

After completion of the course, students will be able to:

1. Gain the basic knowledge on Object Oriented concepts and describe the differences between traditional imperative design and Object-oriented design.
2. Create & design applications using Object Oriented Programming Concepts
3. Explain class structures as fundamental, modular building blocks and explain the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code.
4. Write small/medium scale C++ / java programs with simple graphical user interface
5. Describe the file handling and error handling mechanisms in C++ and Create simple data structures like arrays in a Java program.

### **Course Name: System Analysis and Design**

Course Code: **MCA-302**

#### **Course outcomes:**

After completion of the course, students will be able to:

1. Identify various types of information systems concepts and terminologies and understand system development activities in the context of when they typically occur.
2. Illustrate the initial phases of the System Development Life Cycle (SDLC) using analytical tools and quantitative techniques used to identify problems also examine the different issues related to systems analysis and design.
3. Learn and practice the techniques and processes used by the systems analyst at each phase within the systems development cycle and evaluate information systems projects to identify various aspects of feasibility of these projects.
4. Develop team-building and communication and interviewing skills, which are essential to successful systems projects.
5. Transform requirements specifications into practical and achievable design specifications.

**Course Name: Computer Graphics**

**Course Code: MCA-303**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Explain the core concepts of computer graphics, including viewing, projection, perspective, modeling and transformation in two and three dimensions.
2. Interpret the mathematical foundation of the concepts of computer graphics and Describe the fundamentals of animation, parametric curves and surfaces, and spotlighting.
3. Identify a typical graphics pipeline and apply graphics programming techniques to design and create computer graphics.
4. Apply the concepts of color models, lighting and shading models, textures, ray tracing, hidden surface elimination, anti-aliasing, and rendering.
5. Create effective OpenGL programs to solve graphics programming issues, including 3D transformation, objects modelling, colour modelling, lighting, textures, and ray tracing.

**Course Name: Artificial Intelligence**

**Course Code: MCA-304**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Recall fundamental understanding of the history of artificial intelligence (AI), its Foundations and current scope and limitations.
2. Explain basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
3. Apply knowledge representation through logical reasoning.
4. Analyze the working of intelligent agents, expert systems
5. Evaluate scientific method to models of machine learning.

**Course Name: Design and Analysis of Algorithm**

**Course Code: MCA-305**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Analyze the asymptotic performance of algorithms.
2. Learn rigorous correctness proofs for algorithms.
3. Demonstrate a familiarity with major algorithms and data structures.
4. Apply important algorithmic design paradigms and methods of analysis.
5. Synthesize efficient algorithms in common engineering design situations.

**Course Name: Object Oriented Programming Lab**

**Course Code: MCA-351**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Acquire profound knowledge of object oriented programming.
2. Demonstrate the difference between the solutions offered by traditional imperative problem solving method and object-oriented method
3. Explain the class inheritance, data encapsulation, polymorphism as fundamental building blocks to generate reusable code.
4. Understand and implement error handling and file handling routines.

**Course Name: Computer Graphics Lab**

**Course Code: MCA-352**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Explain the core concepts of computer graphics, including viewing, projection, perspective, modelling and transformation in two and three dimensions.
2. Apply the concepts of colour models, lighting and shading models, textures, ray tracing, hidden surface elimination, anti-aliasing, and rendering.
3. Interpret the mathematical foundation of the concepts of computer graphics.
4. Describe the fundamentals of animation, parametric curves and surfaces, and spotlighting.

5. Identify a typical graphics pipeline and apply graphics programming techniques to design and create computer graphics.
6. Create effective OpenGL programs to solve graphics programming issues, including 3D transformation, objects modelling, colour modelling, lighting, textures, and ray tracing.

**Course Name: DAA Lab**

**Course Code: MCA-353**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Understand basic as well as advanced data structures for efficient data storage and retrieval
2. Illustrate how the choice of data structures and the algorithm design methods impact the performance of programs.
3. Perform analysis of different complex sorting and searching algorithms.
4. Identify among tractable and intractable problems.
5. Apply graph algorithms to find shortest path to traverse graph using BFS traversal technique.

**Course Name: Communication & Soft Skills – III**

**Course Code: MCA-354**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Learn negotiation skills, extempore and to present himself/ herself orally.
2. Develop the habit of listing and writing skills such as Business Letters, E- Mails, and Notices etc.
3. Identify the teams and groups and how to lead the life through positive attitude.
4. Apply their effective communication and soft skills at their work places.

## Semester IV

**Course Name: Theory of Computation**

**Course Code: MCA-401**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Define finite automata, regular grammars, and regular expression representations of regular languages
2. Apply the pumping lemma for regular languages to determine if a language is regular
3. Convert between grammars and push-down automata for context-free languages.
4. Determine if a language is regular or context-free.
5. Demonstrate that a grammar is ambiguous.
6. Translate a context-free grammar from one form to another.
7. Produce simple programs for a Turing Machine.
8. Explain the concept of un-decidability and list examples of un-decidable problems.

**Course Name: Advanced Java Programming**

**Course Code: MCA-402**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Explain the Internet Programming, using Java Applets
2. Create and design a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT).
3. Apply event handling on AWT and Swing components.
4. Describe to access database through Java programs, using Java Data Base Connectivity (JDBC)
5. Create and design dynamic web pages, using Servlets and JSP.
6. Describe a reusable software component, using Java Bean.
7. Identify the remote methods in an application using Remote Method Invocation (RMI)

8. Create and design, Stateful, Stateless and Entity Beans.

**Course Name: WEB Technology**

**Course Code: MCA-403**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Explain the core concepts to develop a dynamic webpage by the use of java script and HTML.
2. Identify and Incorporate aesthetics and formal concepts of layout and organization to design websites that effectively communicate using visual elements.
3. Apply and Select markup languages for processing, identifying, and presenting of information in web pages.
4. Interpret the fundamental computer theory to basic programming techniques and use scripting languages and web services to transfer data and add interactive components to web pages..
5. Describe the Concept and plan an internet-based business that applies appropriate business models and web technologies and multiple web technologies to create advanced web components.
6. Create and design websites using appropriate security principles, focusing specifically on the vulnerabilities inherent in common web implementations and Incorporate best practices in navigation, usability and written content to design websites that give users easy access to the information they seek.

**Course Name: Computer Based Optimization Techniques**

**Course Code: MCA-404**

**Course Outcome:**

After successful completion of the course, students will be able to:

1. Build a mathematical programming model of a real-life situation
2. Understand the basic theory and methods for linear programming problems
3. Understand the basic properties of the interior point method and how to use it to solve convex optimization problems
4. Apply branch and bound and/or cutting plane algorithms to solve integer programming problems
5. Use a computer package to solve a mathematical programming problem that arises in practice

**Course Name: Microprocessor Design & Assembly Language**

**Course Code: MCA-405**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor's (8085) internal architecture and its operation within the area of manufacturing and performance.
2. Compare accepted standards and guidelines to select appropriate Microprocessor (8085) and to meet specified performance requirements.
3. Analyze assembly language programs; select appropriate assemble into the machine a cross-

assembler utility of a microprocessor.

4. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.
5. Learn microprocessor's (8086) internal architecture and its operation within the area of manufacturing and performance. Evaluate assembly language programs and download the machine code that will provide solutions to real-world control problems.
6. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.

**Course Name: Advanced Java Programming Lab**

**Course Code: MCA-451**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Explain the Internet Programming, using Java Applets
2. Illustrate reusable software component, using Java Bean.
3. Describe to access database through Java programs, using Java Data Base Connectivity (JDBC)
4. Apply event handling on AWT and Swing components.
5. Create and design dynamic web pages, using Servlets and JSP.
6. Identify the remote methods in an application using Remote Method Invocation (RMI)
7. Create and design, Stateful, Stateless and Entity Beans.
8. Create and design a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT)

**Course Name: WEB Technology Lab**

**Course Code: MCA-452**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Apply the concepts, design and implement dynamic websites with good aesthetic sense of designing.
2. Interpret the web pages using HTML and Cascading Styles sheets
3. Describe and analyze a web page and identify its elements and attributes.
4. Identify and Build web applications using PHP and create XML documents and Schema.
5. Create analyze and apply the role of languages like HTML, CSS, XML, JavaScript, PHP and protocols in the workings of the web and web applications.

**Course Name: Microprocessor Lab**

**Course Code: MCA-453**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Understand the working of a microprocessor.
2. Set up programming strategies and select proper mnemonics and run their program on the training boards.
3. Practice different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations in comparison.
4. Develop testing and experimental procedures on a Microprocessor to analyze their operation under different cases.
5. Prepare professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.
6. Demonstrate the ability to interact effectively on a social and interpersonal level with fellow students and will demonstrate the ability to divide up and share task responsibilities to complete assignments primarily via team based laboratory activities.

**Course Name: Communication & Soft Skills –IV**

**Course code: MCA-454**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Learn grammatical concepts and phonetics for correct sentence making and pronunciation.
2. Develop the habit of office management and formal writing which will help them at their work place.
3. Identify the different traits of Personal interview and group discussion to get a good job.
4. Apply their effective communication and soft skills at their work places.



## Training for Oracle Certified Associate Developer

**Course Name: RDBMS Concepts and Introduction to SQL**

**Course Code: MCA-406**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Familiarize with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.
2. Describe the fundamental elements of relational database management systems
3. Design ER-models to represent simple database application scenarios
4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
5. Improve the database design by normalization.

**Course Name: Oracle Database 10G Administration Workshop I Release-2-WDP (D17092GC31S)**

**Course Code: MCA-455**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Understand the database concepts and database management system software.
2. Illustrate major DBMS components and their function.
3. Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
4. Write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
5. Program a data-intensive application using DBMS APIs.

**Course Name: Oracle Database 10G Administration Workshop II Release-2-WDP (D17090GC31S)**

**Course Code: MCA-456**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Understand the functions of the Oracle Database Server and Oracle Database Client.
2. Understand and apply the Data Dictionary.
3. Understand and apply database statistics in relation to performance and integrity of the database.
4. Establish an in depth understanding of Database Administration using the DBMS Interfaces SVRMGR, OEM tools, Command Line interface and SQL\*Plus.
5. Apply the Relational Database Model to understand the Logical and Physical aspects of the DBMS

architecture.

6. Create, maintain and manipulate an Oracle Database.

7. Create and understand the application of user rolls, privileges, and the security of the databases

## Semester – V

**Course Name: Software Engineering**

**Course Code: MCA- 501**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Learn different software engineering approaches to resolve different software crises like failure in operation, non-meeting of requirements delayed delivery, over budget.
2. Compare different software process models to find the appropriate one.
3. Apply 4 GL techniques to develop software system.
4. Develop manage software project from project initiation to project closure.
5. Develop quality software systems with latest tools and techniques.

**\*Elective – I**

**Course Name: Advanced Database Concepts**

**Course Code: MCA 502.1**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Explain in detail DBMS architecture.
2. Illustrate in detail query processing and techniques involved in query optimization.
3. Illustrate the principles of concurrency control.
4. Examine the principles of recovery management.
5. Working successfully in a team by design and develop database application system as part of a team.

**Course Name: Data Warehousing & Data Mining**

**Course Code: MCA 502.2**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Recall the basic concepts of data mining and data warehousing along with its architecture.
2. Illustrate the various operational databases such as OLAP, MOLAP, ROLAP.
3. Summarize working of the data preprocessing, Data warehouse technology and data mining techniques.
4. Experiment with different other techniques for data mining such as neural networks and genetic

algorithms.

5. Distinguish and differentiate between the recent trends and uses of data mining on the social networks.

**Course Name: Android Programming**

**Course Code: MCA 502.3**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Describe Android platform, Architecture and features.
2. Design User Interface and develop activity for Android App.
3. Use Intent, Broadcast receivers and Internet services in Android App.
4. Design and implement Database Application and Content providers.
5. Use multimedia, camera and Location based services in Android App.
6. Discuss various security issues in Android platform

**Course Name: .NET Framework and ASP.NET**

**Course Code: MCA- 503**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Understand the Microsoft .NET Framework and ASP.NET page structure.
2. Design web application with variety of controls.
3. Access the data using inbuilt data access tools.
4. Use Microsoft ADO.NET to access data in web Application.
5. Configure and deploy Web Application.
6. Develop secured web application.

**Course Name: Compiler Design**

**Course Code: MCA- 504**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Identify and convert any instruction of a program to convert from source language to target language and should be recognize what happens at each and every phase of a compiler.
2. Demonstrate understanding of the different types of parsing techniques and should be in a position to solve the problem.
3. Build the source code meaning and & organize it into Intermediate code .
4. Differentiate and analyze the program segment and be able to generate the intermediate code.
5. Determine the optimized code and techniques which helps in reducing the no. of instructions in a program and also the utilization of registers in an effective way.

**\*Elective II**

**Course Name: Parallel Processing**

**Course Code: MCA 505.1**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Remember the basic concepts of parallel computing with its architecture and applications.
2. Summarize working of the different interconnection network such as Static, Dynamic, Cube and Omega network etc.
3. Experiment with different designing principles of pipelined processors and vector processing and job sequencing.
4. Distinguish and differentiate between the various Multiprocessor Architecture and Multiprocessor Scheduling Strategies.

**Course Name: Mobile Computing**

**Course code: MCA 505.2**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Understand about mobile communication with their different routing algorithms.
2. Understand different data backup schemes used in mobile network to store the data.
3. Explain about location management that is much important for mobile network.
4. Build the knowledge of how transactions are done through mobile, different security issues while mobile transaction.
5. Appraise different routing protocols used for routing the path like ADDV, DSR, FSR etc.

**Course Name: Cloud Computing**

**Course Code: MCA 505.3**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Explain the core issues of cloud computing such as security, privacy, and interoperability.
4. Choose the appropriate technologies, algorithms, and approaches for the related issues.
5. Identify problems, and explain, analyze, and evaluate various cloud computing solutions.
6. Provide the appropriate cloud computing solutions and recommendations according to the applications used.

**Course Name: Real Time Systems**

**Course Code: MCA -505.4**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Identify the important role of Real time and Embedded systems in current time
2. Summarize working of the real time operating system and their functionalities.
3. Apply different programming concepts of real time systems along with the database using uni-processor and multiprocessor environment.
4. Assess the emerging systems such as HART OS, VRTX etc.
5. Evaluate the various faults in real time systems along with clock synchronization.

**Course Name: Software Engineering Lab**

**Course Code: MCA-551**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Learn different tools to automate software development process like developing DFD, ERD, UML using Rational Rose, E-draw.
2. Understand role of designing in software development.
3. Design a complete software systems using the learnt tools and techniques.
4. Handle complete software development process including System Analysis, Design, development, testing, implementation and maintenance.
5. Create SRS, Software designing document, Test Plans, Maintenance Plan for software projects.

**Course Name: Advanced Database Concepts Lab**

**Course Code: MCA-552.1**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Explain and evaluate the fundamental theories and requirements that influence the design of modern database systems
2. Assess and apply database functions and packages suitable for enterprise database development and database management
3. Critically evaluate alternative designs and architectures for databases and data warehouses
4. Discuss and evaluate methods of storing, managing and interrogating complex data

5. Explain and critically evaluate database solutions for data exchange
6. Analyse the background processes involved in queries and transactions, and explain how these impact on database operations.

**Course Name: Data Warehousing and Data Mining Lab**

**Course Code: MCA-552.2**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Build a data warehouse and query it (using open source tools like Pentaho Data Integration Tool, Pentaho Business Analytics).
2. Perform data mining tasks using a data mining toolkit
3. Understand the data sets and data preprocessing.
4. Demonstrate the working of algorithms for data mining tasks such association rule mining, Classification, clustering and regression.
5. Exercise the data mining techniques with varied input values for different parameters.
6. Obtain Practical Experience Working with all real data sets.
7. Emphasize hands-on experience working with all real data sets.

**Course Name: Android Programming Lab**

**Course Code: MCA-552.3**

**Course outcomes:**

After successful completion of the course, students will be:

1. Expose to technology and business trends impacting mobile applications.
2. Competent with the characterization and architecture of mobile applications.
3. Competent with understanding enterprise scale requirements of mobile applications.
4. Competent with designing and developing mobile applications using one application development framework.

**Course Name: .NET Lab**

**Course Code: MCA-553**

**Course outcomes:**

After successful completion of the course, students will be able to:

1. Explain the programming skills and be familiar with programming environment.



2. Apply the concept so the students will be able to use ASP.NET controls in web applications.
3. Interpret the to debug and deploy ASP.NET web applications
4. Describe to create database driven ASP.NET web applications and web services
5. To develop, implement, and demonstrate Component Services, Threading, Remoting, Windows services, web
6. Identify Security in the .NET framework and Deployment in the .NET.
7. Create and develop Assemblies and Deployment in .NET, Application Development

**Course Name: Communication & Soft Skills –V**

**Course Code: MCA – 554**

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Learn how to fight with stage fear through various practice sessions.
2. Develop the habit of making formal presentations such as seminar and conference.
3. Identify individual differences, personality, human rights, values and ethics to develop their own personality.
4. Apply their effective communication and soft skills at their work place.

## Semester – VI

**Course Name: Industrial Project**

**Course Code: MCA- 651**

After successful completion of the Industrial Project, students will be able to:

1. Identify and align the project to the organization's strategic plans and business justification throughout its lifecycle.
2. Identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders.
3. Implement project management knowledge, processes, lifecycle and the embodied concepts, tools and techniques in order to achieve project success.
4. Utilize technology tools for communication, collaboration, information management, and decision support.
5. Implement general business concepts, practices, and tools to facilitate project success.
6. Adapt project management practices to meet the needs of stakeholders from multiple sectors of the society.
7. Apply project management practices to the launch of new programs, initiatives, products, services, and events relative to the needs of stakeholders.

**M.Tech (CS)**

## 1. Name of the Program: *M.Tech.*

### Program Outcomes:

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **2. Name of the Specific Program**

***M.Tech.- CS (Computer Science)***

### **Program Specific Outcomes:**

**PSO1** : Will be able to design, develop and implement efficient software for a given real life problem.

**PSO2** : Will be able to apply knowledge of AI, Machine Learning and Data Mining in analyzing big data for extracting useful information from it and for performing predictive analysis.

**PSO3** : Will be able to design, manage and secure wired/ wireless computer networks for transfer and sharing of information.

### **Course Outcomes**

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT1: Cryptography & Network Security

#### **Outcomes:**

After completing the course, students should be able to:

1. Describe network security services and mechanisms.
2. Apply Symmetrical and Asymmetrical cryptography.
3. Implement Data integrity, Authentication, Digital Signatures.
4. Implement Various network security applications, IPSec, Firewall, IDS, Web security, Email security, and Malicious software etc.
5. To understand how to deploy encryption techniques to secure data in transit across data networks.
6. To design security applications in the field of Information technology

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT2: AI and Fuzzy Logic

#### **Outcomes:**

At the end of the course, the student should be able to:

1. Represent knowledge using propositional calculus and predicate calculus.
2. Use inference rules to produce predicate calculus expression.
3. Solve problems using search techniques: depth-first, breadth-first, forward chaining, backward chaining, best-first, branch-and-bound, and-or-graph, and heuristic search.
4. Analyze and design a fuzzy logic system using fuzzy logic tool box.
5. Analyze and design a neural network system using neural network toolbox.
6. Analyze and design a rule-based expert system.
7. Design a machine vision system application.

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT3: Advanced Operating Systems

#### **Outcomes:**

At the end of the course, the student should be able to:

1. Analyze the structure of OS and basic architectural components involved in OS design.
2. Analyze and design the applications to run in parallel either using process or thread models of different OS.
3. Analyze the various device and resource management techniques for timesharing and distributed systems.
4. Understand the Mutual exclusion, Deadlock detection and agreement protocols of

- Distributed operating system.
5. Interpret the mechanisms adopted for file sharing in distributed Applications.
  - 6 Conceptualize the components involved in designing a contemporary OS

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT4: Advanced DBMS

**Outcomes:**

By the end of this module, students should be able to:

1. Explain and evaluate the fundamental theories and requirements that influence the design of modern database systems
2. Assess and apply database functions and packages suitable for enterprise database development and database management
3. Evaluate alternative designs and architectures for databases and data warehouses
4. Discuss and evaluate methods of storing, managing and interrogating complex data
5. Explain and critically evaluate database solutions for data exchange
6. Analyse the background processes involved in queries and transactions, and explain how these impact on database operation and design

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT5: Object Oriented Design & Construction

**Outcomes:**

By the end of this module, students should be able to:

1. To understand the object oriented concepts for designing object oriented models.
2. To understand the use of UML (Unified Modeling Language) for object oriented analysis and design.
3. To describe the step by step object oriented methodology of software development from problem statement through analysis, system design, and class design.
4. To understand the issues for implementing object oriented designs or models.
5. To understand the concept of different patterns for constructing software architectures through object oriented models.
6. To understand the problems, communicating with application experts, modeling enterprises, preparing documentation, and designing programs by using object oriented models.

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT6: Modern Compiler Design

**Outcomes:**

On successful completion of the course students will be able to:

1. Specify and analyse the lexical, syntactic and semantic structures of advanced language features
2. Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
3. Write a scanner, parser, and semantic analyser without the aid of automatic generators
4. Turn fully processed source code for a novel language into machine code for a novel computer
5. Describe techniques for intermediate code and machine code optimisation
6. Design the structures and support required for compiling advanced language features.

**Semester/Year:** I<sup>st</sup>/I<sup>st</sup>

**Name of the Course:** 1MT7: Advance Data Communication & Network

At the end of the course, the student should be able to:

1. The course is aimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers with special emphasis on IP, TCP & UDP and Routing algorithms.
2. Describe network architectures and classifications.
3. Some of the major topics which are included in this course are CSMA/CD, TCP/IP implementation, LANs/WANs, internetworking technologies,
4. Describe various network applications, and network security considerations.
5. Routing and Addressing. Provide the mathematical background of routing protocols.
6. Develop some familiarity with current research problems and research methods in advance computer networks.

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT1: Advanced Data Structures & Algorithms

**Outcomes:**

By the end of the course, the students will be able to:

1. Understand basic data structures such as arrays, linked lists, stacks and queues.
2. Design and analyze programming problem statements.
3. Choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem.
4. Understand the necessary mathematical abstraction to solve problems.
5. Analysis of efficiency and proofs of correctness
6. Design approaches in a problem specific manner.

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT2: Advanced Computer Architecture

**Outcomes:**

1. To be able to describe the various architectural concepts that may be applied to optimize and enhance the classical Von Neumann architecture into high performance computing hardware systems.
2. To be able to describe the design issues relating to the architectural options.
3. To be able to describe the challenges faced in the implementation of these high performance system.
4. To be able to identify, assess contemporary practical examples and contemporary application areas.
5. Develop the Pipelining Concept for a given set of Instructions.
6. Analyze the performance of different scalar Computers.

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT3: Real Time and Embedded Systems

**Outcomes:**

Student should be able to:

1. Demonstrate the ability to work within the constraints imposed by the real-time aspects of systems.
2. Apply correctly the terminology, and list applications, of real time systems.
3. Evaluate the implications of design choices on real time system implementation.
4. Apply simple real time functions using a real time operating system and a programming language suitable for embedded real-time systems.
5. Analyse and schedule real time task sets for a single processor.
6. Apply real-time methodology to multiprocessor, and distributed systems.

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT4: Data Mining and Bio Informatics

**Outcomes:**

Student should be able to:

1. Differentiate OnLine Transaction Processing and OnLine Analytical processing.
2. Learn Multidimensional schemas suitable for data warehousing.
3. Understand various data mining functionalities
4. knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics
5. existing software effectively to extract information from large databases and to use this information in computer modeling
6. problem-solving skills, including the ability to develop new algorithms and analysis methods

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT5: Soft Computing

**Outcomes:**

Upon completion of the course, the student are expected to

1. Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory.
2. Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic
3. To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations
4. Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications
5. Reveal different applications of these models to solve engineering and other problems.
6. Evaluate and compare solutions by various soft computing approaches for a given problem

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT6: Wireless and Mobile Communication

**Outcomes:**

Student should be able to:

1. Explain the Classification of mobile communication systems.
2. To explain the various terminology, principles, devices, schemes, concepts, algorithms and different methodologies used in Wireless Communication Networks.
3. To enable students to compare and contrast multiple division techniques, mobile communication systems, and existing wireless networks.
4. Analyze the radio channel characteristics and the cellular principle
5. Analyze the measures to increase the capacity in GSM systems- sectorization and Spatial Filtering for Interference Reduction
6. Ability to analyze improved data services in cellular communication

**Semester/Year:** II<sup>nd</sup> /I<sup>st</sup>

**Name of the Course:** 2MT7: Simulation and Modelling

**Outcomes:**

After successful completion of the course the students would be able to:

1. Create a relevant model for a multitude of problems from science and engineering, by extracting the necessary and relevant information regarding the problem.
2. Define the different modeling terms by analyzing the system or the data that is present.
3. Implement the model on the computer and from the results check for the validity of the model and correctness of the assumptions present in the model.
4. Analyze the outcomes (mostly through visualizations) and make predictions.
5. Understand the limitations of their model and nuances in computer modeling of systems.



6. Develop and model engineering problems and apply procedures for modeling systems using ARENA framework.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** 3MT1: Information Retrieval

**Outcomes:**

Student should be able to:

1. Understanding the basics of Information retrieval like what is a corpus, what is precision and recall of an IR system
2. Analyze the data structures like Inverted Indices used in Information retrieval systems
3. Understanding the basics of web search
4. Design the different techniques for compression of an index including the dictionary and its posting list
5. Understanding the different components of an Information retrieval system
6. Developing the ability of develop a complete IR system from scratch

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** 3MT2: Research Methodology

**Outcomes:**

Student should be able to:

1. Understand some basic concepts of research and its methodologies.
2. Identify appropriate research topics.
3. Select and define appropriate research problem and parameters.
4. Prepare a project proposal (to undertake a project)
5. Organize and conduct research (advanced project) in a more appropriate manner.
6. Write a research report and thesis.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** 3MT3: Parallel & Distributed Computing

**Outcomes:**

Student should be able to:

1. Develop and apply knowledge of parallel and distributed computing techniques and methodologies.
2. Apply design, development, and performance analysis of parallel and distributed applications.
3. Use the application of fundamental Computer Science methods and algorithms in the development of parallel applications.
4. Explain the design, testing, and performance analysis of a software system, and to be able to communicate that design to others.
5. To gain experience in a number of different parallel computing paradigms including memory passing, memory sharing, data-parallel and other approaches.
6. To develop improved communication and collaborative skills.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** 3MT4: Digital Signal Processing

**Outcomes:**

Students who successfully complete the course will be able to:

1. Determine the spectral coefficients and the Fourier series components of discrete-time signals.
2. Determine the frequency response and the z-transform of discrete-time systems.
3. Determine the discrete Fourier transform of discrete-time signals.
4. Calculate the outputs of discrete-time systems in response to inputs.
5. Design Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) filters, and evaluate the performance to meet expected system specifications using MATLAB.
6. Demonstrate an understanding of contemporary issues by reviewing recent technical articles

and establishing between the course material and the content of the article.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

Name of the Course: 3MT5: Data Mining & Knowledge Management

**Outcomes:**

1. Differentiate OnLine Transaction Processing and OnLine Analytical processing
2. Learn Multidimensional schemas suitable for data warehousing.
3. Understand various data mining functionalities.
4. Understands the relations between different components of information and knowledge management infrastructure.
5. Provides examples of the ways in which information and knowledge management infrastructure impacts contemporary organizations.
6. Analyze and discuss issues related to information and knowledge management infrastructure.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

Name of the Course: 3MT6: Animation and Advanced Computer Graphics

**Outcomes:**

After studying this subject students would have capability to make own web site and host their own web site on internet.

1. Analyze the basic raytracing algorithm and explain its limitations
2. Explain a local illumination model and derive the rendering equation
3. Design and implement a rendering algorithm based on Monte Carlo path tracing
4. Explain the physical laws of motion relevant for computer animation
5. Design and implement a mass-spring simulation system and a 2D rigid body simulator
6. Evaluate the performance and conceptual limits of the implemented simulation code

**PGDCA**

**Name of the Program: PGDCA**

**Program/Program Specific Outcomes:**

After Completing the Post Graduate Diploma of Computer Application (PGDCA) Students will be able to:

1. Understand and apply knowledge of computing and technological advances appropriate to the program.
2. Analyse a problem, and identify and define the logical modeling of solutions.
3. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet stakeholder needs.
4. A sense of professional, ethical, legal, security and social issues and responsibilities
5. Articulate the relevance of latest computing technologies in shaping the life.

## **Semester – I**

**Course Name: Mathematical Foundation of Computer Science**

**Course Code: PGDCA-101**

### **Course outcomes:**

After completion of the course students will be able to:

1. Identify logical notation and determine if the argument is or is not valid.
2. Understand the basic principles of sets and operations in sets and prove basic set equalities.
3. Apply counting principles to determine probabilities.
4. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
5. Demonstrate an understanding of relations and functions and be able to determine their properties.

**Course Name: Computer and ‘C’ Programming**

**Course Code: PGDCA-102**

### **Course outcomes:**

After completion of the course students will be able to:

1. Understand the fundamentals of C programming and the use of pointers, structures and unions.
2. Illustrate the loops and decision making statements to solve the problem.
3. Build and implement different operations on arrays.
4. Use functions to solve the given problem.
5. Implement file operations in C programming for a given application.

**Course Name: Computer Organization & Architecture**

**Course Code: PGDCA-103**

**Course Outcomes:**

After completion of the course students will be able to:

1. Understand the architecture and functionality of central processing unit.
2. Use appropriate tools to design verify and test the CPU architecture.
3. Learn the concepts of parallel processing, pipelining and interprocessor communication.
4. Exemplify in a better way the I/O and memory organization.
5. Analyze some of the design issues in terms of speed, technology, cost, performance.
6. Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.

**Course Name: Database Management System**

**Course Code: PGDCA- 104**

**Course outcomes:**

After completion of the course students will be able to:

1. Describe the fundamental elements of relational database management systems
2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
3. Design ER-models to represent simple database application scenarios.
4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
5. Improve the database design by normalization and will be familiar with basic recovery and concurrency control scheme.

**Course Name: Accounting and Financial Management**

**Course Code: PGDCA-105**

**Course outcomes:**

After completion of the course students will be able to:

1. Define bookkeeping and accounting
2. Explain the general purposes and functions of accounting
3. Explain the differences between management and financial accounting
4. Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses
5. Identify the main financial statements and their purposes.

**Course Name: Office Management Lab**

**Course Code: PGDCA-151**

**Course Outcomes:**

After completion of the course students will be able to:

1. Identify and recall the use of CUI and GUI based operating systems.
2. Summarize the working of various Application Software's such as MS Word, MS Excel and MS PowerPoint.
3. Apply the various features and functionalities of MS Word, MS Excel and MS PowerPoint.
4. Design and develop various Word files, spreadsheets and PowerPoint presentations.

**Course Name: 'C' Programming Lab**

**Course Code: PGDCA-152**

**Course outcomes:**

After completion of the course students will be able to:

1. Know concepts in problem solving and do programming in C language.
2. Write diversified solutions using C language.
3. Develop the use of the C programming language to implement various algorithms.
4. Develop the basic concepts and terminology of programming in general.
5. Introduce more advanced features of the C language.

**Course Name: DBMS Lab**

**Course Code: PGDCA-153**

**Course outcomes:**

After completion of the course students will be able to:

1. Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS
2. Develop a clear understanding of the conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management
3. Attain a good practical understanding of the SQL.
4. Develop clear concepts about Relational Model.
5. Examine techniques pertaining to Database design practices • Prepare various database tables and joins them using SQL commands
6. Understand the basic concepts of Concurrency Control & database security
7. Understand the basic concept how storage techniques are used to backup data and maintain data access performance in peak hours
8. Evaluate options to make informed decisions that meet data storage, processing, and retrieval needs.

**Course Name: Communication & Soft Skills-I**

**Course Code: PGDCA-154**

**Course Outcomes:**

By the end of this course students will be able to-

1. Learn the vocabulary part to utilize that in their Communication Skills.
2. Develop the habit of listening, writing, speaking and reading to apply those in their carrier.
3. Identify Emotional intelligence and Brain Power and to utilize that at their work place.
4. Apply communication skills and soft skills in their respective work places.



## Semester – II

**Course Name: Data Structure Using C**

**Course Code: PGDCA-201**

**Course Outcomes:**

After completion of the course students will be able to:

1. Understand the basic data structures (such as an array-based list, linked list, stack, queue, binary search tree) and algorithms.
2. Acquire the knowledge to analyze, design, apply and use data structures and algorithms to solve engineering problems
3. Evaluate the solutions of problems by implementing them using the advance data structures.
4. Apply modern tool to solve engineering problems using C.
5. Synthesize algorithm or program code or segment that contains iterative constructs and analyze the code segment.

**Course Name: Computer Oriented Numerical and Statistical Techniques**

**Course Code: PGDCA-202**

**Course outcomes:**

After completion of the course students will be able to:

1. Recall theoretical knowledge for solving simple problems.
2. Understand the ability to test and evaluate the methods to get numerical solution to ODE.
3. Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems.
4. Compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method.
5. Apply method of interpolation and extrapolation for prediction.

**Course Name: Operating System**

**Course code: PGDCA-203**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the main components of an OS & describe the important computer system resources

functions and the types of Operating Systems.

2. Understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS and understand the factors in OS design. To understand deadlock and use bankers algorithm for the avoidance of the deadlock
3. Analyze and evaluate the behaviour of critical resources and semaphores and apply the techniques for achieving synchronization and coordination in an operating system. To understand memory allocation, page replacement algorithms and apply the page replacement algorithms for a set of frames. To analyze how files are stored in secondary storage and the different allocation
4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a secure OS.

**Course Name: Data Communication & Computer Networks**

**Course Code: PGDCA-204**

**Course Outcomes:**

After completion of the course students will be able to:

1. Explain the details about computer network, their application and advantages. It explains different transmission technology used for communication.
2. Explains the network security using firewall and different algorithm used for security purpose. It explains the issue related to the network that helps to better understand how we secure our network for threats.
3. Acquire knowledge of OSI model with their different protocols used at particular layers and different routing protocols.
4. Acquire knowledge of LAN, their use and simulated result generated by different measuring tools.
5. Illustrate different types of Ethernet used in network for transmission of data.

**Course Name: Environmental Science**

**Course Code: PGDCA -205**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
2. Articulate the basic structure, functions, and processes of key social systems affecting the environment.
3. Explain how perceptions of environmental problems, the problems themselves, and the proposed solutions are shaped by their historical, geographical, social, political, economic, and cultural contexts.
4. Apply knowledge of the sciences within an interdisciplinary context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, population, resource management, and loss of biodiversity.

**Course Name: Data Structures Using C Language Lab**

**Course Code: PGDCA-251**

**Course outcomes:**

After completion of the course, students will be able to:

1. Understand appropriate data structures as applied to specified problem definition.
2. Acquire knowledge about operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.
3. Evaluate Linear and Non-Linear data structures.
4. Implement appropriate sorting/searching technique for given problem.
5. Design advance data structure using Non-Linear data structure.
6. Determine and implement the complexity of given Algorithms.

**Course Name: Numerical & Statistical Techniques Lab**

**Course Code: PGDCA-252**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Learn fundamentals and concepts of statistical and optimization methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, skewness and kurtosis.
2. Learn important theorems, different formulae and practical applications of these statistical and optimization methods in the field
3. Understand the ability to test and evaluate the methods to get numerical solution to ODE.
4. Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems

**Course Name: Unix & Shell Programming Lab**

**Course Code: PGDCA-253**

**Course Outcomes:**

After completion of the course, students will be able to:

1. Understand the basic Unix structure, commands and utilities of the UNIX operating system and to work confidently in Unix/Linux environment and open systems.
2. Write simple and complex shell scripts to automate various tasks using shell programming.
3. Use simple and advanced filters and frame regular expressions.
4. Demonstrate the file and file and process related commands.

**Course Name: Communication & Soft Skills -II**

**Course Code: PGDCA-254**

**Course outcomes:**

After completion of the course, students will be able to:

1. Learn the basics of Communication such as purpose and barriers of Communication and Business writing.
2. Develop the habit of interpersonal and intercultural communication and apply those in their career.
3. Identify Group Dynamics and Leadership Skills and utilize that at their work place.
4. Apply communication skills and soft skills and different personality traits at their respective work place.

**BCA**

## **Name of the Program: Bachelor of Computer Applications (BCA)**

### **Program Outcomes:**

After Completing the Bachelors of Computer Applications (BCA) Students will be able to:

1. Demonstrate the ability to identify a business problem, isolate its key components, analyze and assess the salient issues, set appropriate criteria for decision making, and draw appropriate conclusions and implications for proposed solutions.
2. Understand wide range of computer applications, computer organization, techniques of computer networking, software engineering-Commerce, Web Designing, Big Data, Python and Advance JAVA etc.
3. Recognize & appreciate the role of computing in a wide variety of activities & application of Modern society, including commerce, education, communication.
4. Improve their computer literacy, their basic understanding of operative systems and a working knowledge of software commonly used in academic and professional environments.
5. Explain how computing systems improve productivity, reliability & transparency of business, governance, education & research organizations.
6. Articulate the relevance of latest computing technologies in shaping the life.

## **Semester I**

### **Introduction to Problem Solving Using 'C'**

**Course Code: 2018-BCADC-101**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming
2. Illustrate concept of compile and debug programs in C language and use different data types for writing the programs.
3. Design programs connecting decision structures, loops and functions.
4. Distinguish between call by value and call by address.
5. Understand the dynamic behavior of memory by the use of pointers.
6. Use different data structures and create / manipulate basic data files and developing applications for real world problems.

### **Fundamentals of Computers and PC Tools**

**Course Code: 2018-BCADC-102**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the important role of computers and why computers are essential components in business and society along with their various components.
2. Demonstrate the building up of Sequential and combinational logic from basic gates.
3. Apply different categories of programs, system software and applications. Organize and work with files and folders. Utilize the Word Processor, Worksheet and PowerPoint for various applications.
4. Assess the emerging technologies in the area like Big Data, Data Mining and Cloud Computing.
5. Bridge the fundamental concepts of computers with the present level of knowledge of the students.

### **Elementary Mathematics**

**Course Code: 2018-BCADC-103**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Use elementary algebra, geometry, number concepts, probability and problem solving.
2. Demonstrate familiarity with number theory and statistics.
3. Think mathematically and exhibit confidence in their mathematical ability.
4. Explain why mathematical thinking is valuable in daily life.
5. Represent and statistically analyze data both graphically and numerically.



**Digital Electronics****Course Code: 2018-BCADE-104****Course Outcomes:****At the completion of the course, a student will be able to:**

1. Recall fundamentals and principles of analog circuits and electronic devices in electrical and electronic engineering. Acquire basic knowledge of physical and electrical conducting properties of semiconductors. Develop the ability to understand the design and working of BJT / FET amplifiers.
2. Employ the codes and number systems converting circuits and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance, and efficiency.
3. Understand different types of digital electronic circuits using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
4. Analyze, design and implement sequential logic circuits. Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real-world applications.
5. Design different types of with and without memory element digital electronic circuits for a particular operation, within the realm of economic, performance, efficiency, user-friendly and environmental constraints
6. Evaluate frequency response to understand the behavior of Digital electronic circuits. Create and analyze electronic circuits

**English-I****Course Code: 2018-BCAAE-105****Course Outcomes****At the completion of the course, a student will be able to:**

1. Recall various grammatical concepts like tenses, modals, active & passive etc.
2. Differentiate between tenses, modals, prepositions etc.
3. Apply the knowledge of grammar in their day to day conversation.
4. Develop language proficiency by practicing speaking, listening, reading and writing skills.
5. Build a capacity to learn new words to enhance their vocabulary.

**'C' Programming Lab****Course Code: 2018-BCADC-101P****Course Outcomes:****At the completion of the course, a student will be able to:**

1. Identify situations where computational methods and computers would be useful.
2. Summarize the programming tasks using techniques learned and write pseudo-code.
3. Choose the right data representation formats based on the requirements of the problem.
4. Use comparisons and limitations of the various programming constructs and choose the right one for the task in hand.

5. Implement file Operations in C programming for a given application.

### **Office Automation Tools Lab**

**Course Code: 2018-BCADC-102P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify and recall the use of CUI and GUI based operating systems.
2. Summarize the working of various application software's such as MS Word, MS Excel and MS PowerPoint.
3. Apply the various features and functionalities of MS Word, MS Excel and MS PowerPoint.
4. Design and develop various Word files, spreadsheets and PowerPoint presentations.

### **Digital Electronics Lab**

**Course Code: 2018-BCADE-104P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall and learn the basics of logic gates & code conversion.
2. Develop design capability in the binary arithmetic logic circuit
3. Apply knowledge in Combinational Logic Problem formulation and verify their functionalities.
4. Examine design capability in synchronous and asynchronous sequential circuits like flip flops, Shift registers, and counters
5. Evaluate the basic understanding of digital circuits and to verify their operation.

## **Semester-II**

### **Database Management System**

**Course Code: 2018-BCADC-201**

#### **Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Identify and organize the information from a DBMS and maintain and retrieve efficiently, and effectively.
2. Illustrate the role of Database Management Systems in information technology applications within organizations and structured query languages to extract information from large datasets
3. Applying contemporary logical design methods and tools for databases and derive a physical design for a database from its logical design.
4. Analyze and design a real database application.
5. Evaluate a real database application using a database management system.

### **Discrete Mathematics**

**Course Code: 2018-BCADC-202**

#### **Course Outcome:**

**After completion of this course Student will be able to:**

1. Simplify and evaluate basic logic statements including compound statements, implications, inverses, converses, and contra positives using truth tables and the properties of logic.
2. Express a logic sentence in terms of predicates, quantifiers, and logical connectives
3. Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.
4. Determine the domain and range of a discrete or non-discrete function, graph functions, identify one-to-one functions, perform the composition of functions, find and/or graph the inverse of a function, and apply the properties of functions to application problems.
5. Verify that a simple program segment with given initial and final assertions is correct using the rule of inference for verification of partial correctness and loop invariants.

## **Analysis of Algorithms and Data Structures**

**Course Code: 2018-BCADC-203**

### **Course Outcome:**

**After completion of this course Student will be able to:**

1. Understand basic data structures (such as an array based list, linked list, stack, queue, binary search tree) and algorithms.
2. Acquire the knowledge to analyze, design, apply and use data structures and algorithms to solve engineering problems
3. Evaluate the solutions of problems by implementing them using the advance data structures .
4. Apply modern tool to solve engineering problems using C.
5. Describe an understanding of analysis of algorithms.
6. Synthesize an algorithm or program code or segment that contains iterative constructs and analyze the code segment.

## **HTML Programming**

**COURSE CODE: 2018-BCASE-204**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember about the concept of web application.
2. Illustrate d concepts of interactive web page(s) using HTML, CSS and JavaScript.
3. Build a responsive web site using HTML5 and CSS3.
4. Assess role of HTML and CSS in effective web development.
5. Develop an effective web application using HTML and CSS as per the plan.

## **Environment Science**

**Course Code: 2018-BCAE-205**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify and justify key stakeholders in humanities and social sciences that need to be a part of sustainable solutions.
2. Articulate the interdisciplinary context of environmental issues.
3. Formulate an action plan for sustainable alternatives that integrate science, humanist, and social perspectives.
4. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
5. Access the qualitative and quantitative research methods to gain empirical evidence bearing on evaluation of environmentally sustainable alternatives.

**Database Management Lab:**  
**Course Code: 2018-BCADC-201P**

**Course Outcomes:**  
**At the completion of the course, a student will be able to:**

1. Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS.
2. Develop a clear understanding of the conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management.
3. Understand the basic concepts of Concurrency Control & database security
4. Understand the basic concept how storage techniques are used to backup data and maintain data access performance in peak hours
5. Attain a good practical understanding of the SQL.
6. Develop clear concepts about Relational Model.
7. Examine techniques pertaining to Database design practices and prepare various database tables and joins them using SQL commands
8. Evaluate options to make informed decisions that meet data storage, processing, and retrieval needs.

**Data Structures Using 'C' Lab**  
**Course Code: 2018-BCADC-203P**

**Course Outcomes:**  
**At the completion of the course, a student will be able to:**

1. Recall how to analyze algorithms and estimate their worst-case and average-case behavior (in easy cases).
2. Illustrate a given problem and develop an algorithm to solve the problem
3. Determine the fundamental data structures and with the manner in which data structures can be best be implemented
4. Design the description of algorithms in both functional and procedural styles.
5. Implement theoretical knowledge in practice (via the practical component of the course).

### **Semester-III**

#### **Operating System**

**Course Code: 2018-BCADC-301**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall the main components of an OS & describe the important computer system resources functions and the types of Operating Systems.
2. Explain the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS and understand the factors in OS design.
3. Evaluate the requirement for process synchronization and coordination handled by operating system
4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a contemporary OS.

#### **OOPs Using C++**

**Course Code: 2018-BCADC-302**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Have profound knowledge of object oriented programming.
2. Demonstrate the difference between the solutions offered by traditional imperative
3. Illustrate problem solving methods and object-oriented methods.
4. Explain the class inheritance, data encapsulation, polymorphism as fundamental building blocks to generate reusable code.
5. Understand and implement error handling and file handling routines.

#### **Software Engineering**

**Course Code: 2018-BCADC-303**

#### **Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Communicate effectively with a range of audiences
4. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
5. Acquire and apply new knowledge as needed, using appropriate learning

strategies

6. Develop an efficient software using latest tools and techniques. Use of computer aided designing and automated testing tools.

### **Computer Networks**

**Course Code: 2018-BCADE-304**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Independently understand basic computer network technology.
2. Identify the different types of network topologies and protocols.
3. Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
4. Identify the different types of network devices and their functions within a network
5. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

### **MySQL (SQL/PL-SQL)**

**Course Code: 2018-BCASE- 305**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember key concepts related to SQL including DDL, DML,DCL,DTL commands.
2. Understanding of PL/SQL elements like Cursors, Procedures, functions, triggers.
3. Applying cursors, procedures, functions and triggers on student database to perform different updating and manipulations in existing tables in database. Use of stored procedures, functions, cursors to ensure max reusability.
4. Analyze the limitations of SQL and supports provided by procedural language to develop a effective application.
5. Built a strong adherence in procedural language while creating application.

### **Operating System Lab**

**Course Code: 2018-BCADC-301P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the functions, structures and history of operating systems understand of design issues associated with operating systems
2. Apply concepts including scheduling, synchronization and deadlocks.
3. Distinguish multithreading , Multitasking & Multiprogramming and also able to explain the concept of memory management including virtual Evaluate the requirement for process synchronization and coordination handled by operating system

4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a contemporary OS.

### **OOPs Using C++ Lab**

**Course Code: 2018-BCADC-302P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

After successful completion of the course, students will be able to:

1. Acquire profound knowledge of object oriented programming.
2. Demonstrate the difference between the solutions offered by traditional imperative problem solving method and object-oriented method
3. Explain the class inheritance, data encapsulation, polymorphism as fundamental building blocks to generate reusable code.
4. Understand and implement error handling and file handling routines.

### **Software Engineering Lab**

**Course Code: 2018-BCADC-303P**

#### **Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Compare between traditional ad-hoc method and SDLC based approach of software development.
2. Understand different theories, models, and techniques related to SDLC.
3. Apply the software engineering lifecycle for different projects by demonstrating competence in communication, planning, analysis, design, construction, and deployment
4. An ability to work in one or more significant application domains. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
5. Develop of efficient software using latest tools and techniques. Use of computer aided designing and automated testing tools.



## **Semester IV**

### **Computer Architecture**

**Course Code: 2018-BCADC-401**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the theory and architecture of central processing unit.
2. Analyze some of the design issues in terms of speed, technology, cost, performance.
3. Design a simple CPU with applying the theory concepts.
4. Use appropriate tools to design verify and test the CPU architecture.
5. Learn the concepts of parallel processing, pipelining and interprocessor communication.
6. Understand the architecture and functionality of central processing unit.
7. Exemplify in a better way the I/O and memory organization.
8. Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.

### **Programming in Java**

**Course Code: 2018-BCADC-402**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall the basic knowledge on Object Oriented concepts specially in java.
2. Create & design applications using Object Oriented Programming Concepts using java
3. Describe for compile, test and run Java programs comprising more than one class
4. Create simple data structures like arrays in a Java program
5. Explain members of classes found in the Java API

### **Internet and Web Design**

**Course Code: 2018-BCADE-403**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Apply the basic concepts for network implementation. Review the current topics in Web & Internet technologies.
2. Interpret and Learn the basic working scheme of the Internet and World Wide Web.
3. Describe fundamental tools and technologies for web design.
4. Identify and comprehend the technologies for Hypertext Mark-up Language (HTML).
5. Create and specify design rules in constructing web pages and sites.

**E-Commerce Technologies**  
**Course Code: 2018-BCADE-404**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify and explain fundamental web site tools including design tools, programming tools, and data processing tools.
2. Apply the solutions on finding major electronic payment issues and options.
3. Acquire the knowledge of security issues and explain procedures used to protect against security threats.
4. Communicate effectively in ways appropriate to the discipline, audience and purpose.
5. Implement the corrective measures to management issues underlying e-Commerce issues including organizational structure, strategic planning, goal setting, corporate social responsibility, international arena, changing market intermediaries, resource allocation and customer service.

**System Administration and Maintenance**

**Course Code: 2018-BCASE-405**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the installation and configuration of mainstream operating systems, important network services.
2. Explain about disaster recovery procedures, and techniques for ensuring the security of the system.
3. Manage system resources, including methods for tracking system metrics.
4. Apply these skills in the administration of an actual computer system with actual users.
5. Configure desktop environment that users would normally require for day to day operations.

**English-II**

**Course Code: 2018-BCAAE-406**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Learn the grammatical concepts and communication process for effective communication skills.
2. Develop the habit of reading and understanding the text for better comprehensive skills.
3. Identify the importance of Time Management, Goals and Business etiquette.
4. Apply their effective communication and writing skills at their work place.

**Java Programming Lab****Course Code: Java 2018-BCADC-402P****Course outcomes:****At the completion of the course, a student will be able to:**

1. Recall traditional imperative design and object-oriented Design using java
2. Understand class structures as fundamental, modular building blocks
3. Describe for compile, test and run Java programs comprising more than one class
4. Create simple data structures like arrays in a Java program
5. Create and Specify classes found in the Java API

**Internet and Web Design Lab****Course Code: 2018-BCADE-403P****Course outcomes:****At the completion of the course, a student will be able to:**

1. Recall basic concepts for network implementation. Review the current topics in Web & Internet technologies.
2. Interpret and learn the basic working scheme of the Internet and World Wide Web.
3. Describe fundamental tools and technologies for web design.
4. Identify and comprehend the technologies for Hypertext Mark-up Language (HTML).
5. Create and Specify design rules in constructing web pages and site

## **Semester-V**

### **Multimedia Applications**

**Course Code: 2018-BCADC-501**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the technical aspect of Multimedia Systems.
2. Understand various file formats for audio, video and text media.
3. Develop various Multimedia Systems applicable in real time.
4. Design interactive multimedia software.
5. Apply various networking protocols for multimedia applications.
6. Evaluate multimedia application for its optimum performance.

### **Programming in .NET**

**Course Code: 2018-BCADC-502**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the programming skills and be familiar with programming environment.
2. Apply the concept so the students will be able to use ASP.NET controls in web applications.
3. Interpret the to debug and deploy ASP.NET web applications
4. Describe to create database driven ASP.NET web applications and web services
5. To develop, implement, and demonstrate Component Services, Threading, remoting, Windows services.
6. Create and develop Assemblies and Deployment in .NET, Application Development.

### **Data Mining**

**Course Code: 2018-BCADC-503**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the basic concepts and need of the data warehousing and data mining with its various application.
2. Summarize the Data Warehousing Architecture and Data Mining Architecture along with the physical design and deployment process.
3. Experiment with single dimensional and multi dimensional association rules for data mining.
4. Assess the various classification techniques such as Bayesian classification, Classifier accuracy, Clustering Methods and Outlier analysis etc.
5. Determine the various applications and algorithms for data mining, text mining and web mining.

### **Mobile Applications**

**Course Code: 2018-BCADE-504**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. It Recall the use of built-in widgets and components, work with the database to store data locally.
2. Explain competent with the characterization and framework of mobile applications.
3. Design and develop mobile applications using application development framework.
4. Distinguish the concepts of Event Driven Programming and various issues in developing Mobile Application.
5. Give opinion about the application development tools and the framework. Ways to maintain state between application invocations, remote data storage and communication.

**Android Programming**

**Course Code: 2018-BCASE-505**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember Android platform, Architecture and features.
2. Understand the User Interface and develop activity for Android App.
3. Design and implement Database Application and Content providers.
4. Use multimedia, camera and Location based services in Android App.
5. Discuss various security issues in Android platform

**Multimedia (FLASH as a multimedia SAV) Lab**

**COURSE CODE: 2018-BCADC-501P**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the basic tools and components of a multimedia project.
2. Apply basic elements and principles of photo editing software to achieve a great photo
3. Apply effects like color, shadows, alteration of backgrounds, cropping and Collage making.
4. Create simple shapes using animation editing software and design.
5. Prepare and present a multimedia portfolio containing electronic media that demonstrates multimedia and problem-solving skills.

**.NET Programming Lab**

**Course Code: 2018-BCADC-502P**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Apply the concept so the students will be able to use ASP.NET controls in web applications.
2. Interpret the debug and deploy ASP.NET web applications.
3. Develop, implement, and demonstrate Component Services, Threading, remoting, Windows services.
4. Identify Security in the .NET framework and Deployment in the .NET.
5. Develop Assemblies and Deployment in .NET, Application Development

## **Semester-VI**

### **PHP Programming**

**Course Code: 2018-BCADC-601**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember basic concept of PHP code to produce outcomes and solve problems.
2. Design and insert data using PHP and MySQL.
3. Apply basic knowledge for test, debug, and deploy web pages containing PHP and MySQL.
4. Creating Infrastructure and maintain complex Data flow with security.
5. Develop an application using PHP and MySQL

### **Project Work/Dissertation**

**Course Code: 2018-BCADC-602**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the real world problems and challenges that need IT based solutions and create very precise specifications of the IT solution to be designed.
2. Understand project characteristics and various stages of a project.
3. Identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders.
4. Implement project management knowledge, processes, lifecycle and the embodied concepts, tools and techniques in order to achieve project success.
5. Demonstrate an ability to work in teams and manage the conduct of the research study.

### **Cloud Computing**

**Course Code: 2018-BCADE-603**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember concept of Cloud Computing, benefit and challenges associated with it.
2. Understand various cloud services, cloud service providers and frameworks being used.
3. Describe importance of virtualization along with their technologies.
4. Identify the need for the virtualization and advantage and limitations of using virtualization concept.
5. Analyze the open stack & Google Cloud platform components and understand Mobile Cloud Computing
6. Investigate the security aspect in cloud, standards for security framework, challenges.

### **Software Testing Concepts**

**Course Code: 2018-BCADE-604**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Learn systematic approach to the development, operation, maintenance, and retirement of software.
2. Learn how to use available resources to develop software, reduce cost of software and how to maintain

quality of software.

3. Illustrate Methods and tools of testing and maintainace of software's.
4. Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
5. Develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software at low cost and with a small cycle time.

### **'R' Programming**

**Course Code: 2018-BCASE-605**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify programming logics and develop efficient programs using R (and similar high-level languages).
2. Explain & describe routine a specialized data manipulation/management and analysis tasks.
3. Apply and build document, share, and collaborate on code development using a suite of Open Source.
4. Develop methods and procedures

### **PHP Lab:**

**Course Code: 2018-BCADC-601P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the major areas and challenges of web programming.
2. Distinguish web-related technologies.
3. Use advanced topics in HTML5, CSS3, JavaScript
4. Use a server-side scripting language, PHP
5. Design and implement typical static web pages and interactive web applications, dynamic web applications.

### **Cloud Computing Lab**

**Course Code: 2018-BCADE-603P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Define & implement Virtualization using different types of Hypervisors
2. Experience storage, calendar and document editing services offered by Google cloud.
3. Describe the functioning of Platform as a Service
4. Explore the Microsoft cloud platform.
5. Analyze and understand the functioning of different components involved in Amazon web services cloud platform.
6. Design & Synthesize Storage as a service using own Cloud

**Software Testing Lab:**  
**Course Code: 2018-BCAAE-604P**

**Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall knowledge of contemporary issues in software testing, such as component-based software testing problems.
2. Identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
3. Differentiate various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects.
4. Ability to use software testing methods and modern software testing tools for their testing projects.
5. Evaluate a software by applying software testing methods.



# **BCA - Cyber Security**

## **Name of the Program: Bachelor of Computer Applications (BCA)**

### **Program Outcomes:**

After Completing the Bachelors of Computer Applications (BCA) Students will be able to:

1. Demonstrate the ability to identify a business problem, isolate its key components, analyze and assess the salient issues, set appropriate criteria for decision making, and draw appropriate conclusions and implications for proposed solutions.
2. Understand wide range of computer applications, computer organization, techniques of computer networking, software engineering-Commerce, Web Designing, Big Data, Python and Advance JAVA etc.
3. Recognize & appreciate the role of computing in a wide variety of activities & application of Modern society, including commerce, education, communication.
4. Improve their computer literacy, their basic understanding of operative systems and a working knowledge of software commonly used in academic and professional environments.
5. Explain how computing systems improve productivity, reliability & transparency of business, governance, education & research organizations.
6. Articulate the relevance of latest computing technologies in shaping the life.

### **Program Specific Outcome: BCA-Cyber Security**

After Completing the Bachelors of Computer Applications – Cyber Security students will be able to:

1. Demonstrate the required knowledge that ensures understanding of fundamental concepts, design and control strategy, and application security in web techniques to secure information.
2. Understand the models, tools and techniques for enforcement of Security Policies, with emphasis on Information Management, Cryptography, Cyber Forensics and Ethical Hacking.
3. Recognize threats to information security, analyze their impact and propose suitable countermeasures
4. Build various aspects of securing systems, servers, Internet, user identity and management.

## **Semester I**

### **Introduction to Problem Solving Using 'C'**

**Course Code: 2018-BCADC-101**

#### **Course Outcomes:**

##### **At the completion of the course, a student will be able to:**

1. Understand the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming
2. Illustrate concept of compile and debug programs in C language and use different data types for writing the programs.
3. Design programs connecting decision structures, loops and functions.
4. Distinguish between call by value and call by address.
5. Understand the dynamic behavior of memory by the use of pointers.
6. Use different data structures and create / manipulate basic data files and developing applications for real world problems.

### **Fundamentals of Computers and PC Tools**

**Course Code: 2018-BCADC-102**

#### **Course Outcomes:**

##### **At the completion of the course, a student will be able to:**

1. Identify the important role of computers and why computers are essential components in business and society along with their various components.
2. Demonstrate the building up of Sequential and combinational logic from basic gates.
3. Apply different categories of programs, system software and applications. Organize and work with files and folders. Utilize the Word Processor, Worksheet and PowerPoint for various applications.
4. Assess the emerging technologies in the area like Big Data, Data Mining and Cloud Computing.
5. Bridge the fundamental concepts of computers with the present level of knowledge of the students.

### **Elementary Mathematics**

**Course Code: 2018-BCADC-103**

#### **Course Outcomes:**

##### **At the completion of the course, a student will be able to:**

1. Use elementary algebra, geometry, number concepts, probability and problem solving.
2. Demonstrate familiarity with number theory and statistics.
3. Think mathematically and exhibit confidence in their mathematical ability.
4. Explain why mathematical thinking is valuable in daily life.
5. Represent and statistically analyze data both graphically and numerically.

**Digital Electronics****Course Code: 2018-BCADE-104****Course Outcomes:****At the completion of the course, a student will be able to:**

1. Recall fundamentals and principles of analog circuits and electronic devices in electrical and electronic engineering. Acquire basic knowledge of physical and electrical conducting properties of semiconductors. Develop the ability to understand the design and working of BJT / FET amplifiers.
2. Employ the codes and number systems converting circuits and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance, and efficiency.
3. Understand different types of digital electronic circuits using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
4. Analyze, design and implement sequential logic circuits. Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real-world applications.
5. Design different types of with and without memory element digital electronic circuits for a particular operation, within the realm of economic, performance, efficiency, user-friendly and environmental constraints
6. Evaluate frequency response to understand the behavior of Digital electronic circuits. Create and analyze electronic circuits

**English-I****Course Code: 2018-BCAAE-105****Course Outcomes****At the completion of the course, a student will be able to:**

1. Recall various grammatical concepts like tenses, modals, active & passive etc.
2. Differentiate between tenses, modals, prepositions etc.
3. Apply the knowledge of grammar in their day to day conversation.
4. Develop language proficiency by practicing speaking, listening, reading and writing skills.
5. Build a capacity to learn new words to enhance their vocabulary.

**'C' Programming Lab****Course Code: 2018-BCADC-101P****Course Outcomes:****At the completion of the course, a student will be able to:**

1. Identify situations where computational methods and computers would be useful.
2. Summarize the programming tasks using techniques learned and write pseudo-code.
3. Choose the right data representation formats based on the requirements of the problem.
4. Use comparisons and limitations of the various programming constructs and choose the right one for the task in hand.

5. Implement file Operations in C programming for a given application.

### **Office Automation Tools Lab**

**Course Code: 2018-BCADC-102P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify and recall the use of CUI and GUI based operating systems.
2. Summarize the working of various application software's such as MS Word, MS Excel and MS PowerPoint.
3. Apply the various features and functionalities of MS Word, MS Excel and MS PowerPoint.
4. Design and develop various Word files, spreadsheets and PowerPoint presentations.

### **Digital Electronics Lab**

**Course Code: 2018-BCADE-104P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall and learn the basics of logic gates & code conversion.
2. Develop design capability in the binary arithmetic logic circuit
3. Apply knowledge in Combinational Logic Problem formulation and verify their functionalities.
4. Examine design capability in synchronous and asynchronous sequential circuits like flip flops, Shift registers, and counters
5. Evaluate the basic understanding of digital circuits and to verify their operation.

## **Semester-II**

### **Database Management System**

**Course Code: 2018-BCADC-201**

#### **Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Identify and organize the information from a DBMS and maintain and retrieve efficiently, and effectively.
2. Illustrate the role of Database Management Systems in information technology applications within organizations and structured query languages to extract information from large datasets
3. Applying contemporary logical design methods and tools for databases and derive a physical design for a database from its logical design.
4. Analyze and design a real database application.
5. Evaluate a real database application using a database management system.

### **Discrete Mathematics**

**Course Code: 2018-BCADC-202**

#### **Course Outcome:**

**After completion of this course Student will be able to:**

1. Simplify and evaluate basic logic statements including compound statements, implications, inverses, converses, and contra positives using truth tables and the properties of logic.
2. Express a logic sentence in terms of predicates, quantifiers, and logical connectives
3. Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.
4. Determine the domain and range of a discrete or non-discrete function, graph functions, identify one-to-one functions, perform the composition of functions, find and/or graph the inverse of a function, and apply the properties of functions to application problems.
5. Verify that a simple program segment with given initial and final assertions is correct using the rule of inference for verification of partial correctness and loop invariants.

## **Analysis of Algorithms and Data Structures**

**Course Code: 2018-BCADC-203**

### **Course Outcome:**

**After completion of this course Student will be able to:**

1. Understand basic data structures (such as an array based list, linked list, stack, queue, binary search tree) and algorithms.
2. Acquire the knowledge to analyze, design, apply and use data structures and algorithms to solve engineering problems
3. Evaluate the solutions of problems by implementing them using the advance data structures .
4. Apply modern tool to solve engineering problems using C.
5. Describe an understanding of analysis of algorithms.
6. Synthesize an algorithm or program code or segment that contains iterative constructs and analyze the code segment.

## **HTML Programming**

**COURSE CODE: 2018-BCASE-204**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember about the concept of web application.
2. Illustrate d concepts of interactive web page(s) using HTML, CSS and JavaScript.
3. Build a responsive web site using HTML5 and CSS3.
4. Assess role of HTML and CSS in effective web development.
5. Develop an effective web application using HTML and CSS as per the plan.

## **Environment Science**

**Course Code: 2018-BCAE-205**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify and justify key stakeholders in humanities and social sciences that need to be a part of sustainable solutions.
2. Articulate the interdisciplinary context of environmental issues.
3. Formulate an action plan for sustainable alternatives that integrate science, humanist, and social perspectives.
4. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
5. Access the qualitative and quantitative research methods to gain empirical evidence bearing on evaluation of environmentally sustainable alternatives.

**Database Management Lab:**  
**Course Code: 2018-BCADC-201P**

**Course Outcomes:**  
**At the completion of the course, a student will be able to:**

1. Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS.
2. Develop a clear understanding of the conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management.
3. Understand the basic concepts of Concurrency Control & database security
4. Understand the basic concept how storage techniques are used to backup data and maintain data access performance in peak hours
5. Attain a good practical understanding of the SQL.
6. Develop clear concepts about Relational Model.
7. Examine techniques pertaining to Database design practices and prepare various database tables and joins them using SQL commands
8. Evaluate options to make informed decisions that meet data storage, processing, and retrieval needs.

**Data Structures Using 'C Lab:**  
**Course Code: 2018-BCADC-203P**

**Course Outcomes:**  
**At the completion of the course, a student will be able to:**

1. Recall how to analyze algorithms and estimate their worst-case and average-case behavior (in easy cases).
2. Illustrate a given problem and develop an algorithm to solve the problem
3. Determine the fundamental data structures and with the manner in which data structures can be best be implemented
4. Design the description of algorithms in both functional and procedural styles.
5. Implement theoretical knowledge in practice (via the practical component of the course).

**Introduction to Information Security & Internet based Attacks**  
**Course Code: BCASE-205**

**Course Outcomes:**  
At the completion of the course, a student will be able to:

1. Explain basic concepts and importance of information security.
2. Identify threats to information security, analyze their impact and propose suitable countermeasures.



3. Perform Vulnerability Assessment on any web based application.
4. Perform various attacks from the OWASP top 10 attacks on the web applications.
5. Create an attack vector on the basis of vulnerabilities found in the first phase.

### **Semester-III**

#### **Operating System**

**Course Code: 2018-BCADC-301**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall the main components of an OS & describe the important computer system resources functions and the types of Operating Systems.
2. Explain the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS and understand the factors in OS design.
3. Evaluate the requirement for process synchronization and coordination handled by operating system
4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a contemporary OS.

#### **OOPs Using C++**

**Course Code: 2018-BCADC-302**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Have profound knowledge of object oriented programming.
2. Demonstrate the difference between the solutions offered by traditional imperative
3. Illustrate problem solving methods and object-oriented methods.
4. Explain the class inheritance, data encapsulation, polymorphism as fundamental building blocks to generate reusable code.
5. Understand and implement error handling and file handling routines.

#### **Software Engineering**

**Course Code: 2018-BCADC-303**

#### **Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Communicate effectively with a range of audiences
4. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
5. Acquire and apply new knowledge as needed, using appropriate learning

strategies

6. Develop an efficient software using latest tools and techniques. Use of computer aided designing and automated testing tools.

### **MySQL (SQL/PL-SQL)**

**Course Code: 2018-BCASE- 305**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember key concepts related to SQL including DDL, DML,DCL,DTL commands.
2. Understanding of PL/SQL elements like Cursors, Procedures, functions, triggers.
3. Applying cursors, procedures, functions and triggers on student database to perform different updating and manipulations in existing tables in database. Use of stored procedures, functions, cursors to ensure max reusability.
4. Analyze the limitations of SQL and supports provided by procedural language to develop a effective application.
5. Built a strong adherence in procedural language while creating application.

### **Operating System Lab**

**Course Code: 2018-BCADC-301P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the functions, structures and history of operating systems understand of design issues associated with operating systems
2. Apply concepts including scheduling, synchronization and deadlocks.
3. Distinguish multithreading , Multitasking & Multiprogramming and also able to explain the concept of memory management including virtual Evaluate the requirement for process synchronization and coordination handled by operating system
4. Categorize memory organization and explain the function of each element of a memory hierarchy and analyze its allocation policies.
5. Conceptualize the components involved in designing a contemporary OS.

### **OOPs Using C++ Lab**

**Course Code: 2018-BCADC-302P**

#### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

After successful completion of the course, students will be able to:

1. Acquire profound knowledge of object oriented programming.

2. Demonstrate the difference between the solutions offered by traditional imperative problem solving method and object-oriented method
3. Explain the class inheritance, data encapsulation, polymorphism as fundamental building blocks to generate reusable code.
4. Understand and implement error handling and file handling routines.

**Software Engineering Lab**  
**Course Code: 2018-BCADC-303P**

**Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Compare between traditional ad-hoc method and SDLC based approach of software development.
2. Understand different theories, models, and techniques related to SDLC.
3. Apply the software engineering lifecycle for different projects by demonstrating competence in communication, planning, analysis, design, construction, and deployment
4. An ability to work in one or more significant application domains. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
5. Develop of efficient software using latest tools and techniques. Use of computer aided designing and automated testing tools.

**Network Security**  
**Course Code: BCASE-306**

**Course Outcomes**

**At the completion of the course, a student will be able to:**

1. Understand the basics of Networking and its related attacks.
2. Differentiate the types of attacks possible on Networks.
3. Understand the concept of various types of networks and attack vectors for them.
4. Perform Attack on networks wireless and wired.

## **Semester- IV**

### **Computer Architecture**

**Course Code: 2018-BCADC-401**

**Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the theory and architecture of central processing unit.
2. Analyze some of the design issues in terms of speed, technology, cost, performance.
3. Design a simple CPU with applying the theory concepts.
4. Use appropriate tools to design verify and test the CPU architecture.
5. Learn the concepts of parallel processing, pipelining and interprocessor communication.
6. Understand the architecture and functionality of central processing unit.
7. Exemplify in a better way the I/O and memory organization.
8. Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.

### **Programming in Java**

**Course Code: 2018-BCADC-402**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall the basic knowledge on Object Oriented concepts specially in java.
2. Create & design applications using Object Oriented Programming Concepts using java
3. Describe for compile, test and run Java programs comprising more than one class
4. Create simple data structures like arrays in a Java program
5. Explain members of classes found in the Java API

### **Internet and Web Design**

**Course Code: 2018-BCADE-403**

**Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Apply the basic concepts for network implementation. Review the current topics in Web & Internet technologies.
2. Interpret and Learn the basic working scheme of the Internet and World Wide Web.
3. Describe fundamental tools and technologies for web design.
4. Identify and comprehend the technologies for Hypertext Mark-up Language (HTML).
5. Create and specify design rules in constructing web pages and sites.

## **System Administration and Maintenance**

**Course Code: 2018-BCASE-405**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the installation and configuration of mainstream operating systems, important network services.
2. Explain about disaster recovery procedures, and techniques for ensuring the security of the system.
3. Manage system resources, including methods for tracking system metrics.
4. Apply these skills in the administration of an actual computer system with actual users.
5. Configure desktop environment that users would normally require for day to day operations.

## **English-II**

**Course Code: 2018-BCAAE-406**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Learn the grammatical concepts and communication process for effective communication skills.
2. Develop the habit of reading and understanding the text for better comprehensive skills.
3. Identify the importance of Time Management, Goals and Business etiquette.
4. Apply their effective communication and writing skills at their work place.

## **Java Programming Lab**

**Course Code: Java 2018-BCADC-402P**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall traditional imperative design and object-oriented Design using java
2. Understand class structures as fundamental, modular building blocks
3. Describe for compile, test and run Java programs comprising more than one class
4. Create simple data structures like arrays in a Java program
5. Create and Specify classes found in the Java API

## **Internet and Web Design Lab**

**Course Code: 2018-BCADE-403P**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall basic concepts for network implementation. Review the current topics in Web & Internet technologies.
2. Interpret and learn the basic working scheme of the Internet and World Wide Web.
3. Describe fundamental tools and technologies for web design.
4. Identify and comprehend the technologies for Hypertext Mark-up Language (HTML).
5. Create and Specify design rules in constructing web pages and site

## **Mobile Hacking and Malwares**

**Course Code: BCASE-406**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Learn the basics of Mobiles and Malwares and its related attacks.
2. Create various types of Computer Malwares.
3. Perform various attacks to hack Mobile Technology.
4. Attack and control victim using malware injections.

## **Semester-V**

### **Multimedia Applications**

**Course Code: 2018-BCADC-501**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the technical aspect of Multimedia Systems.
2. Understand various file formats for audio, video and text media.
3. Develop various Multimedia Systems applicable in real time.
4. Design interactive multimedia software.
5. Apply various networking protocols for multimedia applications.
6. Evaluate multimedia application for its optimum performance.

### **Programming in .NET**

**Course Code: 2018-BCADC-502**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember the programming skills and be familiar with programming environment.
2. Apply the concept so the students will be able to use ASP.NET controls in web applications.
3. Interpret the to debug and deploy ASP.NET web applications
4. Describe to create database driven ASP.NET web applications and web services
5. To develop, implement, and demonstrate Component Services, Threading, remoting, Windows services.
6. Create and develop Assemblies and Deployment in .NET, Application Development.

### **Data Mining**

**Course Code: 2018-BCADC-503**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the basic concepts and need of the data warehousing and data mining with its various application.
2. Summarize the Data Warehousing Architecture and Data Mining Architecture along with the physical design and deployment process.
3. Experiment with single dimensional and multi dimensional association rules for data mining.
4. Assess the various classification techniques such as Bayesian classification, Classifier accuracy, Clustering Methods and Outlier analysis etc.
5. Determine the various applications and algorithms for data mining, text mining and web mining.



## **Mobile Applications**

**Course Code: 2018-BCADE-504**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. It Recall the use of built-in widgets and components, work with the database to store data locally.
2. Explain competent with the characterization and framework of mobile applications.
3. Design and develop mobile applications using application development framework.
4. Distinguish the concepts of Event Driven Programming and various issues in developing Mobile Application.
5. Give opinion about the application development tools and the framework. Ways to maintain state between application invocations, remote data storage and communication.

## **Android Programming**

**Course Code: 2018-BCASE-505**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember Android platform, Architecture and features.
2. Understand the User Interface and develop activity for Android App.
3. Design and implement Database Application and Content providers.
4. Use multimedia, camera and Location based services in Android App.
5. Discuss various security issues in Android platform

## **Multimedia (FLASH as a multimedia SAV) Lab**

**COURSE CODE: 2018-BCADC-501P**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the basic tools and components of a multimedia project.
2. Apply basic elements and principles of photo editing software to achieve a great photo
3. Apply effects like color, shadows, alteration of backgrounds, cropping and Collage making.
4. Create simple shapes using animation editing software and design.
5. Prepare and present a multimedia portfolio containing electronic media that demonstrates multimedia and problem-solving skills.

## **.NET Programming Lab**

**Course Code: 2018-BCADC-502P**

### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Apply the concept so the students will be able to use ASP.NET controls in web applications.
2. Interpret the debug and deploy ASP.NET web applications.
3. Develop, implement, and demonstrate Component Services, Threading, remoting, Windows services.
4. Identify Security in the .NET framework and Deployment in the .NET.
5. Develop Assemblies and Deployment in .NET, Application Development

### **Software Reverse Engineering and Cyber Forensics**

**Course Code: BCASE-506**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the concept of Software Reverse Engineering.
2. Understand how to reverse engineer the software to gain its password/key for version update.
3. Learn the concept of data storage on various devices and recovery of any data after being deleted.
4. Recognize Cyber Forensics and various concepts of tracing different attacks.

## **Semester-VI**

### **PHP Programming**

**Course Code: 2018-BCADC-601**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember basic concept of PHP code to produce outcomes and solve problems.
2. Design and insert data using PHP and MySQL.
3. Apply basic knowledge for test, debug, and deploy web pages containing PHP and MySQL.
4. Creating Infrastructure and maintain complex Data flow with security.
5. Develop an application using PHP and MySQL

### **Project Work/Dissertation**

**Course Code: 2018-BCADC-602**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Identify the real world problems and challenges that need IT based solutions and create very precise specifications of the IT solution to be designed.
2. Understand project characteristics and various stages of a project.
3. Identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders.
4. Implement project management knowledge, processes, lifecycle and the embodied concepts, tools and techniques in order to achieve project success.
5. Demonstrate an ability to work in teams and manage the conduct of the research study.

### **Cloud Computing**

**Course Code: 2018-BCADE-603**

#### **Course outcomes:**

**At the completion of the course, a student will be able to:**

1. Remember concept of Cloud Computing, benefit and challenges associated with it.
2. Understand various cloud services, cloud service providers and frameworks being used.
3. Describe importance of virtualization along with their technologies.
4. Identify the need for the virtualization and advantage and limitations of using virtualization concept.
5. Analyze the open stack & Google Cloud platform components and understand Mobile Cloud Computing
6. Investigate the security aspect in cloud, standards for security framework, challenges.

## **Software Testing Concepts**

**Course Code: 2018-BCADE-604**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Learn systematic approach to the development, operation, maintenance, and retirement of software.
2. Learn how to use available resources to develop software, reduce cost of software and how to maintain quality of software.
3. Illustrate Methods and tools of testing and maintainance of software's.
4. Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
5. Develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software at low cost and with a small cycle time.

## **PHP Lab:**

**Course Code: 2018-BCADC-601P**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand the major areas and challenges of web programming.
2. Distinguish web-related technologies.
3. Use advanced topics in HTML5, CSS3, JavaScript
4. Use a server-side scripting language, PHP
5. Design and implement typical static web pages and interactive web applications, dynamic web applications.

## **Cloud Computing Lab**

**Course Code: 2018-BCADE-603P**

### **Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Define & implement Virtualization using different types of Hypervisors
2. Experience storage, calendar and document editing services offered by Google cloud.
3. Describe the functioning of Platform as a Service
4. Explore the Microsoft cloud platform.
5. Analyze and understand the functioning of different components involved in Amazon web services cloud platform.
6. Design & Synthesize Storage as a service using own Cloud

**Software Testing Lab:**  
**Course Code: 2018-BCAAE-604P**

**Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Recall knowledge of contemporary issues in software testing, such as component-based software testing problems.
2. Identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
3. Differentiate various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects.
4. Ability to use software testing methods and modern software testing tools for their testing projects.
5. Evaluate a software by applying software testing methods.

**Information Security Management System (ISMS)**  
**Course Code: BCASE-606**

**Course Outcomes:**

**At the completion of the course, a student will be able to:**

1. Understand various procedures and benefits of ISMS
2. Understand the auditing techniques for ISMS.
3. Apply various techniques of risk assessment and management techniques.
4. Evaluate how and what policy to implement for ISO-27001 Standard Certifications.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Education

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.A.
2. B.Ed.
3. B.A.-B.Ed.
4. B.Sc.-B.Ed.
5. Diploma in Guidance & Counselling
6. Diploma in Yoga
7. M.Ed.
8. M.Phil Education
9. Ph.D (Education)

**B.A.**

## **Program Specific Outcomes:**

### **B.A. Programme Specific outcomes are as follows:**

- Develop mastery of major areas of content knowledge.
- Design an inclusive learning environment for diverse students.
- Prepare and use different assessment tools in class.
- Plan effective instruction.
- Develop a positive attitude towards teaching profession.
- Contribute in the development of nation and society.
- Show the commitment and collaborative stance to help all students learn.



# Course Outcomes

## First Semester

**GENERAL ENGLISH (COMPULSORY)  
ESSENTIAL LANGUAGE SKILLS  
BA -101**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the differences between spoken and written English
- Understand the factors that influence use of grammar and vocabulary in speech and writing.
- Comprehend the format of different forms of formal letter writing.
- Summarise and appreciate poems.
- Differentiate among different parts of speech
- Make sentences in Active and Passive Voice.
- Transform sentence from direct to indirect narration .
- Develop vocabulary and communicative skills.

**SOCIOLOGY  
INTRODUCTION TO SOCIOLOGY  
BA-102.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand sociological theories.
- Explain processes of socialization.
- Understand the inter-dependence of social institutions.
- Establish linkages of Sociology with other Social Sciences.
- Appreciate sociology as a discipline.

**SOCIOLOGY  
INDIAN SOCIETY  
BA-102.II**

**COURSE OUTCOMES:**

**On completion of this course, students will be able to:**

- Identify the inequalities existing in the society.
- Understand the need of sociological reasoning.

- Evaluate the colonial view of Indian society and the growth of sociology in India.
- Appreciate the pluralistic nature of society.
- Critically think about Indian society and social issues.

**HISTORY**  
**ANCIENT HISTORY OF INDIA (UP TO 1200 A.D.)**  
**BA-104. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify and describe the different empires of India( up to 1200 A.D)
- Draw the map of Mauryan, Gupta and Post-Gupta.
- Visit the monuments of different empires.
- Analyse socio-economic and religious life of different empires.
- Appreciate the development of art, literature and science during Gupta. Maurya and Magadh Empire.

**POLITICAL SCIENCE**  
**INTRODUCTION TO POLITICAL SCIENCE**  
**BA-103.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Define, evaluate and critique the basic principles of Political Science.
- Identify the difference between Traditional and Contemporary Perspectives of Political Science.
- Recall knowledge of the state, its origin, structure and functions.
- Understand and analyse the concepts of Democracy and Dictatorship, Welfare State, Justice, Human Rights, Gender Role.
- Apply basic political theories for further study.

**POLITICAL SCIENCE**  
**MODERN POLITICAL THEORY - I**  
**BA-103.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recall the meaning and growth of Political Science as a discipline.

- Analyse the influence of traditionalism on the modern political theories.
- Differentiate between traditional and modern approaches of political theory.
- Identify the impact of Behaviouralism, System Approach, Structural Functional Approach and other Approaches and their contribution in making of political theory.

<p><b>HISTORY</b>  <b>HISTORY OF RAJASTHAN</b>  <b>BA- 104. I</b></p>
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**COURSE OUTCOMES:**

**On completion of this course, students will be able to:**

- Understand the economic administrative changes brought by British in Rajasthan.
- Explain the early history and culture of Rajasthan.
- Understand the integration of Rajasthan.
- Analyse the different movements in Rajasthan in pre independent India.
- Appreciate the role of Rajputs in the resistance of Rajputs to Muslim invasions.
- Visit the forts and temples built by Rajputs.
- Draw maps of Rajput Empire.

<p><b>ENGLISH LITERATURE</b>  <b>POETRY AND DRAMA</b>  <b>BA -105.I</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Comprehend representative literary and cultural text with a significant number of historical, geographical context.
- Analyze the poems of Shakespeare, Dryden, Milton, John Donne and R. Herrick.
- Apply critical and theoretical approaches to the reading and analyze literary and cultural texts in multiple genres.
- Appreciate the poems of Shakespeare, Dryden, Milton, John Donne and R. Herrick.
- Enjoy the works of shakespeare and Dryden and Milton.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA- 105.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Summarize the main ideas of the essays.
- Identify the critical ideas that appear in literary and cultural texts: The Gandhian Outlook, A Gentleman, Animals in Prison, El Dorado
- Analyze the themes that appear in literary texts- A Cup of Tea, The (Saki): The Open Window
- Write the character sketch of the main characters of Gulliver Travels.
- Appreciate enjoy reading short stories and novels.

**ECONOMICS  
MICRO ECONOMICS – BASIC  
BA - 106.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Compare various terms of market.
- Build foundation for other branches of Economics
- Understand important principles and theories of micro economics.
- Appreciate the utility of economics in day to day life.

**ECONOMICS  
MICRO ECONOMICS- ADVANCED  
BA - 106.II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Explain the functions of market and prices as allocating mechanism.
- Understand the theory of welfare economics.
- Differentiate and output determination in Monopoly and monopolistic competition
- Understand the concepts of rent, profit and interest
- Discriminate between price and output in different types of market.
- Understand the theory of welfare economics.
- Take interest in the behavior of various markets by reading magazines.

**GEOGRAPHY**  
**PHYSICAL GEOGRAPHY I**  
**BA – 107. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand rocks, soils, volcanoes and earthquakes.
- Read, interpret, and generate maps and other geographic representations
- Observe and recognize of erosional and deposition land forms.
- Read literature related to origin of the earth
- Read papers and incidents related to winds, volcanoes etc.

**GEOGRAPHY**  
**GEOGRAPHY OF RAJASTHAN I**  
**BA– 107. II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand physiography and broad physical division of Rajasthan.
- Locate major rivers of Rajasthan on map.
- Understand climatic condition of Rajasthan.
- Understand problems and prospects in Agriculture.
- Classify soil resources.
- Contribute in optimal use of various natural resources of Rajasthan.

**GEOGRAPHY PRACTICAL**  
**BA – 107. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Measure the field with different types of scales.
- Develop the skill of mapping relief features.

**PSYCHOLOGY**  
**INTRODUCTION TO PSYCHOLOGY**  
**BA– 108. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the different Introspection, Observation, Experimental, Interview, Questionnaire and Case Study.
- Understand the biological bases of behavior.
- Know the concept of motivation and emotion.
- Classify different theories of Intelligence.
- Use different motivational techniques.

**PSYCHOLOGY**  
**HUMAN DEVELOPMENT**  
**BA– 108. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Know the determinants of development
- Understand the theories of Freud and Erickson
- Comprehend emotional, social and moral development
- Classify between aging and old age

**PSYCHOLOGY PRACTICAL**  
**BA– 108. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Conduct psychological experiments.
- Understand individual differences.
- Interpret psychological tests.
- Apply psychological skills to career goals

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_ Motivation
- Emotion
- \_ Intelligence
- Cognition.

हिन्दी साहित्य  
हिन्दी भाषा का उद्भव एवं विकास  
**BA– 110. I**

अधिगम अनुवर्तन

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिंदी भाषा के उद्भव और विकास का प्रत्यास्मरण कर सकेंगे।
- हिन्दी की लिपियों व बोलियों से अवगत हो सकेंगे।
- हिन्दी साहित्य के काल विभाजन से अवगत हो सकेंगे।
- हिंदी भाषा की व्यावहारिक उपयोगिता का मूल्यांकन कर सकेंगे।
- हिन्दी भाषा का प्रयोग प्रभावशाली सम्प्रेषण के रूप में कर सकेंगे।

**हिन्दी साहित्य  
भारतीय काव्यशास्त्र  
BA- 110. II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- काव्यशास्त्र के विभिन्न रूपों व अंगों को पहचान सकेंगे।
- रस निष्पत्ति व रसास्वादन की क्षमता विकसित कर सकेंगे।
- अलंकार सम्प्रदाय से अवगत हो सकेंगे।
- विभिन्न सिद्धान्तों का ज्ञान प्रदान करना।

**DRAWING AND PAINTING  
FUNDAMENTALS OF VISUAL ART & INDIAN FOLK ART  
BA- 111. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain various methods and mediums used in various forms of painting.
- Identify and classify various forms of arts.
- Appreciate various arts forms.
- Visit exhibition galleries.
- Participate in the development of visual and folk art.

**DRAWING AND PAINTING PRACTICAL  
CREATIVE DESIGN  
BA- 111. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Show their creative instinct.
- Draw portfolios using different mediums.

**DRAWING AND PAINTING PRACTICAL**

**STILL LIFE**

**BA- 111. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop pencil shading skills.
- Prepare portfolios.

**HOME SCIENCE**

**FAMILY RESOURCE MANAGEMENT & HOUSING**

**BA-112.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of management in the family as well as the other system.
- Explain the importance of various uses of resources in order to achieve goals.
- Understand the needs and factors affecting selection and purchases of site for house building.
- Understand various element and principles of art used in the interior decoration.
- Appreciate family resource management.
- Participate in the family resource management.
- Read literature on family resource management.

**HOME SCIENCE**

**HUMAN PHYSIOLOGY**

**BA-112.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the elementary concept of anatomy.
- Comprehend the functions of various body organs.
- Explain the prevention and control of infections and diseases.



**HOME SCIENCE PRACTICAL**  
**BA-112.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of flower arrangement.
- Develop the skill of food preservation.
- Appreciate the art of preservation of food.
- Develop aesthetic sense.
- Develop scientific temper in cooking and preservation.
- Appreciate flower decoration styles.

**संस्कृत साहित्य**  
**संस्कृत कथा-साहित्य**  
**बीए .115.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत कथा साहित्य से अवगत हो सकेंगे।
- कथा साहित्य से नैतिक मूल्यों को विकसित कर सकेंगे।
- संस्कृत व्याकरण से परिचित हो सकेंगे।
- संस्कृत अनुवाद करने की क्षमता विकसित कर सकेंगे।
- संस्कृत वाङ्मय के वैज्ञानिक ज्ञान की समीक्षा कर सकेंगे।

**संस्कृत साहित्य**  
**पद्य साहित्य, भारतीय संस्कृति के तत्त्व**  
**बीए.115.II**

**अधिगम अनुवर्तन555**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत भाषा का व्यावहारिक से अवगत हो सकेंगे।
- अपने विचारों को संस्कृत भाषा में अभिव्यक्त करने की क्षमता का विकास करेंगे।
- राष्ट्रीय, सांस्कृतिक एवं सामाजिक चेतना से अवगत हो सकेंगे।
- संस्कृत पद्य साहित्य से अवगत कराना।
- भारतीय संस्कृति की विशेषताओं से परिचित हो सकेंगे।
- प्राचीन शिक्षा पद्धति व शिक्षा केंद्रों से अवगत हो सकेंगे।
- संस्कृत व्याकरण अलंकारों को अभिव्यक्ति में प्रयोग कर सकेंगे।
- संस्कृत साहित्य के प्रति अभिरुचि लेंगे।
- संस्कृत भाषा की विविध विधाओं की सराहना कर सकेंगे।

## Second Semester

### COMPUTER APPLICATION IN EDUCATION

BA- 201

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the fundamental hardware components
- Understand the difference between an operating system and an application program
- Give examples of types of computers
- State the applications of computer technology
- Identify the principal components of computer system
- Draw a flow diagram and represent the data flows.
- Apply computer technology in their learning and teaching.
- Read about the innovative uses of computer.

### SOCIOLOGY

#### SOCIETY, CULTURE AND SOCIAL GLOBLIZATION

BA- 202.I

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Comprehend the basic sociological concepts of culture.
- Engage in the sociological debates over the role of culture in social inequalities.
- Identify and define key debates and approaches to globalization and development.
- Situate globalization within the 20th-century capitalist development and its key trajectories
- Understand and explain various social, political, cultural, and economic aspects of globalization.
- Analyse the impacts on society at local and global levels.
- Appreciate the diversity of culture.

### SOCIOLOGY

#### INDIAN SOCIETY: ISSUES AND PROBLEMS

BA -202.II

### **COURSE OUTCOMES:**

**On completion of the course, the students will be able to-**

- Describe and understand the basic theoretical approaches applied to social problems.
- Identify social problems and analyse their core reasons.
- Analyse social problems using sociological theories.
- Demonstrate an understanding of the relationship between social problems and social institutions.
- Organize the components of social problems situated in social structure.
- Sensitive to issues and problems of Indian society.
- Apply solution of different problems.

<p style="text-align: center;"><b>POLITICAL SCIENCE</b> <b>INDIAN POLITICAL THOUGHT</b> <b>BA -203.I</b></p>
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### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Summarize knowledge related to ancient political thinkers and their relevance in modern India.
- Understand Social Reconstructions theorists.
- Understand and analyse contribution of liberals and extremists.
- Understand the Spritual Resurgence of Swami Vivekanand.
- Evaluate the contribution of Indian Political Thinkers in Indian National Movement.
- Appreciate various Indian national movements.
- Read literature about various thinkers.

<p style="text-align: center;"><b>POLITICAL SCIENCE</b> <b>INDIAN POLITY</b> <b>B.A.B.ED 203.II</b></p>
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### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the Political and Constitutional system in India.
- Understand and analyse the centre state relations.
- Comprehend the basic structures and process of government system.
- Explain Legislative, Executive and Judicial functioning in Indian Political System

- Critically evaluate the role of Political Parties and Pressure Groups.
- Appreciate constitutional system of India.
- Participate in major debates in Indian polity.

**HISTORY**  
**MEDIEVAL INDIA**  
**BA -204.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the background of religion institutions of Mugal empire and Delhi saltanat
- Draw historical maps and digrams.
- Visit places of historical interest, archiological sites, museums and archives.
- Collect coins and other historical materials

**HISTORY**  
**MAIN TRENDS OF CULTURAL HISTORY OF INDIA**  
**BA -204.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the interlinkage of culture, religion, litrecture and science.
- Understand social institutions of ancient India.
- Understand different social movement of India.
- Take interest in the writings of historians.
- Play active role in activities of historical associations.
- Visit temples to understand the architecture.
- Appreciate the contribution of Aryabhata, Varahammihira, Charaka and Sushruta in science.
- Read historical documents.

**ENGLISH LITERATURE**  
**POETRY AND DRAMA**  
**BA- 205.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the gist of the poems of Kabir, Toru Dutt, Rabindranath Tagore and Sarojini Naidu.
- Interpret and describe the critical ideas, values and themes that appear in literary and cultural texts.
- Develop aesthetic sense towards poetry.
- Appreciate the poetry of Kabir, Toru Dutt, Rabindranath Tagore and Sarojini Naidu.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA -205.II**

**COURSE OUTCOMES:**

**On completion the course, students will be able to:**

- Identify the salient features of literary texts from a broad range of English and American literary periods
- Analyze the central idea of the essays.
- Understand the ideas and themes of the novel.
- Employ knowledge of literary tradition to produce imaginative work.
- Comprehend the writing style.

**ECONOMICS  
INDIAN ECONOMY  
BA - 208.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain the working of Indian economy.
- Understand the issues in India's economic development.
- Understand the population dynamics and composition.
- Analyze the problems of economy.
- Appreciate various efforts to give boost to Indian economy.

**ECONOMICS  
ECONOMY OF RAJASTHAN  
BA - 206.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain the working of the Economy of Rajasthan.
- Understand the changing trends in the Rajasthan economy.
- Understand the leading issues in Rajasthan's economic development.
- Analyze the economic development in relation to five year plan.

**GEOGRAPHY**  
**PHYSICAL GEOGRAPHY II**  
**BA- 206. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand hydrosphere.
- Analyze ocean tides, currents and marine resources.
- Classify the different layers of atmosphere.
- Understand climatic elements.
- Draw diagram and maps.
- Take interest in national geographic channel.
- Read atlas and books.

**GEOGRAPHY**  
**GEOGRAPHY OF RAJASTHAN II**  
**BA- 207. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Differentiate Metallic and Non Metallic Minerals of Rajasthan.
- Critically Evaluate the Power Resources in Rajasthan.
- Understand Development and Importance of Various Industries in Rajasthan.
- Locate Different Industries in the Map of Rajasthan
- Understand Human Resources.
- Draw maps showing different resources.
- Appreciate the Measures for the Development of Tribes and Castes of Rajasthan.

**GEOGRAPHY PRACTICAL**  
**BA. - 207. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Draw different kinds of graphs.
- Develop the skill of drawing maps.
- Identify types of maps.

**PSYCHOLOGY**  
**SOCIAL PSYCHOLOGY**  
**BA 208.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the nature of social psychology and its subject matter.
- Explain how social theoretical approaches are used to help explain human behavior.
- Understand the forces that create group differences.
- Develop awareness of major social problems and issues.

**PSYCHOLOGY**  
**PERSONALITY**  
**BA 208.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Define the concept of personality.
- Draw a flow chart of personality.
- Differentiate between different theories of personality.
- Assess personality through various projective and non projective techniques.
- Understand the meaning of defense mechanism and its types.
- Appreciate personality
- Apply different means to develop an integrated personality.

**PSYCHOLOGY**  
**PRACTICAL**  
**B.A.B.ED 208.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret psychological tests.
- Understand personality of different subject/testee through psychological test.
- Understand leadership qualities of different subject/testee through psychological test.

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_Social Maturity.
- \_Leadership.
- \_Adjustment.
- \_Personality.

**हिन्दी साहित्य,  
आधुनिक काव्य  
BA 209.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- साहित्य को समझने, उसका आस्वादन करने तथा मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- हिंदी साहित्य की प्राचीन व आधुनिक गद्य, पद्य विधाओं का तात्विक परिचय प्रत्यास्मरण करवा सकेंगे।
- साहित्यिक प्रवृत्तियों के संदर्भ में विभिन्न साहित्य विधाओं के विकासक्रम को पहचान सकेंगे।
- साहित्यकारों के साहित्यिक व्यक्तित्व एवं कृतित्व की सराहना कर सकेंगे।
- आधुनिक काव्य संबंधित पुस्तकों को पढ़ेंगे।

**हिन्दी साहित्य  
प्रयोजनमूलक हिन्दी  
BA 209.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- विभिन्न व्यवहार क्षेत्रों में राजभाषा के रूप में प्रयुक्त हिन्दी भाषा के ज्ञान की व्याख्या कर सकेंगे।
- राष्ट्र की सामाजिक-आर्थिक-सांस्कृतिक विकास की आवश्यकताओं को दृष्टिपथ में रखकर संचार माध्यमों के उपयोग और भाषिक तथा सर्जनात्मक क्षमता विकसित कर सकेंगे।
- हिन्दी पत्रकारिता की भूमिका, महती परम्परा और संभावनाओं को समझ सकेंगे।
- हिन्दी और पत्रकारिता की अवधारणाओं, सिद्धान्तों, कर्तव्यों, अधिकारों, सीमाओं, कानूनों आदि का सैद्धान्तिक ज्ञान देते हुए व्यावहारिक सामर्थ्य विकसित कर सकेंगे।
- व्यवहार पक्षों एवं भाषायी कौशलों का विकास कर विभिन्न क्षेत्रों में रोजगार के अवसरों का प्रयोग कर सकेंगे।
- सम्प्रेषण कुशलता को विकसित कर सकेंगे।
- हिन्दी भाषा की सराहना कर सकेंगे।
- हिन्दी भाषा की विभिन्न पुस्तकों को पढ़ सकेंगे।

**DRAWING AND PAINTING  
ART IN EDUCATION, CULTURE AND SOCIETY  
BA 211.I**



**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the importance of Art in society.
- Recognize the process of creativity.
- Nurture creativity in pupils.
- Appreciate creativity.
- Contribute in development of Art.

**DRAWING AND PAINTING PRACTICAL  
RENDERING  
BA 211.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of rendering.
- Develop the skill of colour and shading.

**DRAWING AND PAINTING PRACTICAL  
STILL LIFE  
B.A.B.ED 211.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Prepare portfolio.
- Prepare a sketch book.
- Develop the skill of Painting still life.

**HOME SCIENCE  
INTRODUCTION TO HUMAN DEVELOPMENT  
BA-212.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the phases of human development.
- Identify the factors influencing human development.
- Identify the behavioural problems among children and its measures.
- Comprehend with the characteristics of the various exceptional children.
- Explain the process of human development.

**HOME SCIENCE**  
**FUNDAMENTALS OF FOODS AND NUTRITION**  
**BA-212.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the function and classification of foods.
- Identify the various minerals and vitamins present in foods.
- Understand the need of dietary allowances of nutrients for various age groups.
- Explain the effects of processing steps on nutritional quality.
- Apply the process of food preservation in reserving food.
- Identify the common adulterants present in foods and methods of detection at home level.
- Appreciate the methods of food nutrition.

**HOME SCIENCE**  
**PRACTICAL**  
**BA-212.III**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:**

- Comprehend with various methods of cooking food
- Identify the various process of preservation
- Identify the steps of meal planning

**संस्कृत साहित्य**  
**नाटक, छन्द, संस्कृत साहित्य का इतिहास**  
**बीए.215.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत नाटकों एवं संस्कृत साहित्य के छन्दों का प्रत्यास्मरण कर सकेंगे।
- संस्कृत साहित्य के इतिहास का वर्णन कर सकेंगे।
- व्याकरणिक कृदन्त प्रकरण का विवेचन कर सकेंगे।
- राजस्थान के संस्कृत साहित्य की समझ विकसित कर सकेंगे।
- संस्कृत साहित्य के नाटक प्रति रुचि लेते हुए विभिन्न नाटकों को पढ़ेंगे

संस्कृत साहित्य  
वैदिक साहित्य  
बीए.215.II

अधिगम अनुवर्तन

इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- वैदिक साहित्य को समझ सकेंगे।
- संस्कृत गद्य साहित्य से अवगत हो सकेंगे।
- संस्कृत प्रत्यय की पहचान कर सकेंगे।
- मानवीय मूल्यों को विकसित कर सकेंगे।

## Third Semester

### अनिवार्य हिन्दी

#### BA-301

#### अधिगम अनुवर्तन

#### इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिन्दी भाषा की व्यावहारिक उपयोगिता का प्रत्यास्मरण कर सकेंगे।
- शब्द संरचना की प्रक्रिया को समझ सकेंगे।
- भाषा को समझने व मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- साहित्यिक कृतियों का विविध दृष्टि से विवेचन, विश्लेषण तथा समीक्षा करेंगे।
- शुद्ध लेखन व वाचन की क्षमता विकसित करेंगे।
- प्रभावी सम्प्रेषण कर सकेंगे।

### ENVIRONMENT AND SOCIETY

#### BA -302.I

#### COURSE OUTCOMES-

#### On completion of the course, students will be able to:

- Define Sustainable development, resource conservation and climate change.
- Classify the various Natural Resources.
- Describe the various acts of protection of Environment.
- Participate discourse in sociological approaches to Environmental issues and controversies.
- Act as an agent for the protection of Environment.
- Appreciate different movements and global efforts for resource conservation.

### SOCIOLOGY

#### METHODS IN SOCIAL RESEARCH

#### BA -302.II

#### COURSE OUTCOMES

#### On completion of the course, students will be able to:

- Demonstrate the ability to choose methods appropriate to research objectives.
- Understand the limitations of different research methods.
- Gain a practical understanding of the various data collection tools
- Develop skills in qualitative and quantitative data analysis and presentation.

- Analyze and interpret research data.
- Conduct social surveys.

**HISTORY**  
**HISTORY OF MEDIEVAL INDIA 1206 - 1526 A.D.**  
**BA- 304.I**

**COURSE OUTCOMES**

**On completion of this course, students will be able to:**

- Understand the rise and fall of Slave Dynasty. and Tughlaq Dynasty.
- Understand the importance of historiography.
- Draw maps and charts.
- Compare the administration, foreign policy, domestic policy, trade of Different dynasties.

**HISTORY**  
**INDIAN SOCIETY AND CULTURE (UPTO 1200 AD)**  
**BA- 304.II**

**COURSE OUTCOMES:**

**On completion of this course, students will be able to:**

- Understand social institution of ancient India.
- Understand the genesis of different religions in India.
- Appreciate the art and architecture.
- Visit places of Shungas, Kushanas and Satavhanas.
- Draw maps.
- Participate in the activities of historical organization.

**POLITICAL SCIENCE**  
**INDIAN POLITICAL THOUGHT - II**  
**BA- 305.I**

**COURSE OUTCOMES:**

**On completion of the course , students will be able to:**

- Understand and analyse the Gandhian Political Philosophy.
- Comprehend the Political Thoughts of Nehru.
- Critically Evaluate Panchsheel Doctrine.
- Understand and analyse Partyless Democracy and total Revolution concept.
- Understand Contemporary Political Thinkers.

- Appreciate the contribution of political thinkers in making India a vibrant democracy.

**POLITICAL SCIENCE  
INDIAN CONSTITUTION  
BA -305.II**

**COURSE OUTCOMES:**

**On completion of the course. students will be able to:**

- Understand and analyse all major dimensions of Indian Constitution system.
- Comprehend the political system and account of the making and working of constitutional institutions.
- Understand the Concepts of Fundamental Rights , Fundamental Duties and Directive Principles of State Policy.
- Evaluate the Nature and Role of Higher Judiciary in India.
- Appreciate the making of constitution and its role in Indian policy.
- Read articles on various amendments.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BA -306.I**

**COURSE OUTCOME:**

**On completion of the course, students will be able to:**

- Analyze the poetry of Arun Kolatkar, A. K. Ramanujan, Nissim Ezekiel, Kamla Das
- Ethically gather, understand evaluate and synthesize information from a variety of written and electronic sources
- Analyze the major themes of the play: Chandalika
- Write reference to context of the poems.
- Appreciate the poetry of Arun Kolatkar, A. K. Ramanujan, Nissim Ezekiel, Kamla Das
- Enjoy the beauties of Poems.
- Collect Poems.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA- 306.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop literary sensibility and competency for analyzing and evaluating a piece of literature
- Understand the central idea of the essays.
- Comprehend the writing style of Rama Mehta
- Analyze the themes of the novel: Inside the Haveli
- Appreciate the theme for writing style of various writers.

**GEOGRAPHY  
HUMAN GEOGRAPHY - I  
BA- 307. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Distinguish Human Geography from others social sciences.
- Understand the Evolution of Man and Classification of Races
- Explain Living Conditions and Culture of Different Tribes of World
- Understand and Explain the Salient Features of Human Development.
- Organize the field work.
- Read and take interest in knowing more about races.

**GEOGRAPHY  
GEOGRAPHY OF RESOURCES I  
BA- 307. II**

**Course Outcomes:**

**On completion of the course student will be able to:**

- Understand the Nature, Scope and Significance of Geography of Resources
- Reflect or the Exploitation of Various Natural Resources
- Discuss Water, Mineral and Power Resources
- Locate Different Minerals Resources in the World Map.

**GEOGRAPHY PRACTICAL  
BA- 307. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Calculate averages.

- Develop the skill of intersection and radiation method.
- Appreciate various methods of plane table survey.

**ECONOMICS**  
**MACRO ECONOMICS-I**  
**B.A.B.ED - 308.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the principles of macro Economics.
- Analyze the flow of income and expenditure in different sectors of economy.
- Interpret National income in relation to GDP, NDP, NNP, PCI and PI.
- Appreciate the contribution of macro economics to the analysis of social issues.
- Draw equations and graphs.

**ECONOMICS**  
**MACRO ECONOMICS-II**  
**BA -308.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyse the determinants of macro economic conditions such as national output and employment.
- Understand different business cycles and take measures of environmental issues and sustainable development.
- Discuss economic concepts in an articulate manner in classroom.
- Apply the concept of equilibrium to both macro and micro economics.

**PSYCHOLOGY**  
**PSYCHOPATHOLOGY**  
**BA -309.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Differentiate between psychosomatic, anxiety and personality disorder
- Suggest coping strategies to deal with stress
- Analyze the causes of different disorders
- Analyze the bearing of psychological models of psychopathology



**PSYCHOLOGY**  
**PSYCHOLOGICAL ASSESSMENT AND STATISTICS**  
**BA- 309.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Compute different measures of central tendency
- Assess mental abilities using standardized tests
- Understand the process of standardized tests
- Give examples of levels of measurement
- Represent data through graphs

**PSYCHOLOGY**  
**PRACTICAL**  
**BA- 309.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret various psychological tests to understand different disorder.
- Guide subject/ testee to manage different disorder.
- Use central tendency for the interpretation of psychological tests.
- Identify phobia anxiety and other neurotic disorder by using psychological test.  
Administration and Interpretation of standardized psychological tests of the following attributes :-  
\_Anxiety test.  
\_Phobia test.  
\_Stress.  
\_Personality disorder.

**हिन्दी साहित्य**  
**प्रथम पेपर भक्तिकालीन काव्य**  
**BA -311.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य के काल विभाजन का प्रत्यास्मरण कर सकेंगे।
- भक्तिकालीन कवियों के जीवन चरित्र को पहचान सकेंगे।
- भक्तिकालीन रचनाओं का संकलन कर सकेंगे।
- भक्तिकालीन रचनाओं की सराहना कर सकेंगे।

**हिन्दी साहित्य,  
द्वितीय पेपर हिन्दी विधाएँ  
BA -311.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- साहित्य को समझने, उसका आस्वादन करने तथा मूल्यांकन करने की दृष्टि विकसित कर सकेंगे ।
- हिंदी साहित्य की प्राचीन व आधुनिक गद्य, पद्य विधाओं की व्याख्या कर सकेंगे ।
- साहित्यिक प्रवृत्तियों के संदर्भ में विभिन्न साहित्य विधाओं के विकासक्रम को जान सकेंगे ।
- कहानी के स्वरूप व तत्वों का विवेचन कर सकेंगे ।
- हिन्दी के प्रमुख कहानीकारों व लेखकों व उनकी कृतियों से अवगत हो सकेंगे ।

**DRAWING AND PAINTING-THEORY  
HISTORY OF INDIAN PAINTING AND SCULPTURE- I  
BA- 312.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recognize various schools of paintings.
- Understand the features of different art schools.
- Appreciate sculpture of different periods.
- Visit places of sculpture.
- Collect pictures of paintings and sculpture.

**DRAWING AND PAINTING  
PRACTICAL ( PORTRAITE- PENCIL SHADING)  
BA- 312.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Use proportion and tonal techniques
- Create different values (range of lights and darks)
- Use them to create the illusion of depth in their painting

**DRAWING AND PAINTING  
PRACTICAL (NATURE STUDY-PENCIL)  
BA- 312.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Use of different types of leaf and tonal techniques
- Appreciate hues and colours of Nature.
- Create different values (range of lights and darks) and use them to create the illusion of depth in their painting.

**HOME SCIENCE  
NUTRITION IN HEALTH & DISEASE  
BA-313.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify and contribute the prevention of public health/Social health problems in the country.
- Evaluate evidence for the relationship between diet, Nutrition and disease.
- Treat common illnesses at home.
- Identify the nutritional deficiency disease.
- Understand the nutrition for special conditions.
- Apply dietary energy and physical assessment methods logies.

**HOME SCIENCE  
FAMILY DYNAMICS AND PARENT EDUCATION  
BA-313.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of family and social affairs.
- Explain the demographic structure of the nation.
- Familiar with longitudinal research methods.
- Assess the various approaches of population.
- Identify the factors influencing population growth.
- Appreciate the role of parent education in family dynamics.

**HOME SCIENCE  
PRACTICAL  
BA-313.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Prepare a variety of snacks.
- Plan meals for variety of people.
- Develop the skill of conducting parent teacher meetings.
- Participate in community life.

**संस्कृत साहित्य  
भारतीय धर्म एवं दर्शन  
बीए .315.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- भारतीय धर्म एवं दर्शन की विवेचना कर सकेंगे।
- प्राचीन साहित्य की पहचान कर सकेंगे।
- संस्कृत साहित्य का वर्तमान जीवन में महत्व।
- भगवत गीता में निहित मूल्यों का विकसित कर सकेंगे।
- धर्म एवं दर्शन को जीवन में उपयोग कर सकेंगे।

**संस्कृत साहित्य  
वेद, उपनिषद्, एवं निबन्ध  
बी.ए.बी.एड. 315.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- प्राचीन संस्कृत साहित्य वेद उपनिषद् आदि से अवगत हो सकेंगे।
- भारतीय दर्शन के सिद्धांत की विवेचना कर सकेंगे।
- संस्कृत निबंधों का विश्लेषण कर सकेंगे।
- प्राचीन साहित्य में निहित मानवीय मूल्यों की पहचान कर विकसित कर सकेंगे।
- प्राचीन साहित्य में सांस्कृतिक एवं मानवीय मूल्यों की सराहना कर सकेंगे।

## Fourth Semester

### ESSENTIAL LANGUAGE SKILLS-II

BA -401

#### COURSE OUTCOMES:

**On the completion of the course, students will be able to:**

- Transform simple sentence into compound and complex sentences.
- Use transitive and intransitive verbs correctly.
- Write paragraphs on different themes.
- Punctuate and capitalize correctly.
- Write different forms of letters.
- Complete the stories.
- Identify use of words as different parts of speech.
- Take interest in English language and literature.
- Develop a positive attitude towards English language.

### ASSESSMENT FOR LEARNING

BA-402

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:**

- Critical Examine issues in assessment and evaluation from constructivist paradigm.
- Understand key concepts such as formative and summative assessment, evaluation and measurement, test, examination.
- Use different kinds and forms of assessment that aid student learning.
- Use wide range of assessment tools, and learn to select and construct these appropriately.
- Evolve realistic, comprehensive and dynamic assessment procedures that are keeping the whole student in view.

### SOCIOLOGY

RURAL SOCIOLOGY

B.A.B.ED -403.I

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:**

- Understand the local and global context of agricultural and rural development processes.
- Recognize the processes, institutions and policy approaches of social organization of rural life.
- Explain the implications of social and environmental change for rural people.
- Discuss different agricultural and rural development paradigms.
- Examine the impact of urbanization on agricultural and rural development.
- Read about the different rural development program.
- Initiate to make their rural life better for people.

**SOCIOLOGY**  
**SOCIAL CHANGE IN INDIA**  
**B.A.B.ED -403.II**

**COURSE OUTCOMES:**

**On completion of the course, the students will be able to-**

- Define social change and concepts related to it.
- Differentiate between social change and Social Mobility
- Understand various Processes of social change.
- Understand various factors of social change.
- Discuss forms of diversity and division within society.

**HISTORY**  
**HISTORY OF INDIA (1857 – 1947)**  
**BA -404.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand different social and religious reform movements.
- Understand the struggle for India's independence.
- Appreciate and differentiate between nationalist, swadesi, revolutionary movements.
- Read articles and literature on Pre-independent India.

**HISTORY**  
**INDIA AFTER 1947**  
**BA -404.II**

**COURSE OUTCOMES:****On completion of the course, student will be able to:**

- Explain problems faced by people after independence.
- Understand the constitution of India.
- Understand the development of science, technology and democracy in India.
- Participate in debates and discourse on constitutional amendments.
- Develop a positive attitude towards post- independent India.

<p style="text-align: center;"><b>POLITICAL SCIENCE</b> <b>REPRESENTATIVE WESTERN POLITICAL THINKERS – I</b> <b>BA -405.I</b></p>
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**COURSE OUTCOMES:****On completion of the course, student will be able to:**

- Recall various western political philosophy of Ancient Era.
- Understand medieval political philosophy of Confucius, Machiavelli and Thomas Aquinas.
- Explain the Concept of Social Contract Theory of State Origin.
- Comprehend the Sociological approach of Montesquieu.
- Appreciate various political philosophies.
- Read more articles and books on the contribution of political thinkers.

<p style="text-align: center;"><b>POLITICAL SCIENCE</b> <b>STATE POLITICS: RAJASTHAN</b> <b>BA -405.II</b></p>
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**COURSE OUTCOMES:****On completion of the course, students will be able to:**

- Understand the Reorganization of Rajasthan
- Acquire knowledge related with structure and function of local level of Government in Rajasthan.
- Understand the structure and functions of various commissions in Rajasthan.
- Examine the various development schemes of Rajasthan.
- Appreciate and examine the state politics of Rajasthan.

<p style="text-align: center;"><b>ENGLISH LITERATURE</b> <b>POETRY AND DRAMA</b></p>
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**BA -406.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Comprehend and summarize the gist.
- Analyze the poems.
- Develop aesthetic sense towards poetry
- Express themselves effectively in a variety of forms.
- Appreciate the poetry of romantic poets.
- Collect poems of romantic poets.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA -406.II**

**COURSE OUTCOME:**

**On completion of the course, students will be able to:**

- Understand the central idea of the essays: Making Writing Simple, How should One Read a Book?, Under the Banyan Tree, The Gateman's Gift, That Pagli & Am I Blue?
- Comprehend the writing style of J. B. Priestley, Virginia Woolf, R. K. Narayan, D. R. Sharma & Alice Walker
- Analyze the theme of the novel: Pride and Prejudice
- Develop a taste for English literature and literary sensibility
- Read the writings of Jane -Austen.
- Identify the similarities of England of 18<sup>th</sup> century and Indian Society.

**GEOGRAPHY  
HUMAN GEOGRAPHY II  
BA- 407. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the Composition of Population
- Compare the Population Composition of India with other Countries of Asia
- Understand the Concept, Causes and Consequences of Migration
- Classify the Human settlements
- Appreciate Mosaic of Culture
- Draw Chart and Diagrams of Population Composition



**GEOGRAPHY**  
**GEOGRAPHY OF RESOURCES II**  
**BA- 407. II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the Concept of Resources Utilization
- Locate and Define the Major Resources Regions of the World
- Classify Agriculture Crops
- Differentiate Beverages and Industrial crops
- Participate in the Conservation of Resources
- Draw map of world showing different resources.
- Visit places and observe resources.

**GEOGRAPHY PRACTICAL**  
**BA. - 407. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of map reading.
- Develop the skill of drawing maps with the help of compass.
- Appreciate the contribution of Geographers in creating maps.

**ECONOMICS**  
**PUBLIC FINANCE**  
**BA - 408.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concepts of public finance, public debt and fiscal policy.
- Understand the changing trends in the public finance.
- Understand the role of Government under liberalized environment.
- Analyze relationship between public revenue and public expenditure.
- Analyze the importance of deficit financing and fiscal policy.
- Take interest in government budget.
- Critique different budgets.

**ECONOMICS**  
**STATISTICS FOR ECONOMIC ANALYSIS**  
**BA - 408.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand uses and importance of statistics in economics.
- Understand the various measures of central tendency such as Mean, Median and Mode.
- Conduct economic analysis using equation and graphs.
- Draw statistical inference.
- Demonstrate knowledge of the empirical tools used in the analysis of data.
- Represent data in graphical and descriptive form.
- Describe and analyze the economy in quantitative terms.
- Apply economic tools of analysis.

**PSYCHOLOGY**  
**EXPERIMENTAL PSYCHOLOGY- I**  
**BA -409.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the meaning and scope of experimental psychology.
- Comprehend the importance of experimental psychology
- Apply the knowledge of experimental psychology in their life situations.
- Apply experimental tools to understand individuals.

**PSYCHOLOGY**  
**EXPERIMENTAL PSYCHOLOGY - II**  
**BA -409.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the meaning and scope of psychophysics
- Know and use of transfer of learning
- Develop understanding of thinking and reasoning
- Differentiate between learning and conditioning

**PSYCHOLOGY  
PRACTICAL  
BA -409.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret various psychological tests to understand learning.
- Understand illusion of different subject/testee through psychological tests.
- Guide subject/testee to improve memory.

Administration and Interpretation of standardized psychological tests of the following attributes :-

\_Memory test.

\_Perception.

\_Forgetting.

\_Learning

**हिन्दी साहित्य  
प्रथम पेपर नाटक तथा निबन्ध  
BA- 411.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- गद्य विधाओं के विकास का प्रत्यास्मरण कर सकेंगे।
- गद्य की प्रमुख विधाओं के तात्त्विक रूप को पहचान सकेंगे।
- रचना विशेष का महत्व समझने व मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- विषय, शिल्प भाषा मंचीयता आदि आधारों पर नाटकों की समीक्षा कर सकेंगे।

**हिन्दी साहित्य  
द्वितीय पेपर भाषा विज्ञान  
BA -411.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- भाषा के लक्षण एवं परिभाषा से अवगत हो सकेंगे।
- भाषा विज्ञान की दृष्टि से भाषा की प्रकृति को जान सकेंगे।
- भाषा विज्ञान के अध्ययन की दिशाओं की व्याख्या कर सकेंगे।
- भाषा व्यवस्था एवं भाषा व्यवहार को समझ सकेंगे।

**DRAWING AND PAINTING-THEORY**  
**HISTORY OF INDIAN PAINTING AND SCULPTURE- II**  
**BA- 412.I**

**Course Outcomes:**

**On completion of the course, students will be able to:**

- Recognise Indian Painting and Sculpture and modes of art expressions from different parts of India.
- Enrich their vision appreciate and develop an aesthetic sensibility to enjoy the beauty of nature and life.
- Observe and study the evolution of its permutations and synthesis with other styles and the rise of an altogether new style.
- Aware of art as a human experience.
- Appreciate the wide range of artistic expressions.

**DRAWING AND PAINTING**  
**PRACTICAL (NATURE STUDY)**  
**BA 412.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify monochromatic, complimentary, and analogous color schemes
- Use linear and tonal techniques to depict form and develop study of nature.
- Develop an informed use of basic color schemes and harmonies in the creation of visual work.

**DRAWING AND PAINTING**  
**PRACTICAL (PORTRAIT)**  
**BA 412.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify monochromatic, complimentary, and analogous color schemes
- Use linear and tonal techniques to depict form and develop composition and landscape
- Develop an informed use of basic color schemes and harmonies in the creation of visual work.
- Explain the process and difficulties of drawing based on previous experiences in art class.

**HOME SCIENCE**  
**INTRODUCTION TO COMMUNITY NUTRITION AND EXTENSION**  
**BA-413.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the methods and approaches of extension.
- Understand the functions, dietary sources and clinical manifestations.
- Initiate community based actions.
- Draw linkage between extension and communication.
- Identify the food and nutrition problems of community.
- Implement appropriate interventions.

**HOME SCIENCE**  
**UNDERSTANDING LIFE SPAN DEVELOPMENT**  
**BA-413.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the changes in child in respect to physical, psychological, language, moral and emotional.
- Identify the bases of development.
- Identify the challenges and problems faced in different age groups.
- List key components of development through different stages.

**HOME SCIENCE**  
**PRACTICAL**  
**BA-413.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the application of psychological test.
- Develop skills in planning and conducting psychological test.

संस्कृत साहित्य  
गद्य, काव्य, एवं व्याकरण  
बीए 415.I

अधिगम अनुवर्तन

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- नीति ग्रंथों का महत्व व नीतिपरक श्लोकों की व्याख्या कर सकेंगे ।
- संस्कृत ग्रन्थों में उपलब्ध जीवनोपयोगी विविध ज्ञान-भण्डार को ग्रहण कर सकेंगे ।
- स्तर के अनुरूप संस्कृत भाषा की व्यावहारिक योग्यता विकसित कर सकेंगे ।
- संस्कृत के श्रवण, भाषण, पठन और लेखन भाषा-कौशलों को विकसित कर सकेंगे ।
- विद्यार्थियों को संस्कृत वाङ्मय में निहित भारतीय वैज्ञानिक तथा वाणिज्यिक शब्दावली एवं शैली का जीवन में प्रयोग कर सकेंगे ।

**संस्कृत साहित्य**  
**काव्य, स्मृतिशास्त्र तथा संस्कृत-साहित्य**  
**बीए. 415.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- स्मृति शास्त्रों में निहित विचारों का विश्लेषण कर सकेंगे ।
- संस्कृत महाकाव्य का मानव जीवन में महत्व को समझ सकेंगे ।
- नीति शतक में उपस्थित मानवीय मूल्यों का विश्लेषण कर सकेंगे ।
- संस्कृत साहित्य का विवेचनात्मक अध्ययन कर सकेंगे ।
- संस्कृत काव्य में निहित मानवीय मूल्यों को विकसित कर सकेंगे ।
- स्मृतिशास्त्रों के योगदान की सराहना कर सकेंगे ।

## **Fifth Semester**

### **ENVIRONMENTAL EDUCATION**

#### **BA –501**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Develop Awareness of the concern for environmental issues
- Understand the concept, objectives and importance of Environmental Education
- Adopt multi-disciplinary approach to environmental problems
- Understand different methods & techniques of teaching Environmental Education
- Design, develop & implement strategies for Environmental Education
- Inculcate environment friendly values through Environmental Education

### **CONTEMPORARY INDIA AND EDUCATION**

#### **BA-502**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Analyze and understand educational concepts, their premises and contexts that are unique to education.
- Understand and appreciate the nature and the purpose of education, their practical ramifications in the school context.
- Analyze the basis of educational goals in the present day Indian society and examine the rationale of educational goals articulated in the reports of various Commissions and policy documents.
- Understand the importance of educational policies and programmes during the pre and post independence period.
- Analyze the forces affecting the educational system.
- Develop competencies to understand the various issues related to education and their addresser.
- Develop vision for futuristic programmes in education.
- Appreciate the role of education in human resource development.

**SOCIOLOGY**  
**POPULATION STUDIES**  
**BA- 503.I**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:**

- Demonstrate an understanding of basic demographic concepts.
- Analyse population dynamics.
- Apply demographic concepts and population theories to explain past and Present population characteristics.
- Understand contemporary socio-economic issues in the context of Population theories.
- Evaluate population policy of India and its impact.
- Read research papers on population studies.

**SOCIOLOGY**  
**CLASSICAL SOCIOLOGICAL THOUGHT**  
**BA- 503.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain Social thought of Auguste Comte, Marxian, Durkheimian, and Weberian on social world.
- Identify the foundations of classical sociology and their historical origins.
- Understand the relevance of classic theories to analyze contemporary social problems.

**HISTORY**  
**WORLD HISTORY(1453-1815)**  
**BA -504.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discuss the major developments in European politico-economic scenario since the Renaissance.
- Understand the major revolutions.
- Explain Napoleon and his continental system
- Understand the causes and results of major battles.



**HISTORY**  
**WORLD HISTORY (1815-1945)**  
**BA -504.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the political, social and economical condition of Europe between 1815-1945.
- Understand the causes and effect of two major world war.
- Identify the factors influencing the political rivalr between the nations.
- Draw maps and charts.
- Understand the process of unification of Germany and Italy.
- Explain with the formation of United Naiton and also understand its relevance.
- Read the documents and produce their own historical analysis.

**POLITICAL SCIENCE**  
**REPRESENTATIVE WESTERN POLITICAL THINKERS – II**  
**BA -505.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand various western political thoughts of modern time.
- Analyse contemporary trends in modern context.
- Appericiate the contribution of political thinkers.
- Discuss the relevance of various political thoughts.

**POLITICAL SCIENCE**  
**INTERNATIONAL RELATIONS**  
**BA- 505. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the key concepts in international relation
- Critically evaluate new trends in international politics.
- Understand the relation between India and neighbouring countries.
- Analyse the role of regional orgnizations in world poilitics.

- Critically evaluate the role of UNO in modern politics.
- Participate in video seminars diplomacy.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BA -506.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze the major theme of the play: Tughlaq
- Understand the writing style of Girish Karnad
- Comprehend the gist of the poems: Ulysses, My Last Duchess, Dover Beach, The Sea and the Skylark, Is Poetry Always Worthy When its old?, Don't Call Me Indo-Anglican, From Homecoming & Hiroshima.
- Appreciate different literary styles and enjoy the beauty of poetry.
- Appreciate the poems: Ulysses, My Last Duchess, Dover Beach, The Sea and the Skylark, Is Poetry Always Worthy When its old?, Don't Call Me Indo-Anglican, From Homecoming & Hiroshima

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA -506.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze the ideas discussed in the essays: Introduction from Women Writing in India: 600 B. C. to the present, The Shroud, Idgah, Roots & Birthday
- Understand the life and writing style of Susie Tharu and K. Lalitha, Munsri Premchan, Ismat Chughtai, V. M. Basheer
- Interpret the ideas and themes of the novel Guide
- Develop literary sensibility.
- Read the other writing of R.K. Narayan and Indian writers in English.

**GEOGRAPHY  
GEOGRAPHY OF INDIA I  
BA- 507. I**

**Course Outcomes:**

**On completion of the course, students will be able to:**

- Define and Understand Physiography and Broad Physical Division of India
- Read, Interpret, and generate Maps and other Geographic Representations of India
- Understand the Climatic Condition and Vegetation of India
- Locate and Define Soils and Drainage System of India
- Make Optimal use of Natural Resources of India
- Create maps on their own.
- Develop cartography.

**GEOGRAPHY**  
**GEOGRAPHY OF ASIA I**  
**B.A.B.ED- 507. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Read, Interpret and Generate Maps and Other Geographic Representation of Asia.
- Understand the Climatic Condition and Drainage System of Asia.
- Differentiate Soils and Agriculture of Asia.
- Establish relationship between the global, regional and local.
- Discuss Physical Features of Asia.
- Apply geographical knowledge to living everyday.

**GEOGRAPHY PRACTICAL**  
**BA. - 507. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discriminate between conical and cylindrical map projections.
- Understand the importance of map projections.
- Use map projections in understanding different geographical concepts.

**ECONOMICS**  
**DEVELOPMENT ECONOMICS-I**  
**BA - 508.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discuss alternative conceptions of development and their justification.
- Participate in the discourse on the modern theories of development.
- Draw a comparison between classical and modern theories of development.
- Identify the strengths of classical and modern theories of development.
- Take interest in Indian economy through different lens of development.

**ECONOMICS**  
**DEVELOPMENT ECONOMICS-II**  
**BA - 508.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Draw linkage in development and planning.
- Explain human development through the prism of gender, education and health.
- Analyze the human development from different perspectives.
- Discuss socio-political and cultural indicators of sustainable development.
- Present argument in relation to investment and planning.
- Read national and international report of human development.
- Participate in sustainable development as an economic citizen.

**PSYCHOLOGY**  
**CHILD PSYCHOLOGY**  
**BA -509. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept and history of childhood.
- Understand how theories try to explain childrens development.
- Illustrate with developmental task of childhood.
- Discuss the development of social and cognitive development of children.
- Recognize the common hazards and happiness of early and late childhood.

**PSYCHOLOGY**  
**ADOLESCENT PSYCHOLOGY**  
**BA -509. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the developmental tasks of adolescent period.
- Familiarize with social, cognitive and emotional development of adolescent.
- Recognize the hazards and happiness of adolescent period.
- Discuss various theories of development.
- Apply different theories of development in instructional process.
- Create a productive classroom environment.

**PSYCHOLOGY  
PRACTICAL  
BA -509. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret psychological tests to major social development of child and adolescent.
- Understand moral development of different subject/testee through psychological tests.
- Guide subject/tested to manage youth problems.

Administration and Interpretation of standardized psychological tests of the following attributes:-

- \_Emotional maturity.
- \_Social maturity.
- \_Adolescent problems.
- \_Moral development.

**हिन्दी साहित्य  
प्रथम पेपर हिन्दी पद्य  
BA- 511.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी की विधाओं का तात्त्विक परिचय का प्रत्यास्मरण कर सकेंगे।
- साहित्यिक कृतियों का विभिन्न दृष्टियों से विवेचना-विश्लेषण, आस्वाद तथा समीक्षा करने की दृष्टि विकसित कर सकेंगे।
- हिन्दी पद्य के स्वरूप का विश्लेषण कर सकेंगे।
- हिन्दी कविता के इतिहास को सारांशित कर सकेंगे।

**हिन्दी साहित्य**  
**द्वितीय पेपर रीतिकालीन काव्य**  
**BA -511.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी की आदिकालीन, भक्तिकालीन व रीतिकालीन काव्य प्रवृत्तियों की व्याख्या कर सकेंगे।
- तात्कालीन प्रमुखकवि तथा उनकी कृतियों का विश्लेषण कर सकेंगे।
- पाठ्य कृतियों के संदर्भ में समीक्षा की क्षमता विकसित कर सकेंगे।
- रीतिकालीन काव्य का सौन्दर्य बोध व सराहना कर सकेंगे।
- रीतिकालीन काव्य का संग्रह कर सकेंगे।

**DRAWING AND PAINTING**  
**HISTORY OF ANCIENT ART AND WESTERN ARTS (THEORY)**  
**BA -512. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Familiarize with the western art .
- Know the development, similarities and dissimilarities of ancient Art and Western Art.
- Appreciate Gotheic, Byzantine and Greek art.
- Visit places of different art forms.

**DRAWING AND PAINTING**  
**PRACTICAL**  
**BA- 512. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of Anatomy drawing.
- Develop the skill of outdoor painting
- Creat indoor paintings.
- Appericiate different impressionistic image of models.

**DRAWING AND PAINTING**  
**PRACTICAL**  
**BA- 512. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Introduce the students to a wide range of drawing strategies to advance their practice and offer methods by which they can build and sustain a work over a longer period.
- Challenge the students to interrogate their existing skills and encourage them move from line drawing to consider the qualities of tone, texture and mark making to reveal form and volume.
- Develop increased observational skills. Through practice the students will become adept at recognizing the structure of the human form and begin to assess their own work, providing confidence in their capacity to advance their subsequent study in Fine Art life drawing

**HOME SCIENCE  
INTRODUCTION TO TEXTILES  
BA-513.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand different fibres.
- Recognize different types of yarns.
- Appreciate the art of dying of yarns.
- Discuss basic principles of yarn making.

**HOME SCIENCE  
INTRODUCTION TO CLOTHING  
BA-513.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recall and recognize the psychological aspect of clothing in social situation.
- Understand the design and constructional details of historic costumes and make use of knowledge in modern garment designing.
- Appreciate historic costumes and textiles of different countries.
- Understand the psycho-social aspect of clothing.
- Appreciate regional costumes of India.
- Appreciate global diversity of dressing.

**HOME SCIENCE  
PRACTICAL  
BA-513.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the Preparation, packaging, sensory/objective (TSS, pH) evaluation and costing of fruit and vegetables products
- Identify the steps involved in preservation of fruit and vegetables products

**संस्कृत साहित्य  
ललित साहित्य तथा साहित्यशास्त्र  
बीए. 515.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत साहित्य के विभिन्न साहित्यकारों की लेखन शैली का विश्लेषण कर सकेंगे।
- संस्कृत साहित्य में उल्लिखित प्रकृति चित्रण का वर्णन कर सकेंगे।
- संस्कृत साहित्य के पात्रों के नैतिक मूल्यों को स्वयं में विकसित कर सकेंगे।
- संस्कृत साहित्यकारों की भाषा शैली के सौन्दर्य की सरहाना कर सकेंगे।

**संस्कृत साहित्य  
संस्कृत काव्य शास्त्र  
बीए -515.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत काव्यशास्त्र के विभिन्न रूपों में अंगों की विवेचना कर सकेंगे।
- संस्कृत ध्वनियों का विश्लेषण कर सकेंगे।
- संस्कृत काव्य के विभिन्न संप्रदायों का विश्लेषण कर सकेंगे।
- संस्कृत साहित्य में रसास्वादन की क्षमता को विकसित कर सकेंगे।



## Sixth Semester

### अनिवार्य हिन्दी BA -601

#### अधिगम अनुवर्तन

इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिंदी भाषा के उद्भव और विकास का प्रत्यास्मरण कर सकेंगे।
- हिन्दी की लिपियों व बोलियों का अर्थ ग्रहण कर सकेंगे।
- विभिन्न व्यवहार क्षेत्रों में राजभाषा के रूप में हिन्दी भाषा का उपयोग कर सकेंगे।
- हिंदी भाषा के व्यावहारिक रूप को अपने लेखन व वाचन में विकसित कर सकेंगे।

### CHILDHOOD AND GROWING UP

#### B.A.B.ED. -602

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:-**

- Understand the processes of development and learning.
- Appreciate human diversity.
- Understand multidimensional and inter-dependence of development.
- Understand the linkages of child development with family, school, neighborhood and community.
- Discuss various theories of development.
- Apply different theories of development in instructional process.
- Create a productive classroom environment.

### SOCIOLOGY

#### INDIAN SOCIOLOGICAL THINKERS

#### BA -603. I

#### COURSE OUTCOMES

**On completion of the course, students will be able to:-**

- Understand Indian thinkers and their ideas in each of the major emerging paradigms in Indian sociology.
- Articulate and apply contemporary sociological use and theory.
- Analyze the various sociological concepts and theories developed by Indian sociological thinkers.
- Appreciate the contribution of Indian sociological thinkers.

**SOCIOLOGY**  
**INTRODUCING SUB SOCIOLOGIES**  
**B.A.B.ED- 603. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Understand Urban Sociology.
- Explain Socio-developmental issues.
- Participate in the achievement of the sustainable cities of communities.
- Appreciate different policies and programs of urban social development.

**POLITICAL SCIENCE**  
**CHALLENGES TO DEMOCRACY**  
**B.A.B.ED- 605. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Analyse the reasons and consequences of various problems faced by Indian democracy.
- Understand the major global issues.
- Develop specific ways in which contemporary challenges can be addressed peacefully.
- Contribute in the maintaining democracy in the country.
- Appreciate the initiatives.

**POLITICAL SCIENCE**  
**MODERN POLITICAL THEORY – PART II**  
**B.A.B.ED- 605.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the various theories of Political Development and its genesis.
- Understand and analyse the trends of Modernization and Post modernization.
- Discuss various models of political theory based on simulations.
- Analyse different theories of alienation.
- Appreciate the contributions of various theories of political development.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BA -606. I**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Comprehend the poetry of Yeats, Eliot, G. K. Adiga, E. D Souza, O. N. V. Kurup, Jayaprabha, Daya Pawar and S Mahapatra.
- Express the gist of the poems orally.
- Comprehend representative literary and cultural text with a significant number of historical, geographical contexts.
- Apply critical and theoretical approaches to the reading and analyze literary and cultural texts in multiple genres.
- Appreciate literary style of poems.
- Read poems and drama of different genres.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BA -606. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Comprehend the central idea of the essays.
- Analyze the major themes of the novel, Jane Eyre.
- Understand the writing style of Kanchan Ilaiah, S. V. Srinivas, Shashi Deshpande & Ambai.
- Analyze the characters, setting and plot of the novel, Jane Eyre.
- Read other novels of Charlotte Bronte.

**GEOGRAPHY  
GEOGRAPHY OF INDIA II  
BA- 607. I**

**Course Outcomes:**

**On completion of the course, students will be able to:-**

- Examine the physiographic features of India.
- Differentiate the Crops of India.
- Understand the Development of Industries.
- Understand the types and patterns of settlements.

- Describe Population Growth and Population Density.
- Locate the types of Settlements in India.

**GEOGRAPHY**  
**GEOGRAPHY OF ASIA II**  
**BA- 607. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the location, physiography, agriculture, minerals and Industries of Asia.
- Locate on map the Physical division of Japan, China, Pakistan and Turkey.
- Read Literature Related to different types of Agriculture Crops of Japan, China, Pakistan and Turkey.
- Locate and define the major Mineral's Regions of Japan, China, Pakistan and Turkey.
- Locate on map the Industrial Region of Japan, China, Pakistan and Turkey.

**GEOGRAPHY PRACTICAL**  
**BA. - 607. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discriminate between conical, cylindrical and zenithal map projections.
- Understand the importance of zenithal projections.
- Use map projections in understanding the Earth.

**ECONOMICS**  
**MONEY AND BANKING**  
**BA - 608.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Discuss the basic concepts of Money and Banking.
- Explain the functions of commercial bank and Reserve Bank of India.
- Discuss the effects of nationalization on economy.
- Analyze different theories of demand for money.
- Describe and analyze the role of money in different types of economy.

- Appreciate the new concepts in banking.

**ECONOMICS**  
**INTERNATIONAL ECONOMICS**  
**BA - 608.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Demonstrate knowledge of concepts of tariff quota and exchange rate.
- Critically analyze the role of International institutions in foreign trade.
- Understand the role of International Trade.
- Discuss the theories of international trade.
- Explain the composition and consequences of international trade.
- Analyze the effect of trade policy in different time periods.
- Take interest and read the latest developments in international trades.

**PSYCHOLOGY**  
**COUNSELLING PSYCHOLOGY - I**  
**BA- 609. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Know the concept of counselling.
- Understand the approaches of counselling.
- Acquaint with the process of counselling.
- Apply the knowledge of counselling.
- Ethically conducts the counseling across different settings.
- Reflect values and attitudes of counseling psychology in behavior.

**PSYCHOLOGY**  
**MANAGING STRESS, HEALTH AND WELL BEING**  
**BA. - 609. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Understand the meaning and nature of stress.
- Analyze major causes of stress.
- Comprehend various theories of stress.

- Understand the concept of well being.
- Use knowledge regarding the management of stress.
- Aware of well being of people.

**PSYCHOLOGY  
PRACTICAL  
B.A. B.ED. - 609. III**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Administer and interpret various psychological tests to major stress level of subjects.
- Guide and counsell different stake holders by the use of psychological tests.
- Guide subject/testee to maintain well being.

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_Stress .
- \_Psychological well being.
- \_Counselling.
- \_Mental health.

**हिन्दी साहित्य  
प्रथम पेपर उपन्यास एकांकी  
BA- 611. I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य की विभिन्न विधाओं के तात्त्विक स्वरूप की व्याख्या कर सकेंगे।
- उपन्यास व एकांकी की विभिन्न प्रवृत्तियों का विश्लेषण कर सकेंगे।
- एकांकी व उपन्यास की विकास क्रम का प्रत्यभिज्ञान कर सकेंगे।
- उपन्यास एकांकी के आस्वादन, अध्ययन एवं मूल्यांकन कर सकेंगे।

**हिन्दी साहित्य  
द्वितीय पेपर आधुनिक काल  
BA- 611. II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य के काल विभाजन का प्रत्यास्मरण व प्रत्यभिज्ञान कर सकेंगे।
- आधुनिक काल की हिन्दी साहित्य की प्रवृत्तियों का वर्णन कर सकेंगे।
- आधुनिक कालीन हिन्दी कवियों की कृतियों में अभिरूचि विकसित कर सकेंगे।
- हिन्दी की विभिन्न संस्थाओं व पत्र-पत्रिकाओं को पढ़ेंगे।

**DRAWING AND PAINTING**  
**ART AND CULTURE OF FAR EAST (THEORY)**  
**BA. - 612. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the artistic style of Far East.
- Differentiate the art of Ancient China and Japan.
- Understand the cultural development in contemporary art.
- Appreciate the far eastern architecture.
- Read books related to art and culture of China and Japan.
- Visit art galleries.

**DRAWING AND PAINTING PRACTICAL**  
**PRACTICAL**  
**BA- 612. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand basic anatomical relationships relevant to descriptive drawing of the human form.
- Demonstrate competence in linear methods of drawing images of the life model.
- Demonstrate competence in tonal methods of drawing images of the life model.
- Understand and be able to depict basic proportional relationships of the life model.
- Understand rhythms of the body and natural forms and how they exist in the whole and parts of the figure.

**DRAWING AND PAINTING PRACTICAL**  
**PRACTICAL**  
**BA- 612. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Create drawing strategies to advance their practice
- Develop from line drawing to the qualities of tone and texture
- Identify form and volume.
- Develop increased observational skills.
- Develop confidence in their capacity to advance their subsequent study in Fine Art life drawing

**HOME SCIENCE**  
**HOME SCIENCE FOR SKILL DEVELOPMENT**  
**BA-613.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand different types of fashion events and the planning required for their successful organisation.
- Gain practical knowledge of administrative, design, marketing, operational and risk management steps required for the successful organisation of fashion events through project work.
- Conduct project work on fashion events.
- Participate in fashion events.
- Visit fashion shows.
- Read stories and reports of different fashion events.

**HOME SCIENCE**  
**FOOD PRESERVATION, PROVISIONS OF FOOD RELATED LAWS**  
**BA-613.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Recall food laws and regulations.
- Understand the concept of processing and preservation of fruits and vegetables.
- Develop awareness of food safety.

**HOME SCIENCES**  
**PRACTICAL**  
**BA-613.III**

**COURSE OUTCOMES:**



**On completion of the course, students will be able to:-**

- Understand the process of preservation of fruit and vegetable products
- Appreciate the different methods of preservation of fruit and vegetable products
- Use the different methods of preservation of fruit and vegetable products in daily life

**संस्कृत साहित्य**  
**भाषा—विज्ञान तथा शास्त्रीय साहित्य का इतिहास**  
**ch, 615.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत भाषा की उत्पत्ति विकास की विवेचना ।
- अर्थ विज्ञान अर्थ परिवर्तन कारणों का विश्लेषण ।
- सिद्धांत कौमुदी का विश्लेषणात्मक अध्ययन ।
- शास्त्रीय साहित्य शास्त्र का विवेचन आत्मक वर्णन ।

**संस्कृत साहित्य**  
**नाटक एवं नाट्य शास्त्र**  
**बीए -615.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत नाटक के उद्भव एवं विकास का परिचय ।
- संस्कृत नाटकों के रसास्वादन की क्षमता का विकास ।
- संस्कृत नाटकों के तात्विक रूपों का विश्लेषण ।
- संस्कृत नाट्यकारों के व्यक्तित्व एवं कृतित्व की विवेचना ।

**B.Ed.**

## **Name of the Program: *B.Ed.***

### **Program Outcomes:**

#### **B. Ed Programme outcomes are as follows:**

- to develop a focus on the context of education in the contemporary Indian milieu
- to understand the sensitivity of diverse languages in the country and their outcome in the class.
- to understand the shift in the conceptualization of disciplinary knowledge curriculum in schools.
- to understand the gender inequalities in various facets of school education-overcome gender inequalities in the classroom and social institutions.
- to assist in learning of organized learning experiences.
- to help gather appropriate assessment strategies towards learning both for the teachers and the students.
- to ensure that there is close connections between the student-teachers and the self, child, community, and school in the different curricula areas.
- to enable the student- teacher to apply ICT and integrate the concept to help in the teaching learning process.
- to strengthen of professional competencies of student –teachers.
- to ensure experiences are made more systematized.
- to use first hand experience of student - teachers interns in senior - secondary classes.
- to appreciate role of socio -political realities and also the contextual understanding in the inclusive learning atmosphere.

## **Course Outcomes**

### **First Semester**

#### **CHILDHOOD AND GROWING UP**

##### **B.Ed-101**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understanding of the processes of development and learning.
- Appreciate human diversity.
- Understand multidimensional and inter-dependence of development.
- Understand the linkages of child development with family, school, neighbourhood and community.

#### **CONTEMPORARY INDIA AND EDUCATION**

##### **B.ED-102**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Analyze and understand educational concepts, their premises and contexts that are unique to education.
- Understand and appreciate the nature and the purpose of education, their practical ramifications in the school context.
- Analyze the basis of educational goals in the present day Indian society and examine the rationale of educational goals articulated in the reports of various Commissions and policy documents.
- Understand the importance of educational policies and programmes during the pre and post independence period.
- Analyze the forces affecting the educational system.
- Appreciate the role of education in human resource development.
- Develop competencies to understand the various issues related to education and their addresser.
- Develop vision for futuristic programmes in education.

#### **LANGUAGE ACROSS THE CURRICULUM**

##### **B.ED-103**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature of multi-cultural and multi-linguistic society.
- Know the major linguistic issues with emphasis on Indian society.
- Understand the relation of language with other subjects.
- Analyse classroom linguistic problems and classroom management.
- Understand different strategies to promote classroom learning.

## **UNDERSTANDING THE DISCIPLINE: LANGUAGE**

### **B.ED-104**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Reflect on historical paradigm shift in language.
- Enable student- teachers to know that language is product of human intellect.
- Acquaint student–teachers with linguistic as science of human language and its relation with other fields of study.
- Enable students to understand multilingual society and the need of global language.

## **UNDERSTANDING THE DISCIPLINE: SCIENCE**

### **B.ED-104**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the phenomena of science and developmental perspective of science
- Understand major achievements, problems and ethics in science

## **UNDERSTANDING THE DISCIPLINE: SOCIAL SCIENCE**

### **B.ED-104**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the historical and philosophical bases of Social Science.
- Understand the integration of knowledge about the learner, subject and social context.
- Develop ability to correlate social with disciplinary subjects.
- Reflect on the nature and role of disciplinary knowledge in the school curriculum.
- Understand key concept of social science.
- Understand the need for learning social science at elementary and secondary level.

## **YOGA HEALTH AND PERSONALITY**

**B.ED-105**

### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand concept and streams of Yoga health, healings and disease
- Follow Yogic principles of healthy living.
- Manage Stress through yoga.
- Understand and practices various yogic Asana and prnayama.
- Understand Need of Yoga for positive health and wholesome personality development.
- Establish Relationship between Yoga and Health.

## **YOGA PRACTICAL**

**BABED-102.II**

### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop skill of Asanas and kriyas.
- Develop the skill of meditation.
- Appreciate the knowledge of meditation and yogic kriyas.
- Develop personality.

## Second Semester

### TEACHING AND LEARNING B.ED-201

#### Course Outcomes:

**After the completion of the course student will be able to:**

- Understand the concept of learning and teaching.
- Understand theories of learning.
- Understand learners.
- Understand phases and models of teaching.
- Understand the strategies of teaching.
- Analyzing competencies of teaching and learning.
- Analyze competencies related to learning in and out of school.

### DRAMA AND ART IN EDUCATION B.ED-202

#### Course Outcomes:

**After the completion of the course student will be able to:**

- The use of art in teaching – learning.
- Understand local culture and art forms.
- Use drama as critical pedagogy
- Use drama and art forms to invoke collective consciousness.
- Enhance theatre skills
- Use art forms in bringing about social change
- Use art forms in nurturing empathy.
- Use art forms in expanding the landscapes of children's art.

### ASSESSMENT FOR LEARNING B.ED-203

#### Course Outcomes:

**After the completion of the course student will be able to:**

- Critical Examine of issues in assessment and evaluation from constructivist paradigm.
- Understand key concepts such as formative and summative assessment, evaluation and measurement, test, examination.
- Use different kinds and forms of assessment that aid student learning.

- Use wide range of assessment tools, and learn to select and construct these appropriately.
- Evolve realistic, comprehensive and dynamic assessment procedures that are keeping the whole student in view.

## COMPUTER APPLICATION IN EDUCATION

**B.ED- 204**

### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the fundamental hardware components
- Understand the difference between an operating system and an application program
- Give examples of types of computers
- State the applications of computer technology
- Identify the principal components of computer system
- Draw a flow diagram and represent the data flows.
- Apply computer technology in their learning and teaching.
- Read about the innovative uses of computer.

## PEDAGOGY OF CHEMISTRY

**B.ED-205**

### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Help student-teachers revisit the key concepts of chemistry.
- Encourage student-teachers to grasp the key concepts through constructivist and experimental pedagogy.
- Skills to be used in the classrooms at upper primary and secondary level.
- Apply the chemistry in daily life.
- Use different methods of teaching chemistry in diverse settings.
- Enable student-teachers to use various techniques and methods of evaluation in chemistry.
- Prepare latest teaching aids organise Co-curricular activities.

## PEDAGOGY OF GENERAL SCIENCE

**B.ED-205**

### **Course Outcomes:**

**After the completion of the course student will be able to:**



- Revisit the key concepts of general science.
- Grasp the key concepts through constructivist and experimental pedagogy.
- Skills to be used in the classrooms at upper primary and secondary level.
- Understand and appreciate of General Science in daily life.
- Construct tests different methods of teaching General Science.
- Use various techniques and methods of evaluation in General Science.
- Prepare and use various teaching aids.

## **PEDAGOGY OF POLITICAL SCIENCE**

### **B.ED-205**

#### **Course Outcomes:**

##### **After the completion of the course student will be able to:**

- Understand the broad themes of democracy, development and diversity.
- Understand the modern concept of political science in terms of nature and interface with society.
- Acquire a conceptual understanding of the process in learning of political science and transactional implications.
- Understand different methods of teaching political science.
- Develop ability to prepare teaching aids.
- Develop ability to organize group activities.

## **PEDAGOGY OF ENGLISH**

### **B.ED-205**

#### **Course Outcomes:**

##### **After the completion of the course student will be able to:**

- Understand the nature and purpose of English.
- Understanding of the basic concepts in second language teaching.
- Teach basic language skills as listening, speaking, reading and writing and integrate them with communicative purpose.
- Review and use appropriately different approaches and methods of teaching English.
- Select, prepare, and use appropriate audio-visual aids for effective teaching of English.
- Use various techniques of testing English as a second language and develop diagnostic techniques and remedial teaching.

**संस्कृत शिक्षण**  
**B.Ed.-205**

**अधिगम अनुवर्तन :**

- भाषा संरचना में संस्कृत भाषा तत्वों का ज्ञान देना।
- संस्कृत भाषा के विकास एवं विशेषताओं को समझना।
- माध्यमिक स्तर के लिए निर्धारित संस्कृत पाठ्यक्रम एवं पाठ्यवस्तु के विश्लेषण व समीक्षा की कुशलता का विकास करना।
- संस्कृत के वैज्ञानिक स्वरूप का ज्ञान देना।
- संस्कृत शिक्षण में प्रयुक्त होने वाली विधियों एवं युक्तियों से अवगत कराना।
- संस्कृत भाषा शिक्षण में दृश्य व श्रव्य उपकरणों के व्यावहारिक उपयोग का ज्ञान देना।
- संस्कृत शिक्षण में मूल्यांकन व मूल्यांकन विधियों का महत्व तथा उपलब्धि परीक्षण, उपचारात्मक व निदानात्मक परीक्षण का ज्ञान देना।

**PEDAGOGY OF MATHEMATICS**  
**B.ED-205**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand nature of Mathematics as a discipline.
- Understand general objectives of teaching Mathematics.
- Formulate instructional objectives in terms of behavioural outcomes.
- Analyze the content in terms of concepts, sub-concepts and relation between them.
- Select and organise learning experiences according to content and level of students.
- Design appropriate teaching – learning strategy/approach suited to particular content.
- Use ICT and various teaching aids in teaching of Mathematics..
- Evaluate Mathematics Text Book.
- Construct achievement test and diagnostic test.
- Understand innovations and implications of researches in the field of Mathematics Education

**PEDAGOGY OF COMMERCIAL PRACTICE**  
**B.ED-205**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature and purpose of Commercial Practice.
- Develop pedagogical analysis of the subject matter and concept maps syllabus at different levels.
- Use ICT for effective teaching of Commercial Practice.
- Adopt thematic approach of teaching.

## PEDAGOGY OF BIOLOGY

### B.ED-206

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Revisit the key concepts of biology.
- Deliver key concepts through constructivist and experimental pedagogy
- Develop related skills to be used in the classrooms at upper primary and secondary level.
- Appreciate the role of biology in daily life
- Acquaint student-teachers with such content which would deepen and enrich their knowledge in biology
- Use different methods of teaching biology in different situations.
- Use various techniques and methods of evaluation in biology

## PEDAGOGY OF ECONOMICS

### B.ED-206

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand the nature and purpose of Economics.
- Skillful pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of Economics.
- Acquire knowledge to adopt thematic approach of teaching.
- Think critically the economic issues, problems, policies and solution. Course content:

## PEDAGOGY OF GEOGRAPHY

### B.ED-206

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand nature and purpose of Geography in modern Indian Perspective.
- Skilled in pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of Geography.
- Acquire of knowledge to adopt thematic approach of teaching.

## PEDAGOGY OF SOCIAL SCIENCE

**B.ED-206**

### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Revisit the key concepts of social science.
- Grasp the key concepts and categories through constructivist and experimental pedagogy.
- Understand and Appreciate Social Studies in daily life
- Understand different methods of teaching Social Studies.
- Use various techniques and methods of evaluation in social studies.
- Develop ability to prepare teaching aids.
- Develop ability to organize group activities.

## PEDAGOGY OF HISTORY

**B.ED-206**

### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand nature and purpose of History in modern Indian Perspective.
- Skilled in pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of History.
- Acquire of knowledge to adopt thematic approach of teaching.
- Create Time Scale related to Historical events and persona.

## हिन्दी शिक्षण

**B.ED-206**

### **अधिगम अनुवर्तन**

- भाषा संरचना में हिन्दी भाषा तत्वों का ज्ञान देना।
- हिन्दी भाषा के विकास एवं विशेषताओं को समझना।

- माध्यमिक स्तर के लिए निर्धारित पाठ्यक्रम एवं पाठ्यवस्तु के विश्लेषण व समीक्षा की कुशलता का विकास करना।
- हिन्दी की विधाओं एवं उनके व्यवहारिक शिक्षण संस्थितियों का ज्ञान देना।
- हिन्दी भाषा शिक्षण में दृश्य व श्रव्य उपकरणों के व्यवहारिक उपयोग का ज्ञान देना।
- हिन्दी शिक्षण में मूल्यांकन व मूल्यांकन विधियों का महत्व तथा उपलब्धि परीक्षण, उपचारात्मक व निदानात्मक परीक्षण का ज्ञान देना।

## **PEDAGOGY OF PHYSICS**

### **B.ED-206**

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand nature of Physics as a discipline.
- Understand general objectives of teaching Physics.
- Formulate instructional objectives in terms of behavioural outcomes.
- Analyze the content in terms of concepts, sub-concepts and their linkages
- Provide learning experiences engaging learners
- Apply Evaluation tools for the assessment purposes.

## **PEDAGOGY OF BOOK KEEPING**

### **B.ED-206**

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand the nature and purpose of teaching of Book Keeping.
- Develop pedagogical analysis of the subject matter
- Develop content base concept maps
- Use ICT for transaction of book keeping pedagogy
- Adopt thematic approach of teaching.
- Appreciate the use of teaching aids in meaningful engagements of learning
- Apply Evaluation tools for the assessment purposes.

## **PEDAGOGY OF DRAWING AND PAINTING**

### **B.ED-206**

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Understand the nature and aims of Art.
- Establish its correlations with other subjects.

- Use various methods of teaching Art.
- Develop positive attitude towards art
- Use teaching aids in nurturance of creativity in arts.
- Enjoy and appreciate the role of art in school curriculum.

## **SCHOOL – INTERNSHIP**

### **B.ED-P1**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Use ICT effectively.
- Sustained engagement with learners and schools.
- Explore a variety of pedagogies in their subject areas of different school activities.
- Reflect on one's aim Professional Practice.
- Write Professional diaries.

## Third Semester

### KNOWLEDGE AND CURRICULUM

#### B.ED-301

##### Course Outcomes:

**After the completion of the course student will be able to:**

- Develop understanding the need and importance of curriculum in fulfilling the aims of education.
- Critically analyse various samples of textbook.
- Examine the epistemological basis of education.
- Establish interconnectedness of curriculum, textbooks, pedagogy and evaluation.
- Analyse national curriculum frameworks.

### CRITICAL UNDERSTANDING OF ICT

#### B.ED-302

##### Course Outcomes:

**After the completion of the course student will be able to:**

- Understand the meaning of properties in the text
- Demonstrate an awareness of the main processes in an ICT system
- Demonstrate awareness of communication components of ICT systems
- use system map and block diagram
- use units for conveying data and for storing data appropriately.

### SCHOOL INTERNSHIP

#### B.ED-P2

##### Course Outcomes:

**After the completion of the course student will be able to:**

- Enable to plan learning conditions and activities for specific units of study.
- Provide opportunities to observe and participate in the school.
- Impart understanding of school culture.
- Understand multiple roles and responsibilities of teacher.
- Understand and reflect one's own professional practices to grow as a practitioner.
- Capacitate to think about educational theories and their application in concrete teaching learning experience.

## **Fourth Semester**

### **GENDER, SCHOOL AND SOCIETY**

**B.ED-401**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand gender and related concepts.
- Understand gender in historical context
- Observe and understand related inequalities, its social causes and impact on society.
- Analyse gender difference in relation to cognition, achievement and career choice.
- Analyse the relationship of gender and development and their implications for policy and practice.
- Participate in gender, school and society discourse.

### **CREATING AN INCLUSIVE SCHOOL**

**BED-402**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Demonstrate knowledge of different perspectives in the area of education of children with disabilities.
- Develop positive attitudes towards children with special needs.
- Identify needs of children with diversities.
- Plan need-based programmes for all children with varied abilities in the classroom.
- Use human and material resources in the classroom.
- Use specific strategies involving skills in teaching special needs children in inclusive classrooms.
- Use appropriate learner-friendly evaluation procedures.
- Incorporate innovative practices to respond to education of children with special needs.
- Contribute to the formulation of policy.

### **PEACE EDUCATION**

**B.ED-403**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**



- Understand the need and importance of value education.
- Understand the nature, characteristics and types of human values.
- Understand the five core values - Truth, Righteous conduct, Peace, Love and Non-Violence.
- Appreciate the developments in Peace Education in India and Abroad.
- Understand various methods, techniques and approaches of value development.
- Appreciate the preamble to the constitution and values inherent in it.
- Understand various models of value education

## **ENVIRONMENTAL EDUCATION**

### **B.ED-404**

#### **Course Outcomes:**

#### **After the completion of the course student will be able to:**

- Aware of the concern for environmental issues
- Acquaint with the concept, objectives and importance of Environmental Education
- Adopt multi-disciplinary approach to environmental problems
- Design, develop & implement strategies for Environmental Education
- Understand different methods & techniques of teaching Environmental Education
- Inculcate environment friendly values through Environmental Education

## **POST INTERNSHIP**

### **BED-P3**

#### **sCOURSE OUTCOMES:**

#### **On completion of the course, students will be able to:**

- Expected to submit a comprehensive report on the basis their school internship
- Improvement in the instructional activity of the student teachers by using various techniques and practical skills in teaching
- Develop Confidence in facing the classroom situations.
- Guiding in planning their lessons, learning to organise contents, formulating suitable gestures and developing other related skills.
- Create an ICT based lesson plan and also used ICT based resources as a teaching aids

**B.A.- B. Ed.**

## **Program: B.A. B.Ed**

### **Programme outcomes are as follows:**

- Develop mastery of major areas of content knowledge.
- Design an inclusive learning environment for diverse students.
- Prepare and use different assessment tools in class.
- Plan effective instruction.
- Develop teaching skills.
- Prepare teaching models and tools.
- Reflect upon instructional practices.
- Apply subject specific knowledge and skills in teaching.
- Understand and evaluate the secondary school curriculum of schools affiliated to different boards.
- Analyse the role of teacher in prevailing socio-cultural and political system in the environment.
- Develop a positive attitude towards teaching profession.
- Contribute in the development of nation and society.
- Show the commitment and collaborative stance to help all students learn.

## **Course Outcome:**

### **First Semester:**

<p style="text-align: center;"><b>GENERAL ENGLISH (COMPULSORY)</b> <b>ESSENTIAL LANGUAGE SKILLS</b> <b>BABED -101</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the differences between spoken and written English
- Understand the factors that influence use of grammar and vocabulary in speech and writing.
- Comprehend the format of different forms of formal letter writing.
- Summarise and appreciate poems.
- Differentiate among different parts of speech
- Make sentences in Active and Passive Voice.
- Transform sentence from direct to indirect narration .
- Develop vocabulary and communicative skills.

<p style="text-align: center;"><b>YOGA</b> <b>YOGA HEALTH AND PERSONALITY</b> <b>BABED-102.I</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand concept and streams of Yoga health, healings and disease.
- Manage Stress through yoga.
- Understand and practise various yogic Asana and Prnayama.
- Understand need of Yoga for positive health and wholesome personality development.
- Establish relationship between Yoga and Health.
- Follow Yogic principles of healthy living.
- Develop a positive attitude towards yoga.

<p style="text-align: center;"><b>YOGA PRACTICAL</b> <b>BABED-102.II</b></p>
--

**COURSE OUTCOMES:****On completion of the course, students will be able to:**

- Develop skill of Asanas and kriyas.
- Develop the skill of meditation.
- Appreciate the knowledge of meditation and yogic kriyas.
- Develop personality.

<p style="text-align: center;"><b>SOCIOLOGY</b> <b>INTRODUCTION TO SOCIOLOGY</b> <b>BABED-103.I</b></p>
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**COURSE OUTCOMES:****On completion of the course, students will be able to:**

- Understand sociological theories.
- Explain processes of socialization.
- Understand the inter-dependence of social institution.
- Establish linkages of Sociology with other Social Sciences.
- Appreciate sociology as a discipline.

<p style="text-align: center;"><b>SOCIOLOGY</b> <b>INDIAN SOCIETY</b> <b>BABED-103.II</b></p>
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**COURSE OUTCOMES:****On completion of this course, students will be able to:**

- Identify the inequalities existing in the society.
- Understand the need of sociological reasoning.
- Evaluate the colonial view of Indian society and the growth of sociology in India.
- Appreciate the pluralistic nature of society.
- Critically think about Indian society and social issues.

<p style="text-align: center;"><b>HISTORY</b> <b>ANCIENT HISTORY OF INDIA (UP TO 1200 A.D.)</b> <b>BABED -104. I</b></p>
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**COURSE OUTCOMES:****On completion of the course, students will be able to:**

- Identify and describe the different empires of India( up to 1200 A.D)

- Draw the map of Mauryan, Gupta and Post-Gupta.
- Visit the monuments of different empires.
- Analyse socio-economic and religious life of different empires.
- Appreciate the development of art, literature and science during Gupta, Maurya and Magadh Empire.

**HISTORY**  
**HISTORY OF RAJASTHAN**  
**BABED- 104. I**

**COURSE OUTCOMES:**

**On completion of this course, students will be able to:**

- Understand the economic administrative changes brought by British in Rajasthan.
- Explain the early history and culture of Rajasthan.
- Understand the integration of Rajasthan.
- Analyse the different movements in Rajasthan in pre independent India.
- Appreciate the role of Rajputs in the resistance of Rajputs to Muslim invasions.
- Visit the forts and temples built by Rajputs.
- Draw maps of Rajput Empire.

**POLITICAL SCIENCE**  
**INTRODUCTION TO POLITICAL SCIENCE**  
**BABED-105.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Define, evaluate and critique the basic principles of Political Science.
- Identify the difference between Traditional and Contemporary Perspectives of Political Science.
- Recall knowledge of the state, its origin, structure and functions.
- Understand and analyse the concepts of Democracy and Dictatorship, Welfare State, Justice, Human Rights, Gender Role.
- Apply basic political theories for further study.

**POLITICAL SCIENCE**  
**MODERN POLITICAL THEORY - I**  
**BABED-105.II**

## **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recall the meaning and growth of Political Science as a discipline.
- Analyse the influence of traditionalism on the modern political theories.
- Differentiate between traditional and modern approaches of political theory.
- Identify the impact of Behaviouralism, System Approach, Structural Functional Approach and other Approaches and their contribution in making of political theory.

<p style="text-align: center;"><b>ENGLISH LITERATURE POETRY AND DRAMA BABED -106.I</b></p>
--

## **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Comprehend representative literary and cultural text with a significant number of historical, geographical context.
- Analyze the poems of Shakespeare, Dryden, Milton, John Donne and R. Herrick.
- Apply critical and theoretical approaches to the reading and analyze literary and cultural texts in multiple genres.
- Appreciate the poems of Shakespeare, Dryden, Milton, John Donne and R. Herrick.
- Enjoy the works of shakespeare and Dryden and Milton.

<p style="text-align: center;"><b>ENGLISH LITERATURE PROSE AND FICTION BABED- 106.II</b></p>
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## **COURSE OUTCOMES:**

**On completion of the course,students will be able to:**

- Summarize the main ideas of the essays.
- Identify the critical ideas that appear in literary and cultural texts: The Gandhian Outlook, A Gentleman, Animals in Prison, El Dorado
- Analyze the themes that appear in literary texts- A Cup of Tea, The (Saki): The Open Window
- Write the character sketch of the main characters of Gulliver Travels.
- Appreciate enjoy reading short stories and novels.

**GEOGRAPHY  
PHYSICAL GEOGRAPHY I  
BABED – 107. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand rocks, soils, volcanoes and earthquakes.
- Read, interpret, and generate maps and other geographic representations
- Observe and recognize of erosional and deposition land forms.
- Read literature related to origin of the earth
- Read papers and incidents related to winds, volcanoes etc.

**GEOGRAPHY  
GEOGRAPHY OF RAJASTHAN I  
BABED– 107. II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand physiography and broad physical division of Rajasthan.
- Locate major rivers of Rajasthan on map.
- Understand climatic condition of Rajasthan.
- Understand problems and prospects in Agriculture.
- Classify soil resources.
- Contribute in optimal use of various natural resources of Rajasthan.

**GEOGRAPHY  
PRACTICAL  
BABED – 107. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Measure the field with different types of scales.
- Develop the skill of mapping relief features.

**ECONOMICS  
MICRO ECONOMICS – BASIC  
BABED - 108.I**

**COURSE OUTCOMES:**



**On completion of the course, students will be able to:**

- Compare various terms of market.
- Build foundation for other branches of Economics
- Understand important principles and theories of micro economics.
- Appreciate the utility of economics in day to day life.

**ECONOMICS**  
**MICRO ECONOMICS- ADVANCED**  
**BABED - 108.II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Explain the functions of market and prices as allocating mechanism.
- Understand the theory of welfare economics.
- Differentiate and output determination in Monopoly and monopolistic competition
- Understand the concepts of rent, profit and interest
- Discriminate between price and output in different types of market.
- Understand the theory of welfare economics.
- Take interest in the behavior of various markets by reading magazines.

**PSYCHOLOGY**  
**INTRODUCTION TO PSYCHOLOGY**  
**BABED– 109. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the different Introspection, Observation, Experimental, Interview, Questionnaire and Case Study.
- Understand the biological bases of behavior.
- Know the concept of motivation and emotion.
- Clasasify different theories of Intelligence.
- Use different motivational techniques.

**PSYCHOLOGY**  
**HUMAN DEVELOPMENT**  
**BABED– 109. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Know the determinants of development
- Understand the theories of Freud and Erickson
- Comprehend emotional, social and moral development
- Classify between aging and old age

**PSYCHOLOGY  
PRACTICAL  
BABED– 109. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Conduct psychological experiments.
- Understand individual differences.
- Interpret psychological tests.
- Apply psychological skills to career goals

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_ Motivation
- Emotion
- \_ Intelligence
- Cognition.

**बी.ए.बी.एड. – हिन्दी साहित्य  
हिन्दी भाषा का उद्भव एवं विकास  
BABED– 111. I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिंदी भाषा के उद्भव और विकास का प्रत्यास्मरण कर सकेंगे।
- हिन्दी की लिपियों व बोलियों से अवगत हो सकेंगे।
- हिन्दी साहित्य के काल विभाजन से अवगत हो सकेंगे।
- हिंदी भाषा की व्यावहारिक उपयोगिता का मूल्यांकन कर सकेंगे।
- हिन्दी भाषा का प्रयोग प्रभावशाली सम्प्रेषण के रूप में कर सकेंगे।

**बी.ए.बी.एड. – हिन्दीसाहित्य  
भारतीय काव्यशास्त्र  
BABED– 111. II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- काव्यशास्त्र के विभिन्न रूपों व अंगों को पहचान सकेंगे।
- रस निष्पत्ति व रसास्वादन की क्षमता विकसित कर सकेंगे।
- अलंकार सम्प्रदाय से अवगत हो सकेंगे।
- विभिन्न सिद्धान्तों का ज्ञान प्रदान करना।

**DRAWING AND PAINTING  
FUNDAMENTALS OF VISUAL ART & INDIAN FOLK ART  
BABED- 112. I**

**COURSE OUTCOMES:**

**On completion of the course, students will able to:**

- Explain various methods and mediums used in various forms of painting.
- Identify and classify various forms of arts.
- Appreciate various arts forms.
- Visit exhibition galleries.
- Participate in the development of visual and folk art.

**DRAWING AND PAINTING PRACTICAL  
CREATIVE DESIGN  
BABED- 112. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Show their creative instinct.
- Draw portfolios using different mediums.

**DRAWING AND PAINTING PRACTICAL  
STILL LIFE  
BABED- 112. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop pencil shading skills.
- Prepare portfolios.

**HOME SCIENCE  
FAMILY RESOURCE MANAGEMENT & HOUSING  
BABED-113.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of management in the family as well as the other system.
- Explain the importance of various uses of resources in order to achieve goals.
- Understand the needs and factors affecting selection and purchases of site for house building.
- Understand various element and principles of art used in the interior decoration.
- Appreciate family resource management.
- Participate in the family resource management.
- Read literature on family resource management.

**HOME SCIENCE  
HUMAN PHYSIOLOGY  
BABED-113.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the elementary concept of anatomy.
- Comprehend the functions of various body organs.
- Explain the prevention and control of infections and diseases.

**HOME SCIENCE  
PRACTICAL  
BABED-113.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of flower arrangement.
- Develop the skill of food preservation.
- Appreciate the art of preservation of food.
- Develop aesthetic sense.
- Develop scientific temper in cooking and preservation.
- Appreciate flower decoration styles.

**संस्कृत साहित्य**  
**संस्कृत कथा-साहित्य**  
**बीएबीएड.115.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत कथा साहित्य से अवगत हो सकेंगे।
- कथा साहित्य से नैतिक मूल्यों को विकसित कर सकेंगे।
- संस्कृत व्याकरण से परिचित हो सकेंगे।
- संस्कृत अनुवाद करने की क्षमता विकसित कर सकेंगे।
- संस्कृत वाङ्मय के वैज्ञानिक ज्ञान की समीक्षा कर सकेंगे।

**संस्कृत साहित्य**  
**पद्य साहित्य, भारतीय संस्कृति के तत्त्व**  
**बीएबीएड.115.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत भाषा का व्यावहारिक से अवगत हो सकेंगे।
- अपने विचारों को संस्कृत भाषा में अभिव्यक्त करने की क्षमता का विकास करेंगे।
- राष्ट्रीय, सांस्कृतिक एवं सामाजिक चेतना से अवगत हो सकेंगे।
- संस्कृत पद्य साहित्य से अवगत कराना।
- भारतीय संस्कृति की विशेषताओं से परिचित हो सकेंगे।
- प्राचीन शिक्षा पद्धति व शिक्षा केंद्रों से अवगत हो सकेंगे।
- संस्कृत व्याकरण अलंकारों को अभिव्यक्ति में प्रयोग कर सकेंगे।
- संस्कृत साहित्य के प्रति अभिरुचि लेंगे।
- संस्कृत भाषा की विविध विधाओं की सराहना कर सकेंगे।

## Second Semester

<p style="text-align: center;"><b>COMPUTER APPLICATION IN EDUCATION</b> <b>BABEd- 201</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the fundamental hardware components
- Understand the difference between an operating system and an application program
- Give examples of types of computers
- State the applications of computer technology
- Identify the principal components of computer system
- Draw a flow diagram and represent the data flows.
- Apply computer technology in their learning and teaching.
- Read about the innovative uses of computer.

<p style="text-align: center;"><b>EDUCATION</b> <b>TEACHING AND LEARNING</b> <b>BABED- 202</b></p>
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**COURSE OUTCOMES:**

**On completion the course student will be able to:**

- Understand the concept and theories of learning and teaching.
- Understand learners.
- Understand phases, models and strategies of teaching.
- Analyze competencies of teaching and learning.
- Analyze competencies related to learning in and out of school.
- Establish relationship between teaching and learning.
- Apply strategies of teaching to enhance learning.

<p style="text-align: center;"><b>SOCIOLOGY</b> <b>SOCIETY, CULTURE AND SOCIAL GLOBLIZATION</b> <b>BABED- 203.I</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Comprehend the basic sociological concepts of culture.

- Engage in the sociological debates over the role of culture in social inequalities.
- Identify and define key debates and approaches to globalization and development.
- Situate globalization within the 20th-century capitalist development and its key trajectories
- Understand and explain various social, political, cultural, and economic aspects of globalization.
- Analyse the impacts on society at local and global levels.
- Appreciate the diversity of culture.

<p><b>SOCIOLOGY</b>  <b>INDIAN SOCIETY: ISSUES AND PROBLEMS</b>  <b>BABED -203.II</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, the students will be able to-**

- Describe and understand the basic theoretical approaches applied to social problems.
- Identify social problems and analyse their core reasons.
- Analyse social problems using sociological theories.
- Demonstrate an understanding of the relationship between social problems and social institutions.
- Organize the components of social problems situated in social structure.
- Sensitive to issues and problems of Indian society.
- Apply solution of different problems.

<p><b>HISTORY</b>  <b>MEDIEVAL INDIA</b>  <b>BABED -204.I</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the background of religion institutions of Mugal empire and Delhi saltanat
- Draw historical maps and digrams.
- Visit places of historical interest, archiological sites, museums and archives.

- Collect coins and other historical materials

**HISTORY**  
**MAIN TRENDS OF CULTURAL HISTORY OF INDIA**  
**BABED -204.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the interlinkage of culture, religion, literature and science.
- Understand social institutions of ancient India.
- Understand different social movement of India.
- Take interest in the writings of historians.
- Play active role in activities of historical associations.
- Visit temples to understand the architecture.
- Appreciate the contribution of Aryabhata, Varahamihira, Charaka and Sushruta in science.
- Read historical documents.

**POLITICAL SCIENCE**  
**INDIAN POLITICAL THOUGHT**  
**BABED -205.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Summarize knowledge related to ancient political thinkers and their relevance in modern India.
- Understand Social Reconstructionist theorists.
- Understand and analyse contribution of liberals and extremists.
- Understand the Spiritual Resurgence of Swami Vivekanand.
- Evaluate the contribution of Indian Political Thinkers in Indian National Movement.
- Appreciate various Indian national movements.
- Read literature about various thinkers.

**POLITICAL SCIENCE**  
**INDIAN POLITY**  
**B.A.B.ED 205.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**



- Understand the Political and Constitutional system in India.
- Understand and analyse the centre state relations.
- Comprehend the basic structures and process of government system.
- Explain Legislative, Executive and Judicial functioning in Indian Political System
- Critically evaluate the role of Political Parties and Pressure Groups.
- Appreciate constitutional system of India.
- Participate in major debates in Indian polity.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BABED- 206.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the gist of the poems of Kabir, Toru Dutt, Rabindranath Tagore and Sarojini Naidu.
- Interpret and describe the critical ideas, values and themes that appear in literary and cultural texts.
- Develop aesthetic sense towards poetry.
- Appreciate the poetry of Kabir, Toru Dutt, Rabindranath Tagore and Sarojini Naidu.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BABED -206.II**

**M. Marks – 100**

**COURSE OUTCOMES:**

**On completion the course, students will be able to:**

- Identify the salient features of literary texts from a broad range of English and American literary periods
- Analyze the central idea of the essays.
- Understand the ideas and themes of the novel.
- Employ knowledge of literary tradition to produce imaginative work.
- Comprehend the writing style.

**GEOGRAPHY**  
**PHYSICAL GEOGRAPHY II**  
**BABED- 207. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand hydrosphere.
- Analyze ocean tides, currents and marine resources.
- Classify the different layers of atmosphere.
- Understand climatic elements.
- Draw diagram and maps.
- Take interest in national geographic channel.
- Read atlas and books.

**GEOGRAPHY**  
**GEOGRAPHY OF RAJASTHAN II**  
**BABED- 207. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Differentiate Metallic and Non Metallic Minerals of Rajasthan.
- Critically Evaluate the Power Resources in Rajasthan.
- Understand Development and Importance of Various Industries in Rajasthan.
- Locate Different Industries in the Map of Rajasthan
- Understand Human Resources.
- Draw maps showing different resources.
- Appreciate the Measures for the Development of Tribes and Castes of Rajasthan.

**GEOGRAPHY PRACTICAL**  
**BABED. - 207. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Draw different kinds of graphs.
- Develop the skill of drawing maps.
- Identify types of maps.

**ECONOMICS  
INDIAN ECONOMY  
BABED - 208.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain the working of Indian economy.
- Understand the issues in India's economic development.
- Understand the population dynamics and composition.
- Analyze the problems of economy.
- Appreciate various efforts to give boost to Indian economy.

**ECONOMICS  
ECONOMY OF RAJASTHAN  
BABED - 208.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain the working of the Economy of Rajasthan.
- Understand the changing trends in the Rajasthan economy.
- Understand the leading issues in Rajasthan's economic development.
- Analyze the economic development in relation to five year plan.

**PSYCHOLOGY  
SOCIAL PSYCHOLOGY  
BABED 209.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the nature of social psychology and its subject matter.
- Explain how social theoretical approaches are used to help explain human behavior.
- Understand the forces that create group differences.
- Develop awareness of major social problems and issues.

**PSYCHOLOGY  
PERSONALITY  
BABED 209.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Define the concept of personality.
- Draw a flow chart of personality.
- Differentiate between different theories of personality.
- Assess personality through various projective and non projective techniques.
- Understand the meaning of defense mechanism and its types.
- Appreciate personality
- Apply different means to develop an integrated personality.

**PSYCHOLOGY  
PRACTICAL  
B.A.B.ED 209.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret psychological tests.
- Understand personality of different subject/testee through psychological test.
- Understand leadership qualities of different subject/testee through psychological test.

Administration and Interpretation of standardized psychological tests of the following attributes :-

\_Social Maturity.

\_Leadership.

\_Adjustment.

\_Personality.

**हिन्दी साहित्य,  
आधुनिक काव्य  
BABED 211.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- साहित्य को समझने, उसका आस्वादन करने तथा मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- हिंदी साहित्य की प्राचीन व आधुनिक गद्य, पद्य विधाओं का तात्त्विक परिचय प्रत्यास्मरण करवा सकेंगे।
- साहित्यिक प्रवृत्तियों के संदर्भ में विभिन्न साहित्य विधाओं के विकासक्रम को पहचान सकेंगे।
- साहित्यकारों के साहित्यिक व्यक्तित्व एवं कृतित्व की सराहना कर सकेंगे।
- आधुनिक काव्य संबंधित पुस्तकों को पढ़ेंगे।

**हिन्दी साहित्य**

प्रयोजनमूलक हिन्दी  
**BABED 211.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- विभिन्न व्यवहार क्षेत्रों में राजभाषा के रूप में प्रयुक्त हिन्दी भाषा के ज्ञान की व्याख्या कर सकेंगे।
- राष्ट्र की सामाजिक-आर्थिक-सांस्कृतिक विकास की आवश्यकताओं को दृष्टिपथ में रखकर संचार माध्यमों के उपयोग और भाषिक तथा सर्जनात्मक क्षमता विकसित कर सकेंगे।
- हिन्दी पत्रकारिता की भूमिका, महती परम्परा और संभावनाओं को समझ सकेंगे।
- हिन्दी और पत्रकारिता की अवधारणाओं, सिद्धान्तों, कर्तव्यों, अधिकारों, सीमाओं, कानूनों आदि का सैद्धान्तिक ज्ञान देते हुए व्यावहारिक सामर्थ्य विकसित कर सकेंगे।
- व्यवहार पक्षों एवं भाषायी कौशलों का विकास कर विभिन्न क्षेत्रों में रोजगार के अवसरों का प्रयोग कर सकेंगे।
- सम्प्रेषण कुशलता को विकसित कर सकेंगे।
- हिन्दी भाषा की सराहना कर सकेंगे।
- हिन्दी भाषा की विभिन्न पुस्तकों को पढ़ सकेंगे।

**DRAWING AND PAINTING**  
**ART IN EDUCATION, CULTURE AND SOCIETY**  
**BABED 212.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the importance of Art in society.
- Recognize the process of creativity.
- Nurture creativity in pupils.
- Appreciate creativity.
- Contribute in development of Art.

**DRAWING AND PAINTING PRACTICAL**  
**RENDERING**  
**BABED 212.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of rendering.
- Develop the skill of colour and shading.

**DRAWING AND PAINTING PRACTICAL**

**STILL LIFE**  
**B.A.B.ED 212.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Prepare portfolio.
- Prepare a sketch book.
- Develop the skill of Painting still life.

**HOME SCIENCE**  
**INTRODUCTION TO HUMAN DEVELOPMENT**  
**BABED-213.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the phases of human development.
- Identify the factors influencing human development.
- Identify the behavioural problems among children and its measures.
- Comprehend with the characteristics of the various exceptional children.
- Explain the process of human development.

**HOME SCIENCE**  
**FUNDAMENTALS OF FOODS AND NUTRITION**  
**BABED-213.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the function and classification of foods.
- Identify the various minerals and vitamins present in foods.
- Understand the need of dietary allowances of nutrients for various age groups.
- Explain the effects of processing steps on nutritional quality.
- Apply the process of food preservation in reserving food.
- Identify the common adulterants present in foods and methods of detection at home level.
- Appreciate the methods of food nutrition.

**HOME SCIENCE**

**PRACTICAL**  
**BABED-213.III**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:**

- Comprehend with various methods of cooking food
- Identify the various process of preservation
- Identify the steps of meal planning

**संस्कृत साहित्य**  
**नाटक, छन्द, संस्कृत साहित्य का इतिहास**  
**बीएबीएड.215.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत नाटकों एवं संस्कृत साहित्य के छन्दों का प्रत्यास्मरण कर सकेंगे।
- संस्कृत साहित्य के इतिहास का वर्णन कर सकेंगे।
- व्याकरणिक कृदंत प्रकरण का विवेचन कर सकेंगे।
- राजस्थान के संस्कृत साहित्य की समझ विकसित कर सकेंगे।
- संस्कृत साहित्य के नाटक प्रति रुचि लेते हुए विभिन्न नाटकों को पढ़ेंगे

**संस्कृत साहित्य**  
**वैदिक साहित्य**  
**बीएबीएड.215.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- वैदिक साहित्य को समझ सकेंगे।
- संस्कृत गद्य साहित्य से अवगत हो सकेंगे।
- संस्कृत प्रत्यय की पहचान कर सकेंगे।
- मानवीय मूल्यों को विकसित कर सकेंगे।

## Third Semester

अनिवार्य हिन्दी

**BABED-3.01**

अधिगम अनुवर्तन

इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिन्दी भाषा की व्यावहारिक उपयोगिता का प्रत्यास्मरण कर सकेंगे।
- शब्द संरचना की प्रक्रिया को समझ सकेंगे।
- भाषा को समझने व मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- साहित्यिक कृतियों का विविध दृष्टि से विवेचन, विश्लेषण तथा समीक्षा करेंगे।
- शुद्ध लेखन व वाचन की क्षमता विकसित करेंगे।
- प्रभावी सम्प्रेषण कर सकेंगे।

**EDUCATION**

**KNOWLEDGE AND CURRICULUM**

**BABED -302**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop understanding the need and importance of curriculum in Fulfilling the aims of education.
- Critically analyse various samples of textbook.
- Examine the epistemological basis of education.
- Establish interconnectedness of curriculum, textbooks, pedagogy and evaluation.
- Analyse national curriculum frameworks.

**SOCIOLOGY**

**ENVIRONMENT AND SOCIETY**

**BABED -303.I**

**COURSE OUTCOMES-**

**On completion of the course, students will be able to:**

- Define Sustainable development, resource conservation and climate change.
- Classify the various Natural Resources.
- Describe the various acts of protection of Environment.



- Participate discourse in sociological approaches to Environmental issues and controversies.
- Act as an agent for the protection of Environment.
- Appreciate different movements and global efforts for resource conservation.

**SOCIOLOGY**  
**METHODS IN SOCIAL RESEARCH**  
**BABED -303.II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:**

- Demonstrate the ability to choose methods appropriate to research objectives.
- Understand the limitations of different research methods.
- Gain a practical understanding of the various data collection tools
- Develop skills in qualitative and quantitative data analysis and presentation.
- Analyze and interpret research data.
- Conduct social surveys.

**HISTORY**  
**HISTORY OF MEDIEVAL INDIA 1206 - 1526 A.D.**  
**BABED- 304.I**

**COURSE OUTCOMES**

**On completion of this course, students will be able to:**

- Understand the rise and fall of Slave Dynesty.and Tughlaq Dynasty.
- Understand the importance of historiography.
- Draw maps and charts.
- Compare the administration, foreign policy, domestic policy, trade of different dynasties.

**HISTORY**  
**INDIAN SOCIETY AND CULTURE (UPTO 1200 AD)**  
**BABED- 304.II**

**COURSE OUTCOMES:**

**On completion of this course, students will be able to:**

- Understand social institution of ancient India.
- Understand the genesis of different religions in India.
- Appreciate the art and architecture.

- Visit places of Shungas, Kushanas and Satavhanas.
- Draw maps.
- Participate in the activities of historical organization.

**POLITICAL SCIENCE  
INDIAN POLITICAL THOUGHT - II  
BABED- 305.I**

**COURSE OUTCOMES:**

**On completion of the course , students will be able to:**

- Understand and analyse the Gandhian Political Philosophy.
- Comprehend the Political Thoughts of Nehru.
- Critically Evaluate Panchsheel Doctrine.
- Understand and analyse Partyless Democracy and total Revolution concept.
- Understand Contemporary Political Thinkers.
- Appreciate the contribution of political thinkers in making India a vibrant democracy.

**POLITICAL SCIENCE  
INDIAN CONSTITUTION  
BABED -305.II**

**COURSE OUTCOMES:**

**On completion of the course. students will be able to:**

- Understand and analyse all major dimensions of Indian Constitution system.
- Comprehend the political system and account of the making and working of constitutional institutions.
- Understand the Concepts of Fundamental Rights , Fundamental Duties and Directive Principles of State Policy.
- Evaluate the Nature and Role of Higher Judiciary in India.
- Appreciate the making of constitution and its role in Indian policy.
- Read articles on various amendments.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BABED -306.I**

**COURSE OUTCOME:**

**On completion of the course, students will be able to:**

- Analyze the poetry of Arun Kolatkar, A. K. Ramanujan, Nissim Ezekiel, Kamla Das
- Ethically gather, understand evaluate and synthesise information from a variety of written and electronic sources
- Analyze the major themes of the play: Chandalika
- Write reference to context of the poems.
- Appreciate the poetry of Arun Kolatkar, A. K. Ramanujan, Nissim Ezekiel, Kamla Das
- Enjoy the beauties of Poems.
- Collect Poems.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BABED- 306.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop literary sensibility and competency for analyzing and evaluating a piece of literature
- Understand the central idea of the essays.
- Comprehend the writing style of Rama Mehta
- Analyze the themes of the novel: Inside the Haveli
- Appreciate the theme for writing style of various writers.

**GEOGRAPHY  
HUMAN GEOGRAPHY - I  
BABED- 307. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Distinguish Human Geography from others social sciences.
- Understand the Evolution of Man and Classification of Races
- Explain Living Conditions and Culture of Different Tribes of World
- Understand and Explain the Salient Features of Human Development.
- Organize the field work.
- Read and take interest in knowing more about races.

**GEOGRAPHY**  
**GEOGRAPHY OF RESOURCES I**  
**BABED- 307. II**

**Course Outcomes:**

**On completion of the course student will be able to:**

- Understand the Nature, Scope and Significance of Geography of Resources
- Reflect or the Exploitation of Various Natural Resources
- Discuss Water, Mineral and Power Resources
- Locate Different Minerals Resources in the World Map.

**GEOGRAPHY PRACTICAL**  
**BABED- 307. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Calculate averages.
- Develop the skill of intersection and radiation method.
- Appreciate various methods of plane table survey.

**ECONOMICS**  
**MACRO ECONOMICS-I**  
**B.A.B.ED - 308.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the principles of macro Economics.
- Analyze the flow of income and expenditure in different sectors of economy.
- Interpret National income in relation to GDP, NDP, NNP, PCI and PI.
- Appreciate the contribution of macro economics to the analysis of social issues.
- Draw equations and graphs.

**ECONOMICS**  
**MACRO ECONOMICS-II**  
**BABED -308.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyse the determinants of macro economic conditions such as national output and employment.
- Understand different business cycles and take measures of environmental issues and sustainable development.
- Discuss economic concepts in an articulate manner in classroom.
- Apply the concept of equilibrium to both macro and micro economics.

**PSYCHOLOGY  
PSYCHOPATHOLOGY  
BABED -309.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Differentiate between psychosomatic, anxiety and personality disorder
- Suggest coping strategies to deal with stress
- Analyze the causes of different disorders
- Analyze the bearing of psychological models of psychopathology

**PSYCHOLOGY  
PSYCHOLOGICAL ASSESSMENT AND STATISTICS  
BABED- 309.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Compute different measures of central tendency
- Assess mental abilities using standardized tests
- Understand the process of standardized tests
- Give examples of levels of measurement
- Represent data through graphs

**PSYCHOLOGY  
PRACTICAL  
BABED- 309.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret various psychological tests to understand different disorder.
- Guide subject/ testee to manage different disorder.

- Use central tendency for the interpretation of psychological tests.
  - Identify phobia anxiety and other neurotic disorder by using psychological test.
- Administration and Interpretation of standardized psychological tests of the following attributes :-

**\_Anxiety test.**

**\_Phobia test.**

**\_Stress.**

**\_Personality disorder.**

**हिन्दी साहित्य  
प्रथम पेपर भक्तिकालीन काव्य  
BABED -311.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य के काल विभाजन का प्रत्यास्मरण कर सकेंगे।
- भक्तिकालीन कवियों के जीवन चरित्र को पहचान सकेंगे।
- भक्तिकालीन रचनाओं का संकलन कर सकेंगे।
- भक्तिकालीन रचनाओं की सराहना कर सकेंगे।

**हिन्दी साहित्य,  
द्वितीय पेपर हिन्दी विधाएँ  
BABED -311.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- साहित्य को समझने, उसका आस्वादन करने तथा मूल्यांकन करने की दृष्टि विकसित कर सकेंगे।
- हिन्दी साहित्य की प्राचीन व आधुनिक गद्य, पद्य विधाओं की व्याख्या कर सकेंगे।
- साहित्यिक प्रवृत्तियों के संदर्भ में विभिन्न साहित्य विधाओं के विकासक्रम को जान सकेंगे।
- कहानी के स्वरूप व तत्वों का विवेचन कर सकेंगे।
- हिन्दी के प्रमुख कहानीकारों व लेखकों व उनकी कृतियों से अवगत हो सकेंगे।

**DRAWING AND PAINTING-THEORY  
HISTORY OF INDIAN PAINTING AND SCULPTURE- I  
BABED- 312.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recognize various schools of paintings.
- Understand the features of different art schools.

- Appreciate sculpture of different periods.
- Visit places of sculpture.
- Collect pictures of paintings and sculpture.

**DRAWING AND PAINTING**  
**PRACTICAL ( PORTRAITE- PENCIL SHADING)**  
**BABED- 312.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Use proportion and tonal techniques
- Create different values (range of lights and darks)
- Use them to create the illusion of depth in their painting

**DRAWING AND PAINTING**  
**PRACTICAL (NATURE STUDY-PENCIL)**  
**BABED- 312.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Use of different types of leaf and tonal techniques
- Appreciate hues and colours of Nature.
- Create different values (range of lights and darks) and use them to create the illusion of depth in their painting.

**HOME SCIENCE**  
**NUTRITION IN HEALTH & DISEASE**  
**BABED-313.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify and contribute the prevention of public health/Social health problems in the country.
- Evaluate evidence for the relationship between diet, Nutrition and disease.
- Treat common illnesses at home.
- Identify the nutritional deficiency disease.
- Understand the nutrition for special conditions.
- Apply dietary energy and physical assessment methods logies.

**HOME SCIENCE**  
**FAMILY DYNAMICS AND PARENT EDUCATION**  
**BABED-313.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of family and social affairs.
- Explain the demographic structure of the nation.
- Familiar with longitudinal research methods.
- Assess the various approaches of population.
- Identify the factors influencing population growth.
- Appreciate the role of parent education in family dynamics.

**HOME SCIENCE**  
**PRACTICAL**  
**BABED-313.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Prepare a variety of snacks.
- Plan meals for variety of people.
- Develop the skill of conducting parent teacher meetings.
- Participate in community life.

**संस्कृत साहित्य**  
**भारतीय धर्म एवं दर्शन**  
**बीएबीएड .315.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- भारतीय धर्म एवं दर्शन की विवेचना कर सकेंगे।
- प्राचीन साहित्य की पहचान कर सकेंगे।
- संस्कृत साहित्य का वर्तमान जीवन में महत्व।
- भगवत गीता में निहित मूल्यों का विकसित कर सकेंगे।
- धर्म एवं दर्शन को जीवन में उपयोग कर सकेंगे।

**संस्कृत साहित्य**  
**वेद, उपनिषद्, एवं निबन्ध**  
**बी.ए.बी.एड. 315.II**



## अधिगम अनुवर्तन

### इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- प्राचीन संस्कृत साहित्य वेद उपनिषद आदि से अवगत हो सकेंगे।
- भारतीय दर्शन के सिद्धांत की विवेचना कर सकेंगे
- संस्कृत निबंधों का विश्लेषण कर सकेंगे।
- प्राचीन साहित्य में निहित मानवीय मूल्यों की पहचान कर विकसित कर सकेंगे।
- प्राचीन साहित्य में सांस्कृतिक एवं मानवीय मूल्यों की सराहना कर सकेंगे।

## Fourth Semester

### ESSENTIAL LANGUAGE SKILLS-II BABED -401

#### **COURSE OUTCOMES:**

**On the completion of the course, students will be able to:**

- Transform simple sentence into compound and complex sentences.
- Use transitive and intransitive verbs correctly.
- Write paragraphs on different themes.
- Punctuate and capitalize correctly.
- Write different forms of letters.
- Complete the stories.
- Identify use of words as different parts of speech.
- Take interest in English language and literature.
- Develop a positive attitude towards English language.

### ASSESSMENT FOR LEARNING BABED-402

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Critical Examine issues in assessment and evaluation from constructivist paradigm.
- Understand key concepts such as formative and summative assessment, evaluation and measurement, test, examination.
- Use different kinds and forms of assessment that aid student learning.
- Use wide range of assessment tools, and learn to select and construct these appropriately.
- Evolve realistic, comprehensive and dynamic assessment procedures that are keeping the whole student in view.

### SOCIOLOGY RURAL SOCIOLOGY B.A.B.ED -403.I

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the local and global context of agricultural and rural development processes.
- Recognize the processes, institutions and policy approaches of social organization of rural life.
- Explain the implications of social and environmental change for rural people.
- Discuss different agricultural and rural development paradigms.
- Examine the impact of urbanization on agricultural and rural development.
- Read about the different rural development program.
- Initiate to make their rural life better for people.

**SOCIOLOGY**  
**SOCIAL CHANGE IN INDIA**  
**B.A.B.ED -403.II**

**COURSE OUTCOMES:**

**On completion of the course, the students will be able to-**

- Define social change and concepts related to it.
- Differentiate between social change and Social Mobility
- Understand various Processes of social change.
- Understand various factors of social change.
- Discuss forms of diversity and division within society.

**HISTORY**  
**HISTORY OF INDIA (1857 – 1947)**  
**BABED -404.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand different social and religious reform movements.
- Understand the struggle for India's independence.
- Appreciate and differentiate between nationalist, swadesi, revolutionary movements.
- Read articles and literature on Pre -independent India.

**HISTORY**  
**INDIA AFTER 1947**  
**BABED -404.II**

**COURSE OUTCOMES:****On completion of the course, student will be able to:**

- Explain problems faced by people after independence.
- Understand the constitution of India.
- Understand the development of science, technology and democracy in India.
- Participate in debates and discourse on constitutional amendments.
- Develop a positive attitude towards post- independent India.

**POLITICAL SCIENCE  
REPRESENTATIVE WESTERN POLITICAL THINKERS – I  
BABED -405.I**

**COURSE OUTCOMES:****On completion of the course, student will be able to:**

- Recall various western political philosophy of Ancient Era.
- Understand medieval political philosophy of Confucius, Machiavelli and Thomas Aquinas.
- Explain the Concept of Social Contract Theory of State Origin.
- Comprehend the Sociological approach of Montesquieu.
- Appreciate various political philosophies.
- Read more articles and books on the contribution of political thinkers.

**POLITICAL SCIENCE  
STATE POLITICS: RAJASTHAN  
BABED -405.II**

**COURSE OUTCOMES:****On completion of the course, students will be able to:**

- Understand the Reorganization of Rajasthan
- Acquire knowledge related with structure and function of local level of Government in Rajasthan.
- Understand the structure and functions of various commissions in Rajasthan.
- Examine the various development schemes of Rajasthan.
- Appreciate and examine the state politics of Rajasthan.

**ENGLISH LITERATURE  
POETRY AND DRAMA**

**BABED -406.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Comprehend and summarize the zist.
- Analyze the poems.
- Develop aesthetic sense towards poetry
- Express themselves effectively in a variety of forms.
- Appreciate the poetry of romantic poets.
- Collect poems of romantic poets.

**ENGLISH LITERATURE**

**PROSE AND FICTION**

**BABED -406.II**

**COURSE OUTCOME:**

**On completion of the course, students will be able to:**

- Understand the central idea of the essays: Making Writing Simple, How should One Read a Book?, Under the Banyan Tree, The Gateman's Gift, That Pagli & Am I Blue?
- Comprehend the writing style of J. B. Priestley, Virginia Woolf, R. K. Narayan, D. R. Sharma & Alice Walker
- Analyze the theme of the novel: Pride and Prejudice
- Develop a taste for English literature and literary sensibility
- Read the writings of Jone -Austen.
- Identify the similiarities of England of 18<sup>th</sup> century and Indian Society.

**GEOGRAPHY**

**HUMAN GEOGRAPHY II**

**BABED- 407. I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the Composition of Population
- Compare the Population Composition of India with other Countries of Asia
- Understand the Concept, Causes and Consequences of Migration
- Classify the Human settlements
- Appreciate Mosaic of Culture
- Draw Chart and Diagrams of Population Composition

**GEOGRAPHY**  
**GEOGRAPHY OF RESOURCES II**  
**BABED- 407. II**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the Concept of Resources Utilization
- Locate and Define the Major Resources Regions of the World
- Classify Agriculture Crops
- Differentiate Beverages and Industrial crops
- Participate in the Conservation of Resources
- Draw map of world showing different resources.
- Visit places and observe resources.

**GEOGRAPHY PRACTICAL**  
**BABED. - 407. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of map reading.
- Develop the skill of drawing maps with the help of compass.
- Appreciate the contribution of Geographers in creating maps.

**ECONOMICS**  
**PUBLIC FINANCE**  
**BABED - 408.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concepts of public finance, public debt and fiscal policy.
- Understand the changing trends in the public finance.
- Understand the role of Government under liberalized environment.
- Analyze relationship between public revenue and public expenditure.
- Analyze the importance of deficit financing and fiscal policy.
- Take interest in government budget.
- Critique different budgets.

**ECONOMICS**  
**STATISTICS FOR ECONOMIC ANALYSIS**  
**BABED - 408.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand uses and importance of statistics in economics.
- Understand the various measures of central tendency such as Mean, Median and Mode.
- Conduct economic analysis using equation and graphs.
- Draw statistical inference.
- Demonstrate knowledge of the empirical tools used in the analysis of data.
- Represent data in graphical and descriptive form.
- Describe and analyze the economy in quantitative terms.
- Apply economic tools of analysis.

**PSYCHOLOGY**  
**EXPERIMENTAL PSYCHOLOGY- I**  
**BABED -409.I**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand the meaning and scope of experimental psychology.
- Comprehend the importance of experimental psychology
- Apply the knowledge of experimental psychology in their life situations.
- Apply experimental tools to understand individuals.

**PSYCHOLOGY**  
**EXPERIMENTAL PSYCHOLOGY - II**  
**BABED -409.II**

**M. Marks: 75**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the meaning and scope of psychophysics
- Know and use of transfer of learning
- Develop understanding of thinking and reasoning
- Differentiate between learning and conditioning

**PSYCHOLOGY  
PRACTICAL  
BABED -409.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret various psychological tests to understand learning.
- Understand illusion of different subject/testee through psychological tests.
- Guide subject/testee to improve memory.

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_Memory test.
- \_Perception.
- \_Forgetting.
- \_Learning

**PEDAGOGY OF POLITICAL SCIENCE  
BABED-410.I**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the broad themes of democracy, development and diversity.
- Understand the modern concept of political science in terms of nature and interface with society.
- Acquire a conceptual understanding of the process in learning of political science and transactional implications.
- Understand different methods of teaching political science.
- Develop ability to prepare teaching aids.
- Develop ability to organize group activities.

**PEDAGOGY OF ENGLISH  
BABED-410.I**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature and purpose of English.
- Understanding of the basic concepts in second language teaching.



- Teach basic language skills as listening, speaking, reading and writing and integrate them with communicative purpose.
- Review and use appropriately different approaches and methods of teaching English.
- Select, prepare, and use appropriate audio-visual aids for effective teaching of English.
- Use various techniques of testing English as a second language and develop diagnostic techniques and remedial teaching.

**संस्कृत शिक्षण**  
**BABED-410.II**

**अधिगम अनुवर्तन :**

- भाषा संरचना में संस्कृत भाषा तत्वों का ज्ञान देना।
- संस्कृत भाषा के विकास एवं विशेषताओं को समझना।
- माध्यमिक स्तर के लिए निर्धारित संस्कृत पाठ्यक्रम एवं पाठ्यवस्तु के विश्लेषण व समीक्षा की कुशलता का विकास करना।
- संस्कृत के वैज्ञानिक स्वरूप का ज्ञान देना।
- संस्कृत शिक्षण में प्रयुक्त होने वाली विधियों एवं युक्तियों से अवगत कराना।
- संस्कृत भाषा शिक्षण में दृश्य व श्रव्य उपकरणों के व्यावहारिक उपयोग का ज्ञान देना।
- संस्कृत शिक्षण में मूल्यांकन व मूल्यांकन विधियों का महत्व तथा उपलब्धि परीक्षण, उपचारात्मक व निदानात्मक परीक्षण का ज्ञान देना।

**PEDAGOGY OF ECONOMICS**  
**BABED-410.II**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature and purpose of Economics.
- Skillful pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of Economics.
- Acquire knowledge to adopt thematic approach of teaching.
- Think critically the economic issues, problems, policies and solution. Course content:

## **PEDAGOGY OF GEOGRAPHY**

### **BABED-410.II**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand nature and purpose of Geography in modern Indian Perspective.
- Skilled in pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of Geography.
- Acquire of knowledge to adopt thematic approach of teaching.

## **PEDAGOGY OF SOCIAL SCIENCE**

### **BABED-410.II**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Revisit the key concepts of social science.
- Grasp the key concepts and categories through constructivist and experimental pedagogy.
- Understand and Appreciate Social Studies in daily life
- Understand different methods of teaching Social Studies.
- Use various techniques and methods of evaluation in social studies.
- Develop ability to prepare teaching aids.
- Develop ability to organize group activities.

## **PEDAGOGY OF HISTORY**

### **BABED-410.II**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand nature and purpose of History in modern Indian Perspective.
- Skilled in pedagogical analysis of the subject matter and concept mapping of syllabus at different levels.
- Use ICT for effective teaching of History.
- Acquire of knowledge to adopt thematic approach of teaching.
- Create Time Scale related to Historical events and persona.

**हिन्दी शिक्षण**  
**BABED-410.II**

**अधिगम अनुवर्तन**

- भाषा संरचना में हिन्दी भाषा तत्त्वों का ज्ञान देना।
- हिन्दी भाषा के विकास एवं विशेषताओं को समझना।
- माध्यमिक स्तर के लिए निर्धारित पाठ्यक्रम एवं पाठ्यवस्तु के विश्लेषण व समीक्षा की कुशलता का विकास करना।
- हिन्दी की विधाओं एवं उनके व्यवहारिक शिक्षण संस्थितियों का ज्ञान देना।
- हिन्दी भाषा शिक्षण में दृश्य व श्रव्य उपकरणों के व्यवहारिक उपयोग का ज्ञान देना।
- हिन्दी शिक्षण में मूल्यांकन व मूल्यांकन विधियों का महत्व तथा उपलब्धि परीक्षण, उपचारात्मक व निदानात्मक परीक्षण का ज्ञान देना।

**PEDAGOGY OF DRAWING AND PAINTING**  
**BABED-410.II**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature and aims of Art.
- Establish its correlations with other subjects.
- Use various methods of teaching Art.
- Develop positive attitude towards art
- Use teaching aids in nurturance of creativity in arts.
- Enjoy and appreciate the role of art in school curriculum.

**हिन्दी साहित्य**  
**प्रथम पेपर नाटक तथा निबन्ध**  
**BABED- 411.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- गद्य विधाओं के विकास का प्रत्यास्मरण कर सकेंगे।
- गद्य की प्रमुख विधाओं के तात्त्विक रूप को पहचान सकेंगे।
- रचना विशेष का महत्व समझने व मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- विषय, शिल्प भाषा मंचीयता आदि आधारों पर नाटकों की समीक्षा कर सकेंगे।

**हिन्दी साहित्य**  
**द्वितीय पेपर भाषा विज्ञान**  
**BABED -411.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- भाषा के लक्षण एवं परिभाषा से अवगत हो सकेंगे।
- भाषा विज्ञान की दृष्टि से भाषा की प्रकृति को जान सकेंगे।
- भाषा विज्ञान के अध्ययन की दिशाओं की व्याख्या कर सकेंगे।
- भाषा व्यवस्था एवं भाषा व्यवहार को समझ सकेंगे।

**DRAWING AND PAINTING-THEORY**  
**HISTORY OF INDIAN PAINTING AND SCULPTURE- II**  
**BABED- 412.I**

**Course Outcomes:**

**On completion of the course, students will be able to:**

- Recognise Indian Painting and Sculpture and modes of art expressions from different parts of India.
- Enrich their vision appreciate and develop an aesthetic sensibility to enjoy the beauty of nature and life.
- Observe and study the evolution of its permutations and synthesis with other styles and the rise of an altogether new style.
- Aware of art as a human experience.
- Appreciate the wide range of artistic expressions.

**DRAWING AND PAINTING**  
**PRACTICAL (NATURE STUDY)**  
**BABED 412.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify monochromatic, complimentary, and analogous color schemes
- Use linear and tonal techniques to depict form and develop study of nature.
- Develop an informed use of basic color schemes and harmonies in the creation of visual work.

**DRAWING AND PAINTING  
PRACTICAL (PORTRAIT)  
BABED 412.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Identify monochromatic, complimentary, and analogous color schemes
- Use linear and tonal techniques to depict form and develop composition and landscape
- Develop an informed use of basic color schemes and harmonies in the creation of visual work.
- Explain the process and difficulties of drawing based on previous experiences in art class.

**HOME SCIENCE  
INTRODUCTION TO COMMUNITY NUTRITION AND EXTENSION  
BABED-413.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the methods and approaches of extension.
- Understand the functions, dietary sources and clinical manifestations.
- Initiate community based actions.
- Draw linkage between extension and communication.
- Identify the food and nutrition problems of community.
- Implement appropriate interventions.

**HOME SCIENCE  
UNDERSTANDING LIFE SPAN DEVELOPMENT  
BABED-413.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the changes in child in respect to physical, psychological, language, moral and emotional.
- Identify the bases of development.
- Identify the challenges and problems faced in different age groups.
- List key components of development through different stages.

**HOME SCIENCE  
PRACTICAL  
BABED-413.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the application of psychological test.
- Develop skills in planning and conducting psychological test.

**संस्कृत साहित्य  
गद्य, काव्य, एवं व्याकरण  
बीएबीएड 415.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- नीति ग्रंथों का महत्व व नीतिपरक श्लोकों की व्याख्या कर सकेंगे ।
- संस्कृत ग्रन्थों में उपलब्ध जीवनोपयोगी विविध ज्ञान-भण्डार को ग्रहण कर सकेंगे ।
- स्तर के अनुरूप संस्कृत भाषा की व्यावहारिक योग्यता विकसित कर सकेंगे ।
- संस्कृत के श्रवण, भाषण, पठन और लेखन भाषा-कौशलों को विकसित कर सकेंगे ।
- विद्यार्थियों को संस्कृत वाङ्मय में निहित भारतीय वैज्ञानिक तथा वाणिज्यिक शब्दावली एवं शैली का जीवन में प्रयोग कर सकेंगे ।

**संस्कृत साहित्य  
काव्य, स्मृतिशास्त्र तथा संस्कृत-साहित्य  
बीएबीएड. 415.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- स्मृति शास्त्रों में निहित विचारों का विश्लेषण कर सकेंगे ।
- संस्कृत महाकाव्य का मानव जीवन में महत्व को समझ सकेंगे ।
- नीति शतक में उपस्थित मानवीय मूल्यों का विश्लेषण कर सकेंगे ।
- संस्कृत साहित्य का विवेचनात्मक अध्ययन कर सकेंगे ।
- संस्कृत काव्य में निहित मानवीय मूल्यों को विकसित कर सकेंगे ।
- स्मृतिशास्त्रों के योगदान की सराहना कर सकेंगे ।

## **Fifth Semester**

### **ENVIRONMENTAL EDUCATION**

#### **BABED –501**

##### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Develop Awareness of the concern for environmental issues
- Understand the concept, objectives and importance of Environmental Education
- Adopt multi-disciplinary approach to environmental problems
- Understand different methods & techniques of teaching Environmental Education
- Design, develop & implement strategies for Environmental Education
- Inculcate environment friendly values through Environmental Education

### **CONTEMPORARY INDIA AND EDUCATION**

#### **BABED-502**

##### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Analyze and understand educational concepts, their premises and contexts that are unique to education.
- Understand and appreciate the nature and the purpose of education, their practical ramifications in the school context.
- Analyze the basis of educational goals in the present day Indian society and examine the rationale of educational goals articulated in the reports of various Commissions and policy documents.
- Understand the importance of educational policies and programmes during the pre and post independence period.
- Analyze the forces affecting the educational system.
- Develop competencies to understand the various issues related to education and their addresser.
- Develop vision for futuristic programmes in education.
- Appreciate the role of education in human resource development.

**SOCIOLOGY**  
**POPULATION STUDIES**  
**BABED- 503.I**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:**

- Demonstrate an understanding of basic demographic concepts.
- Analyse population dynamics.
- Apply demographic concepts and population theories to explain past and Present population characteristics.
- Understand contemporary socio-economic issues in the context of Population theories.
- Evaluate population policy of India and its impact.
- Read research papers on population studies.

**SOCIOLOGY**  
**CLASSICAL SOCIOLOGICAL THOUGHT**  
**BABED- 503.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explain Social thought of Auguste Comte, Marxian, Durkheimian, and Weberian on social world.
- Identify the foundations of classical sociology and their historical origins.
- Understand the relevance of classic theories to analyze contemporary social problems.

**HISTORY**  
**WORLD HISTORY(1453-1815)**  
**BABED -504.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discuss the major developments in European politico-economic scenario since the Renaissance.
- Understand the major revolutions.
- Explain Napoleon and his continental system
- Understand the causes and results of major battles.



**HISTORY**  
**WORLD HISTORY (1815-1945)**  
**BABED -504.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the political, social and economical condition of Europe between 1815-1945.
- Understand the causes and effect of two major world war.
- Identify the factors influencing the political rivalr between the nations.
- Draw maps and charts.
- Understand the process of unification of Germany and Italy.
- Explain with the formation of United Naiton and also understand its relevance.
- Read the documents and produce their own historical analysis.

**POLITICAL SCIENCE**  
**REPRESENTATIVE WESTERN POLITICAL THINKERS – II**  
**BABED -505.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand various western political thoughts of modern time.
- Analyse contemporary trends in modern context.
- Appericiate the contribution of political thinkers.
- Discuss the relevance of various political thoughts.

**POLITICAL SCIENCE**  
**INTERNATIONAL RELATIONS**  
**BABED- 505. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the key concepts in international relation
- Critically evaluate new trends in international politics.
- Understand the relation between India and neighbouring countries.
- Analyse the role of regional orgnizations in world poilitics.

- Critically evaluate the role of UNO in modern politics.
- Participate in video seminars diplomacy.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BABED -506.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze the major theme of the play: Tughlaq
- Understand the writing style of Girish Karnad
- Comprehend the gist of the poems: Ulysses, My Last Duchess, Dover Beach, The Sea and the Skylark, Is Poetry Always Worthy When its old?, Don't Call Me Indo-Anglican, From Homecoming & Hiroshima.
- Appreciate different literary styles and enjoy the beauty of poetry.
- Appreciate the poems: Ulysses, My Last Duchess, Dover Beach, The Sea and the Skylark, Is Poetry Always Worthy When its old?, Don't Call Me Indo-Anglican, From Homecoming & Hiroshima

**ENGLISH LITERATURE  
PROSE AND FICTION  
BABED -506.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze the ideas discussed in the essays: Introduction from Women Writing in India: 600 B. C. to the present, The Shroud, Idgah, Roots & Birthday
- Understand the life and writing style of Susie Tharu and K. Lalitha, Munsii Premchan, Ismat Chughtai, V. M. Basheer
- Interpret the ideas and themes of the novel Guide
- Develop literary sensibility.
- Read the other writing of R.K. Narayan and Indian writers in English.

**GEOGRAPHY  
GEOGRAPHY OF INDIA I  
BABED- 507. I**

**Course Outcomes:**

**On completion of the course, students will be able to:**

- Define and Understand Physiography and Broad Physical Division of India
- Read, Interpret, and generate Maps and other Geographic Representations of India
- Understand the Climatic Condition and Vegetation of India
- Locate and Define Soils and Drainage System of India
- Make Optimal use of Natural Resources of India
- Create maps on their own.
- Develop cartography.

**GEOGRAPHY**  
**GEOGRAPHY OF ASIA I**  
**B.A.B.ED- 507. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Read, Interpret and Generate Maps and Other Geographic Representation of Asia.
- Understand the Climatic Condition and Drainage System of Asia.
- Differentiate Soils and Agriculture of Asia.
- Establish relationship between the global, regional and local.
- Discuss Physical Features of Asia.
- Apply geographical knowledge to living everyday.

**GEOGRAPHY PRACTICAL**  
**BABED. - 507. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discriminate between conical and cylindrical map projections.
- Understand the importance of map projections.
- Use map projections in understanding different geographical concepts.

**ECONOMICS**  
**DEVELOPMENT ECONOMICS-I**  
**BABED - 508.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discuss alternative conceptions of development and their justification.

- Participate in the discourse on the modern theories of development.
- Draw a comparison between classical and modern theories of development.
- Identify the strengths of classical and modern theories of development.
- Take interest in Indian economy through different lens of development.

**ECONOMICS**  
**DEVELOPMENT ECONOMICS-II**  
**BABED - 508.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Draw linkage in development and planning.
- Explain human development through the prism of gender, education and health.
- Analyze the human development from different perspectives.
- Discuss socio-political and cultural indicators of sustainable development.
- Present argument in relation to investment and planning.
- Read national and international report of human development.
- Participate in sustainable development as an economic citizen.

**PSYCHOLOGY**  
**CHILD PSYCHOLOGY**  
**BABED -509. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept and history of childhood.
- Understand how theories try to explain childrens development.
- Illustrate with developmental task of childhood.
- Discuss the development of social and cognitive development of children.
- Recognize the common hazards and happiness of early and late childhood.

**PSYCHOLOGY**  
**ADOLESCENT PSYCHOLOGY**  
**BABED -509. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the developmental tasks of adolescent period.

- Familiarize with social, cognitive and emotional development of adolescent.
- Recognize the hazards and happiness of adolescent period.
- Discuss various theories of development.
- Apply different theories of development in instructional process.
- Create a productive classroom environment.

**PSYCHOLOGY  
PRACTICAL  
BABED -509. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Administer and interpret psychological tests to major social development of child and adolescent.
- Understand moral development of different subject/testee through psychological tests.
- Guide subject/tested to manage youth problems.

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_Emotional maturity.
- \_Social maturity.
- \_Adolescent problems.
- \_Moral development.

**हिन्दी साहित्य  
प्रथम पेपर हिन्दी पद्य  
BABED- 511.I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी की विधाओं का तात्त्विक परिचय का प्रत्यास्मरण कर सकेंगे।
- साहित्यिक कृतियों का विभिन्न दृष्टियों से विवेचना-विश्लेषण, आस्वाद तथा समीक्षा करने की दृष्टि विकसित कर सकेंगे।
- हिन्दी पद्य के स्वरूप का विश्लेषण कर सकेंगे।
- हिन्दी कविता के इतिहास को सारांशित कर सकेंगे।

**हिन्दी साहित्य**

**द्वितीय पेपर रीतिकालीन काव्य**

**BABED -511.II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी की आदिकालीन, भक्तिकालीन व रीतिकालीन काव्य प्रवृत्तियों की व्याख्या कर सकेंगे।
- तात्कालीन प्रमुखकवि तथा उनकी कृतियों का विश्लेषण कर सकेंगे।
- पाठ्य कृतियों के संदर्भ में समीक्षा की क्षमता विकसित कर सकेंगे।
- रीतिकालीन काव्य का सौन्दर्य बोध व सराहना कर सकेंगे।
- रीतिकालीन काव्य का संग्रह कर सकेंगे।

**DRAWING AND PAINTING**

**HISTORY OF ANCIENT ART AND WESTERN ARTS (THEORY)**

**BABED -512. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Familiarize with the western art .
- Know the development, similarities and dissimilarities of ancient Art and Western Art.
- Appreciate Gotheic, Byzantine and Greek art.
- Visit places of different art forms.

**DRAWING AND PAINTING**

**PRACTICAL**

**BABED- 512. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop the skill of Anatomy drawing.
- Develop the skill of outdoor painting
- Creat indoor paintings.
- Appericiate different impressionistic image of models.

**DRAWING AND PAINTING**

**PRACTICAL**

**BABED- 512. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Introduce the students to a wide range of drawing strategies to advance their practice and offer methods by which they can build and sustain a work over a longer period.
- Challenge the students to interrogate their existing skills and encourage them move from line drawing to consider the qualities of tone, texture and mark making to reveal form and volume.
- Develop increased observational skills. Through practice the students will become adept at recognizing the structure of the human form and begin to assess their own work, providing confidence in their capacity to advance their subsequent study in Fine Art life drawing

**HOME SCIENCE  
INTRODUCTION TO TEXTILES  
BABED-513.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand different fibres.
- Recognize different types of yarns.
- Appreciate the art of dying of yarns.
- Discuss basic principles of yarn making.

**HOME SCIENCE  
INTRODUCTION TO CLOTHING  
BABED-513.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Recall and recognize the psychological aspect of clothing in social situation.
- Understand the design and constructional details of historic costumes and make use of knowledge in modern garment designing.
- Appreciate historic costumes and textiles of different countries.
- Understand the psycho-social aspect of clothing.
- Appreciate regional costumes of India.
- Appreciate global diversity of dressing.

**HOME SCIENCE**

**PRACTICAL**  
**BABED-513.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the Preparation, packaging, sensory/objective (TSS, pH) evaluation and costing of fruit and vegetables products
- Identify the steps involved in preservation of fruit and vegetables products

**संस्कृत साहित्य**  
**ललित साहित्य तथा साहित्यशास्त्र**  
**बीएबीएड. 515.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत साहित्य के विभिन्न साहित्यकारों की लेखन शैली का विश्लेषण कर सकेंगे।
- संस्कृत साहित्य में उल्लिखित प्रकृति चित्रण का वर्णन कर सकेंगे।
- संस्कृत साहित्य के पात्रों के नैतिक मूल्यों को स्वयं में विकसित कर सकेंगे।
- संस्कृत साहित्यकारों की भाषा शैली के सौन्दर्य की सरहाना कर सकेंगे।

**संस्कृत साहित्य**  
**संस्कृत काव्य शास्त्र**  
**बीएबीएड -515.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत काव्यशास्त्र के विभिन्न रूपों में अंगों की विवेचना कर सकेंगे।
- संस्कृत ध्वनियों का विश्लेषण कर सकेंगे।
- संस्कृत काव्य के विभिन्न संप्रदायों का विश्लेषण कर सकेंगे।
- संस्कृत साहित्य में रसास्वादन की क्षमता को विकसित कर सकेंगे।



## Sixth Semester

### अनिवार्य हिन्दी BABED -601

#### अधिगम अनुवर्तन

इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिंदी भाषा के उद्भव और विकास का प्रत्यास्मरण कर सकेंगे।
- हिन्दी की लिपियों व बोलियों का अर्थ ग्रहण कर सकेंगे।
- विभिन्न व्यवहार क्षेत्रों में राजभाषा के रूप में हिन्दी भाषा का उपयोग कर सकेंगे।
- हिंदी भाषा के व्यावहारिक रूप को अपने लेखन व वाचन में विकसित कर सकेंगे।

### CHILDHOOD AND GROWING UP BABED. -602

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:-**

- Understand the processes of development and learning.
- Appreciate human diversity.
- Understand multidimensional and inter-dependence of development.
- Understand the linkages of child development with family, school, neighborhood and community.
- Discuss various theories of development.
- Apply different theories of development in instructional process.
- Create a productive classroom environment.

### SOCIOLOGY INDIAN SOCIOLOGICAL THINKERS BABED -603. I

#### COURSE OUTCOMES

**On completion of the course, students will be able to:-**

- Understand Indian thinkers and their ideas in each of the major emerging paradigms in Indian sociology.
- Articulate and apply contemporary sociological use and theory.
- Analyze the various sociological concepts and theories developed by Indian sociological thinkers.
- Appreciate the contribution of Indian sociological thinkers.

**SOCIOLOGY**  
**INTRODUCING SUB SOCIOLOGIES**  
**BABED- 603. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Understand Urban Sociology.
- Explain Socio-developmental issues.
- Participate in the achievement of the sustainable cities of communities.
- Appreciate different policies and programs of urban social development.

**POLITICAL SCIENCE**  
**CHALLENGES TO DEMOCRACY**  
**BABED- 605. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Analyse the reasons and consequences of various problems faced by Indian democracy.
- Understand the major global issues.
- Develop specific ways in which contemporary challenges can be addressed Peacefully.
- Contribute in the maintaining democracy in the country.
- Appreciate the initiatives.

**POLITICAL SCIENCE**  
**MODERN POLITICAL THEORY – PART II**  
**BABED- 605.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the various theories of Political Development and its genesis.
- Understand and analyse the trends of Modernization and Post modernization.
- Discuss various models of political theory based on simulations.
- Analyse different theories of alienation.
- Appreciate the contributions of various theories of political development.

**ENGLISH LITERATURE  
POETRY AND DRAMA  
BABED -606. I**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Comprehend the poetry of Yeats, Eliot, G. K. Adiga, E. D Souza, O. N. V. Kurup, Jayaprabha, Daya Pawar and S Mahapatra.
- Express the gist of the poems orally.
- Comprehend representative literary and cultural text with a significant number of historical, geographical contexts.
- Apply critical and theoretical approaches to the reading and analyze literary and cultural texts in multiple genres.
- Appreciate literary style of poems.
- Read poems and drama of different genres.

**ENGLISH LITERATURE  
PROSE AND FICTION  
BABED -606. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Comprehend the central idea of the essays.
- Analyze the major themes of the novel, Jane Eyre.
- Understand the writing style of Kanchan Ilaiah, S. V. Srinivas, Shashi Deshpande & Ambai.
- Analyze the characters, setting and plot of the novel, Jane Eyre.
- Read other novels of Charlotte Bronte.

**GEOGRAPHY  
GEOGRAPHY OF INDIA II  
BABED- 607. I**

**Course Outcomes:**

**On completion of the course, students will be able to:-**

- Examine the physiographic features of India.
- Differentiate the Crops of India.
- Understand the Development of Industries.
- Understand the types and patterns of settlements.

- Describe Population Growth and Population Density.
- Locate the types of Settlements in India.

**GEOGRAPHY**  
**GEOGRAPHY OF ASIA II**  
**BABED- 607. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the location, physiography, agriculture, minerals and Industries of Asia.
- Locate on map the Physical division of Japan, China, Pakistan and Turkey.
- Read Literature Related to different types of Agriculture Crops of Japan, China, Pakistan and Turkey.
- Locate and define the major Mineral's Regions of Japan, China, Pakistan and Turkey.
- Locate on map the Industrial Region of Japan, China, Pakistan and Turkey.

**GEOGRAPHY PRACTICAL**  
**BABED. - 607. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discriminate between conical, cylindrical and zenithal map projections.
- Understand the importance of zenithal projections.
- Use map projections in understanding the Earth.

**ECONOMICS**  
**MONEY AND BANKING**  
**BABED - 608.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Discuss the basic concepts of Money and Banking.
- Explain the functions of commercial bank and Reserve Bank of India.
- Discuss the effects of nationalization on economy.
- Analyze different theories of demand for money.
- Describe and analyze the role of money in different types of economy.
- Appreciate the new concepts in banking.

**ECONOMICS**  
**INTERNATIONAL ECONOMICS**  
**BABED - 608.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Demonstrate knowledge of concepts of tariff quota and exchange rate.
- Critically analyze the role of International institutions in foreign trade.
- Understand the role of International Trade.
- Discuss the theories of international trade.
- Explain the composition and consequences of international trade.
- Analyze the effect of trade policy in different time periods.
- Take interest and read the latest developments in international trades.

**PSYCHOLOGY**  
**COUNSELLING PSYCHOLOGY - I**  
**BABED- 609. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Know the concept of counselling.
- Understand the approaches of counselling.
- Acquaint with the process of counselling.
- Apply the knowledge of counselling.
- Ethically conducts the counseling across different settings.
- Reflect values and attitudes of counseling psychology in behavior.

**PSYCHOLOGY**  
**MANAGING STRESS, HEALTH AND WELL BEING**  
**BABED. - 609. II**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

- Understand the meaning and nature of stress.
- Analyze major causes of stress.
- Comprehend various theories of stress.
- Understand the concept of well being.
- Use knowledge regarding the management of stress.

- Aware of well being of people.

**PSYCHOLOGY  
PRACTICAL  
BABED. - 609. III**

**COURSE OUTCOMES**

**On completion of the course, students will be able to:-**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Administer and interpret various psychological tests to major stress level of subjects.
- Guide and counsell different stake holders by the use of psychological tests.
- Guide subject/testee to maintain well being.

Administration and Interpretation of standardized psychological tests of the following attributes :-

- \_Stress.
- \_Psychological well being.
- \_Counselling.
- \_Mental health.

**हिन्दी साहित्य  
प्रथम पेपर उपन्यास एकांकी  
BABED- 611. I**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य की विभिन्न विधाओं के तात्त्विक स्वरूप की व्याख्या कर सकेंगे।
- उपन्यास व एकांकी की विभिन्न प्रवृत्तियों का विश्लेषण कर सकेंगे।
- एकांकी व उपन्यास की विकास क्रम का प्रत्यभिज्ञान कर सकेंगे।
- उपन्यास एकांकी के आस्वादन, अध्ययन एवं मूल्यांकन कर सकेंगे।

**हिन्दी साहित्य  
द्वितीय पेपर आधुनिक काल  
BABED- 611. II**

**अधिगम अनुवर्तन –**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- हिन्दी साहित्य के काल विभाजन का प्रत्यास्मरण व प्रत्यभिज्ञान कर सकेंगे।
- आधुनिक काल की हिन्दी साहित्य की प्रवृत्तियों का वर्णन कर सकेंगे।

- आधुनिक कालीन हिन्दी कवियों की कृतियों में अभिरूचि विकसित कर सकेंगे।
- हिन्दी की विभिन्न संस्थाओं व पत्र-पत्रिकाओं को पढ़ेंगे।

**DRAWING AND PAINTING**  
**ART AND CULTURE OF FAR EAST (THEORY)**  
**BABED. - 612. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand the artistic style of Far East.
- Differentiate the art of Ancient China and Japan.
- Understand the cultural development in contemporary art.
- Appreciate the far eastern architecture.
- Read books related to art and culture of China and Japan.
- Visit art galleries.

**DRAWING AND PAINTING PRACTICAL**  
**PRACTICAL**  
**BABED- 612. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand basic anatomical relationships relevant to descriptive drawing of the human form.
- Demonstrate competence in linear methods of drawing images of the life model.
- Demonstrate competence in tonal methods of drawing images of the life model.
- Understand and be able to depict basic proportional relationships of the life model.
- Understand rhythms of the body and natural forms and how they exist in the whole and parts of the figure.

**DRAWING AND PAINTING PRACTICAL**  
**PRACTICAL**  
**BABED- 612. III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Create drawing strategies to advance their practice
- Develop from line drawing to the qualities of tone and texture
- Identify form and volume.
- Develop increased observational skills.
- Develop confidence in their capacity to advance their subsequent study in Fine Art life drawing

**HOME SCIENCE**  
**HOME SCIENCE FOR SKILL DEVELOPMENT**  
**BABED-613.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Understand different types of fashion events and the planning required for their successful organisation.
- Gain practical knowledge of administrative, design, marketing, operational and risk management steps required for the successful organisation of fashion events through project work.
- Conduct project work on fashion events.
- Participate in fashion events.
- Visit fashion shows.
- Read stories and reports of different fashion events.

**HOME SCIENCE**  
**FOOD PRESERVATION, PROVISIONS OF FOOD RELATED LAWS**  
**BABED-613.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**

- Recall food laws and regulations.
- Understand the concept of processing and preservation of fruits and vegetables.
- Develop awareness of food safety.

**HOME SCIENCES**  
**PRACTICAL**  
**BABED-613.III**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:-**



- Understand the process of preservation of fruit and vegetable products
- Appreciate the different methods of preservation of fruit and vegetable products
- Use the different methods of preservation of fruit and vegetable products in daily life

**संस्कृत साहित्य**  
**भाषा-विज्ञान तथा शास्त्रीय साहित्य का इतिहास**  
**ch,ch,M 615.I**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत भाषा की उत्पत्ति विकास की विवेचना ।
- अर्थ विज्ञान अर्थ परिवर्तन कारणों का विश्लेषण ।
- सिद्धांत कौमुदी का विश्लेषणात्मक अध्ययन ।
- शास्त्रीय साहित्य शास्त्र का विवेचन आत्मक वर्णन ।

**संस्कृत साहित्य**  
**नाटक एवं नाट्य शास्त्र**  
**बीएबीएड -615.II**

**अधिगम अनुवर्तन**

**इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :**

- संस्कृत नाटक के उद्भव एवं विकास का परिचय ।
- संस्कृत नाटकों के रसास्वादन की क्षमता का विकास ।
- संस्कृत नाटकों के तात्विक रूपों का विश्लेषण ।
- संस्कृत नाट्यकारों के व्यक्तित्व एवं कृतित्व की विवेचना ।

## Seventh Semester

### **GENDER, SCHOOL AND SOCIETY**

#### **BABED –701**

##### **COURSE OUTCOMES:**

##### **On completion of the course, student will be able to:**

- Understand gender and related concepts.
- understand gender in historical context
- Observe and understand related inequalities, its social causes and impact on society.
- Analyse gender difference in relation to cognition, achievement and career choice.
- Analyse the relationship of gender and development and their implications for policy and practice.
- Participate in gender, school and society discourse.

### **CREATING AN INCLUSIVE SCHOOL**

#### **BABED –702**

##### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Demonstrate knowledge of different perspectives in education of children with disabilities.
- Identify needs of children with diversities.
- Plan need-based programmes for all children with varied abilities in the classroom.
- Use human and material resources in the classroom.
- Develop positive attitudes towards children with special needs.
- Use specific strategies involving skills in teaching special needs children in inclusive classrooms.
- Use appropriate learner-friendly evaluation procedures.
- Incorporate innovative practices to respond to education of children with special needs.
- Contribute to the formulation of policy.
- Appreciate the development of inclusive schools.

**GUIDANCE AND COUNSELLING IN SCHOOLS**  
**BABED-703**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of Guidance and Counselling.
- Develop sensitively towards the problems of adolescent students.
- Understand the process of guidance services in schools
- Use tools to understand the problems of students.
- Appreciate the role of Guidance and counselling at school level.
- Conduct counselling at school.

**DRAMA AND ART IN EDUCATION**  
**BABED-704**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand local culture and art forms.
- Use drama as critical pedagogy.
- Use drama and art forms to invoke collective consciousness.
- Enhance theatre skills
- Use art forms in bringing about social change
- Use art forms in nurturing life skills.
- Use art forms in expanding the landscapes of children's art.
- Appreciate the role of drama and art in education.

## **Eighth Semester**

### **VALUE AND PEACE EDUCATION**

#### **BABED -801**

##### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Understand the nature, characteristics and types of human values.
- Understand the five core values - Truth, Righteous conduct, Peace, Love and Non-Violence.
- Appreciate the developments in Peace Education in India and Abroad.
- Understand various methods, techniques and approaches of value development.
- Appreciate the preamble to the constitution and values inherent in it.
- Understand various models of value education

### **HEALTH AND PHYSICAL EDUCATION**

#### **BABED-802**

##### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Analyze health risks.
- Understand the Health Education Vision & Mission of India.
- Develop skills for physical fitness, correct postures and habits.
- Develop skills to practice yogasanas and meditation.
- Learn the skills of concentration, relaxation, dealing with stress and strain
- Conduct First Aid.
- Understand and identify tech related health risk..
- Use safety measures in schools.

### **INDIAN CONSTITUTION AND HUMAN RIGHTS**

#### **BABED-803**

##### **Course Outcomes:**

##### **On completion the course, students will be able to:**

- Recall the importance of local self-Government and Panchayati Raj Institutions in India.
- Understand the importance, preamble and salient features of Indian Constitution.

- Develop an understanding of the strength of the Union Government.
- Understand the functioning of the State Government for the unity and the strength of the Democracy.
- Understand the significance of the growing advocacy of Human Rights.
- Appreciate the significance of Fundamental Rights, Duties and Directive Principles of State Policy.

<b>SCHOOL INTERNSHIP</b> <b>BABED-P2</b>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Plan learning conditions and activities for specific units of study.
- Use opportunities to observe and participate in the school.
- Understand school culture.
- Understand multiple roles and responsibilities of teacher.
- Understand and reflect one's own professional practices to grow as a practitioner.
- Capacitate to think about educational theories and their application in concrete teaching learning experience.
- Understand the School Climate and diversity of learners.
- Prepare different school registers.
- Prepare students portfolios.
- Take part in different activities of the school.

<b>POST INTERNSHIP</b> <b>BABED-P3</b>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Expected to submit a comprehensive report on the basis their school internship
- Improvement in the instructional activity of the student teachers by using various techniques and practical skills in teaching
- Develop Confidence in facing the classroom situations.
- Guiding in planning their lessons, learning to organise contents, formulating suitable gestures and developing other related skills.
- Create an ICT based lesson plan and also used ICT based resources as a teaching aids.

**B.Sc.- B. Ed.**

## **Program: B.Sc. B.Ed**

### **Program Outcomes**

- Act as agents of modernization and social change.
- Promote social cohesion, international understanding.
- Acquire competencies and skills needed for Science teaching.
- Use competencies and skills needed for becoming an effective Science teacher.
- Be sensitive about emerging issues such as environment, population gender equality.
- Inculcate rational thinking and scientific temper among the Teacher students.
- Use innovative teaching methods.
- Use managerial skills.
- Become committed teaching professional.
- Illustrate how scientific model can be constructed based on the experimental observations.
- Acquire the knowledge needed for better understanding for reactions, principles and derivations related to Science.
- Acquaint themselves with different modern techniques and concepts useful in the study of Science.

## **Course Outcome:**

### **First Semester:**

<p style="text-align: center;"><b>GENERAL ENGLISH (COMPULSORY)</b> <b>ESSENTIAL LANGUAGE SKILLS</b> <b>BSCBED -101</b></p>
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#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the differences between spoken and written English
- Understand the factors that influence use of grammar and vocabulary in speech and writing.
- Comprehend the format of different forms of formal letter writing.
- Summaries appreciate poems.
- Differentiate among different parts of speech
- Make sentences in Active and Passive Voice.
- Transform sentence from direct to indirect narration .
- Develop vocabulary and communicative skills.

<p style="text-align: center;"><b>YOGA</b> <b>YOGA HEALTH AND PERSONALITY</b> <b>BSCBED-102.I</b></p>
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#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand concept and streams of Yoga health, healings and disease.
- Manage Stress through yoga.
- Understand and practices various yogic Asana and Pranayama.
- Understand need of Yoga for positive health and wholesome personality development.
- Establish relationship between Yoga and Health.
- Follow Yogic principles of healthy living.
- Develop a positive attitude towards yoga.



**YOGA PRACTICAL**  
**BSCBED-102.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop skill of Asanas and kriyas.
- Develop the skill of meditation.
- Appreciate the knowledge of meditation and yogic kriyas.
- Develop personality.

**CHEMISTRY**  
**PHYSICO-INORGANIC CHEMISTRY-I**  
**BSCBED-103.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of atomic structure, the shapes of different orbital's and principles for filling electrons.
- Analyze the periodic table and how the atomic properties of the elements are related to each other.
- Understand the concept of chemical bonding.
- Acquire basic knowledge of chemical kinetics and catalysis.

**CHEMISTRY**  
**PHYSICO-ORGANIC CHEMISTRY – II**  
**BSCBED-103.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of structure and bonding.
- Evaluate stereo chemical outcomes of organic reactions by considering the reaction mechanism.
- Explore the family of organic compounds.
- Understand the concept of colloidal state.

**CHEMISTRY PRACTICAL**  
**BSCBED-103.III**

**PRACTICAL OUTCOMES:**

- Acquire the basic knowledge of laboratory techniques.
- Explore Semi micro Analysis: Cation analysis.
- Develop the separation and identification techniques of ions from Groups I, II, III, IV, V and VI-Anion analysis.

**BOTANY**  
**INTRODUCTORY MICROBIOLOGY**  
**BSCBED-104. I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand ultra structure, function and reproduction of bacteria and virus.
- Analyze the differences between various forms of microbial organisms.
- Comparative evaluation of the diseases caused by bacteria, mycoplasma and viruses.
- Evaluate the importance of microbes in human welfare.

**BOTANY**  
**ALGAE, FUNGI AND LICHENS**  
**BSCBED-104.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Comparative evaluation of general account, structure, reproduction and economic importance of algae and fungi.
- Peruse different classes and members of algae and fungi along with their detailed classification
- Assess the structure and general characters of lichens.
- Understand the ecological importance of thallophytic.

**BOTANY PRACTICALS**  
**BSCBED-104.III**

**PRACTICAL OUTCOMES:**

- Perform gram's staining and demonstration of different types of bacteria based on their cell wall composition.
- Practicing preparation of bacterial growth media.
- Culture and isolation of bacteria and permanent slide preparation of algal and fungal cultures.
- Exploring the disease symptoms caused by various microbes.

<p><b>ZOOLOGY</b>  <b>DIVERSITY OF ANIMALS</b>  <b>BSCBED105.I</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Evaluate different zoogeographical regions of the world, their fauna and climatic conditions.
- Understand the biodiversity of India and world, their conservative measures and reasons for the depletion.
- Apprentice with the taxonomical nomenclature, different basis of classification and five kingdom scheme.
- Review the detailed classification of non-chordata and chordata upto suborders.

<p><b>ZOOLOGY</b>  <b>CELL BIOLOGY AND MOLECULAR BIOLOGY</b>  <b>BSCBED-105.II</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the structure of Prokaryotic and eukaryotic cell, cell membrane and transport across cell.
- Evaluate the structure and functions of different cell organelles i.e. Lysosome, Golgi complex, Mitochondria, Ribosome, Nucleus and chromosome.
- Analyze the detailed structure of DNA, RNA and methods of replication, transcription, and translation.
- Understand the process of cell cycle including mitosis and meiosis.

**ZOOLOGY PRACTICALS**  
**BSCBED-105.III**

**PRACTICAL OUTCOMES-**

- Understand organization and working of dissecting and compound microscope and implement it to analyze various micro forms.
- Enumerate different methods of microscopic slide preparations and estimate composition, preparation and uses of fixatives, stains and common reagents.
- Perform collection of animals like Amoeba, Paramecium, Euglena, Daphnia, Cyclops and Paramecium and culture them in laboratories for various purposes.
- Examine miscellaneous microscopic slides and museum specimens of phylum Protozoa, Porifera, Coelenterata, Platyhelminthes and Aschelminthes.
- Dissect Earthworm and Cockroach for generalization of their external features, general viscera and different physiological systems.
- Illustrate salivary gland chromosomes from Drosophila and Chironomous larva, mitosis in onion root tips, meiosis in Grasshopper and Cockroach testes, staining of mitochondria from the buccal epithelial cells of man, karyotype and idiogram of man, cell permeability in mammalian RBC practically.
- Demonstrate isolation of DNA from rat's Kidney/spleen and characterization using Feulgen staining.

**MATHEMATICS**  
**CALCULUS**  
**BSCBED-106.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of curvature.
- Calculate curvature when the curve is defined in cartesian form or parametric form.
- Apply the fundamental concept of partial differential equation.
- Evaluate the double integral of a function of two variables.
- Compute double integral in rectangular, cylindrical and spherical coordinates.
- Solve problems of triple integral.

**MATHEMATICS**  
**DIFFERENTIAL EQUATIONS**  
**BSCBED-106.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of differential equation.
- Solve first order differential equation, exact differential equation.
- Express the basic existence theorem for higher order linear differential equation.
- Solve the homogeneous linear differential equations with constant coefficients.
- Understand the concept of linear partial differential equation, Lagrange's linear equations and non-linear partial differential equation of first order.
- Derive Carpet's general method of solution.

**MATHEMATICS PRACTICALS**  
**BSCBED-106.III**

**COURSE OUTCOMES:**

- Understand the concept of differential equation by a power point presentation.
- Determine the linear equation in a presentation.
- Solve the partial differential equation.
- Understand the concept of curve and explain by diagram.
- Explain curve of curvature.

**PHYSICS**  
**OPTICS**  
**BSCBED-107.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand various rules and principles of optics.
- Analyze various phenomenon's related to optics.
- Comparative evaluation laser and optical fiber.
- Evaluate the importance of light related events in our life.

**PHYSICS**  
**ELECTROMAGNETISM**  
**BSCBED-107.II**

**Course Outcomes:**

**On completion of the course, students will be able to:**

- Understand the relationship between electric and magnetic fields
- Acquire the basic concepts of electricity and magnetism such as potential and field.
- Calculate the electrostatic and magnetic fields produced by static and moving charges in a variety of simple configurations.
- Apply those theoretical techniques to solve problems in any context underpinned by coupled linear differential equations

**PHYSICS PRACTICALS**  
**BSCBED-107.III**

**Course outcomes**

- Acquire the basic knowledge of laboratory techniques.
- Explore the results of theoretical topics of optics with practical knowledge such as interference, diffraction and polarization.

## Second Semester

<p style="text-align: center;"><b>COMPUTER APPLICATION IN EDUCATION</b> <b>BSCBED- 201</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the fundamental hardware components
- Understand the difference between an operating system and an application program
- Give examples of types of computers
- State the applications of computer technology
- Identify the principal components of computer system
- Draw a flow diagram and represent the data flows.
- Apply computer technology in their learning and teaching.
- Read about the innovative uses of computer.

<p style="text-align: center;"><b>EDUCATION</b> <b>TEACHING AND LEARNING</b> <b>BSCBED- 202</b></p>
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**COURSE OUTCOMES:**

**On completion the course student will be able to:**

- Understand the concept and theories of learning and teaching.
- Understand learners.
- Understand phases, models and strategies of teaching.
- Analyze competencies of teaching and learning.
- Analyze competencies related to learning in and out of school.
- Establish relationship between teaching and learning.
- Apply strategies of teaching to enhance learning.

<p style="text-align: center;"><b>CHEMISTRY</b> <b>PHYSICO INORGANIC CHEMISTRY</b> <b>BSCBED-203.I</b></p>
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**COURSE OUTCOMES:**

**On completion the course student will be able to:**

- Understand general trends in Chemistry behind S-Block and P-Block elements.
- Acquire the knowledge of chemistry of noble gases.
- Evaluate the postulates of kinetic theory of gases.
- Generalize the basic characteristics of liquid and solid states.

**CHEMISTRY**  
**PHYSICO-ORGANIC CHEMISTRY**  
**BSCBED-203.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the nomenclature, synthesis, isomerism and physical properties of Alkenes and Cycloalkanes.
- Understand the nomenclature, structure and bonding in Dienes and Alkynes.
- Explore the basic concept of Arenas and Aromaticity.
- Understand ,analyze and solve the problems based on Electrochemistry.

**CHEMISTRY PRACTICAL**  
**BSCBED-203.III**

**PRACTICAL OUTCOMES:**

- Analyze the techniques of distillation.
- Acquire the concept of induction of Crystallization.

**BOTANY**  
**GYMNOSPERMS AND ANGIOSPERMS**  
**BSCBED-204.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyse the differences between pteridophytes, gymnosperms and angiosperms and
- Evaluate the members of gymnosperm.
- Familiarize with the phenomenon of microsporogenesis and megasporogenesis and development of male and female gametophytes.
- Analyze the procedure of pollination and fertilization in angiosperms.



- Assimilate knowledge on plant tissue culture techniques.

**BOTANY PRACTICALS**  
**BSCBED-204.III**

**PRACTICAL OUTCOMES:**

- Comparative evaluation of morphology, anatomy, and reproductive structures of Bryophyte, Pteridophyta and Gymnosperms.
- Preparation of permanent slides of reproductive structures of flowers.
- Familiarize plant tissue culture technique.

**ZOOLOGY**  
**GENETICS AND EVOLUTION**  
**BSCBED – 205.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Apply the basic principles of Mendelian genetics, linkage, extra chromosomal inheritance and crossing over.
- Evaluate different chromosomal aberrations and various genetic disorders.
- Investigate the concept of gene and gene mutation.
- Conceptualize the construction of pedigree.
- Understand the evolutionary concepts of Lamarck and Darwin.
- Determine the natural selection and paleontology.

**ZOOLOGY**  
**DEVELOPMENTAL BIOLOGY**  
**BSCBED-205.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand in detail about the process of gametogenesis, fertilization, cleavage, gastrulation and neurulation.
- Get a general idea of fate maps, embryonic induction and organizer.
- Evaluate the various steps of development in chick embryo.
- Attain the knowledge of fetal membranes and placenta in mammals.

**ZOOLOGY PRACTICALS**  
**BSCBED-205.III**

**PRACTICAL OUTCOMES-**

- Inspect life cycle of Drosophila and identify male, female, wild and mutant forms amongst them in a prepared culture.
- Scrutinize diverse blood groups and genetic disorders.
- Solve numerical problems based on monohybrid and dihybrid cross.
- Distinguish different types of eggs of fauna inhabiting Earth.
- Analyze different developmental stages of Frog tadpole and chick embryo through studying permanent prepared slides.
- Perform incubation of fertilized egg of chick and prepare a slide of the embryo, identify its age by making window in egg shell.

**MATHEMATICS**  
**NUMERICAL ANALYSIS**  
**BSCBED-206.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand differences and relation between differences and derivatives.
- Derive Newton's formula for forward and backward interpolation.
- Evaluate Gauss's, sterling's, Bessel's interpolation formula.
- Apply Simpson's one- third, Simpson's three-eight formula.
- Understand Newton-Rapshon method, Euler's and Runge-kutta method

**MATHEMATICS**  
**DISCRETE MATHEMATICS**  
**BSCBED-206.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of the sets, types of sets.
- Solve the relation of 2 sets as a subset of their product.

- Explore graph theory and different types of graph as – multi graphs, complete graph, bipartite graph, weighted graph.
- Understand concept of trees and their properties.
- Evaluate logic, Boolean algebra, Boolean function and expressions.

**MATHEMATICS PRACTICALS**  
**BSCBED-206.III**

**COURSE OUTCOMES:**

- Understand the concept of boolean function.
- Explore Lagrange's interpolation formula.
- Understand the theory of graph.
- Explain the concept of tree.

**PHYSICS**  
**ELECTRONIC DEVICES AND CIRCUITS**  
**BSCBED-207.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of state in a dynamical physical system and learn how to analyze simple first and second order linear circuits containing memory elements;
- Explore how to calculate frequency response curves and to interpret the salient features in terms of poles and zeros of the system function;
- Evaluate the importance of electronics theorems .

**PHYSICS**  
**SOLID STATE PHYSICS**  
**BSCBED-207.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of reciprocal space and be able to use it as a tool.
- Analyze various phenomenon related to solid state physics.
- Comparative evaluation for how crystalline materials are studied using diffraction, including concepts like form factor, structure factor, and scattering amplitude.

- Evaluate the importance of material science.

<p style="text-align: center;"><b>PHYSICS PRACTICAL</b> <b>BSCBED-207.III</b></p>
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**COURSE OUTCOMES**

- Acquire the basic knowledge of the electronic circuits .
- Evaluate quantitative analysis techniques.
- Explore the Calibration of galvanometer, voltmeter, ammeter and semiconductors.
- Develop the theory concepts by experimental techniques.

## Third Semester

अनिवार्य हिन्दी  
**BSCBED-301**

### अधिगम अनुवर्तन

#### इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिन्दी भाषा की व्यावहारिक उपयोगिता का प्रत्यास्मरण कर सकेंगे।
- शब्द संरचना की प्रक्रिया को समझ सकेंगे।
- भाषा को समझने व मूल्यांकन करने की क्षमता विकसित कर सकेंगे।
- साहित्यिक कृतियों का विविध दृष्टि से विवेचन, विश्लेषण तथा समीक्षा करेंगे।
- शुद्ध लेखन व वाचन की क्षमता विकसित करेंगे।
- प्रभावी सम्प्रेषण कर सकेंगे।

**EDUCATION**  
**KNOWLEDGE AND CURRICULUM**  
**BSCBED -302**

### COURSE OUTCOMES:

#### On completion of the course, students will be able to:

- Develop understanding the need and importance of curriculum in Fulfilling the aims of education.
- Critically analyse various samples of textbook.
- Examine the epistemological basis of education.
- Establish interconnectedness of curriculum, textbooks, pedagogy and evaluation.
- Analyse national curriculum frameworks.

**CHEMISTRY**  
**PHYSICO-INORGANIC CHEMISTRY-I**  
**BSCBED-303.I**

### COURSE OUTCOMES:

#### On completion of the course, students will be able to:

- Understand the Chemistry of Elements of First, Second and Third Transition Series.
- Explore the nomenclature, classification properties and preparations of coordination compounds.

- Recognize the basic terms of Thermodynamics-I.
- Understand the core concepts of Thermo chemistry.

**CHEMISTRY**  
**PHYSICO-ORGANIC CHEMISTRY-II**  
**BSCBED-303.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the core concept of Electromagnetic Spectrum: UV and IR spectroscopy.
- Explore the methods for preparation of alcohols.
- Understand the methods for preparation methods for Alkyl ,Aryl Halides, Phenols ,Ethers and Epoxides.
- Evaluate the synthesis of Aldehydes and Ketones and explain how to name different aldehydes and ketones.
- Understand nomenclature, structure and bonding of carboxylic acid and its derivatives.

**CHEMISTRY PRACTICAL**  
**BSCBED-303.III**

**Practical Outcomes**

- Acquire the basic knowledge of the Chromatographic techniques.
- Evaluate quantitative analysis techniques.
- Explore the Calibration of fractional weights, pinsetters and burettes.
- Preparation of standard solution.
- Dilution - 0.1 M to 0.001 M solutions.

**BOTANY**  
**ANGIOSPERM TAXONOMY AND ECONOMIC BOTANY**  
**BSCBED304-I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Apply rules of botanical nomenclature.
- Review classifications given by various scientists.

- Differentiate amongst various families of dicotyledonous and monocotyledonous plants.
- Enrich learning about economic and medicinal values of plants.

**BOTANY**  
**PLANT MORPHOLOGY AND ANATOMY**  
**BSCBED304-II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Scrutinize the types of simple and vascular tissues present in plants.
- Observe the phenomenon of secondary growth in plants.
- Ascertain adaptations in hydrophytes, halophytes and xerophytes.
- Understand the concept of biodiversity.

**BOTANY PRACTICALS**  
**(BSCBED-304.III)**

**PRACTICAL OUTCOMES:**

- Comparative study and identification of dicotyledonous and monocotyledonous stem, root and leaf.
- Observe the anatomical structures of plants.
- Analysis and identification of various characteristics of different dicotyledonous and monocotyledonous families.

**ZOOLOGY**  
**STRUCTURE AND FUNCTIONS OF NON-CHORDATES**  
**BSCBED-305.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the structural and functional organization of vital systems i.e., locomotion, skeleton, digestion, respiration, excretion, circulation, nervous, sense organs and reproductive system of various representative animals of non-chordate phylum's.

- Determine the parasitic adaptations in Helminthes and social organization in Honey bee and Termites.
- Investigate the direct and indirect development in insects.

**ZOOLOGY**  
**ANIMAL PHYSIOLOGY AND ENDOCRINOLOGY**  
**BSCBED-305. II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Determine the physiology of osmoregulation, digestion, respiration, blood circulation, excretion and muscle contraction.
- Understand the physiology of nerve impulse, sense organs and reproduction.
- Differentiate different types of endocrine glands, present in animals.
- Acquire the primary idea of neurosecretion.

**ZOOLOGY PRACTICALS**  
**BSCBED-305.III**

**PRACTICAL OUTCOMES-**

- Categorize different museum specimens and microscopic slides of phylum Annelida, Onchophora, Arthropoda, Mollusca, Echinodermata and Hemichordata.
- Dissect Prawn/Squilla and Pila to evaluate their external features, physiological systems and prepare permanent slides of some of their organs.
- Estimate RBC count, WBC count, haemoglobin, haematocrit value (PCV) and identify miscellaneous blood cells in a blood sample.
- Demonstrate catalase activity in liver and digestion of starch by salivary amylase, effect of heat and alcohol on it.
- Examine various phases of estrus cycle by vaginal smear technique in the rat/ mouse.
- Recognize major endocrine glands of mammals through permanent prepared slides.

**MATHEMATICS**  
**ABSTRACT ALGEBRA**  
**BSCBED-306.I**

**COURSE OUTCOMES:**



**On completion of the course, students will be able to:**

- Understand binary operation and use properties.
- Understand and use the terms of homomorphism and isomorphism.
- Analyze the definition, properties of Group and use properties of rings, field in terms of homomorphism and isomorphism.
- Apply fundamental concept including groups, subgroup and normal subgroups.

**MATHEMATICS  
ALGEBRA OF MATRIX  
BSCBED-306.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand different types of matrix.
- Compute matrix vector product.
- Apply properties of determinants (related to row reductions, transpose, and matrix products) to compute determinants.
- Characterize linear transforms using the concepts of existence and uniqueness.
- Solve linear systems represented as linear transforms.

**MATHEMATICS PRACTICALS  
BSCBED-306.III**

**COURSE OUTCOMES:**

- Explore a table for binary operation.
- Understand and work in MS-Excel preparing a matrix.
- Explain determinates in MS-Excel.
- Understand the theory of group
- Explain the concept of ring and field.

**PHYSICS  
MECHANICS & WAVES & OSCILLATIONS  
BSCBED-307.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concepts of mechanics, acoustics and the properties of matter
- Understand physical characteristics of SHM and obtaining solution of the oscillator using differential equations .
- Analyze various phenomenon related to mechanics and oscillations .
- Calculate logarithmic decrement relaxation factor and quality factor of a harmonic oscillator
- Identify and apply the laws of mechanics along with the necessary mathematics for solving numerical.

<p><b>PHYSICS</b>  <b>THEORY OF RELATIVITY &amp; MODERN PHYSICS</b>  <b>BSCBED-307.II</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the basic principles of the special theory of relativity.
- Demonstrate an understanding of nuclear forces, interactions and models .
- Apply the practical experience gained in the experimental methodologies used in scattering experiments and  $\gamma$ -ray spectroscopy
- Critically assess a range of applications of nuclear technology

<p><b>PHYSICS PRACTICAL</b>  <b>BSCBED-307.III</b></p>
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**COURSE OUTCOMES**

- Acquire the basic knowledge of mechanics and oscillations .
- Evaluate quantitative analysis techniques to determine Young modulus, modulus of rigidity and Curie temperature.
- Explore the Calibration of random decay by solid dice method.

## Fourth Semester

### ESSENTIAL LANGUAGE SKILLS-II

**BSCBED -401**

#### **COURSE OUTCOMES:**

**On the completion of the course, students will be able to:**

- Transform simple sentence into compound and complex sentences.
- Use transitive and intransitive verbs correctly.
- Write paragraphs on different themes.
- Punctuate and capitalize correctly.
- Write different forms of letters.
- Complete the stories.
- Identify use of words as different parts of speech.
- Take interest in English language and literature.
- Develop a positive attitude towards English language.

### ASSESSMENT FOR LEARNING

**BSCBED-402**

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Critical Examine issues in assessment and evaluation from constructivist paradigm.
- Understand key concepts such as formative and summative assessment, evaluation and measurement, test, examination.
- Use different kinds and forms of assessment that aid student learning.
- Use wide range of assessment tools, and learn to select and construct these appropriately.
- Evolve realistic, comprehensive and dynamic assessment procedures that are keeping the whole student in view.

### CHEMISTRY

**PHYSICO INORGANIC CHEMISTRY - I**

**BSCBED-403.I**

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the Chemistry of Lanthanide and Actinide Elements.
- Analyze the concept of Acids and Bases.
- Acquire knowledge of electrode conduction and understand the basic principles of Electrochemistry.
- Evaluate Phase equilibrium statement and meaning of terms–phase, component and degree of freedom.

**CHEMISTRY**  
**PHYSICO ORGANIC CHEMISTRY - II**  
**BSCBED-403.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explore the organic compounds of Nitrogen: Preparation of nitro alkanes and nitroarenes.
- Understand the basic features of Spectroscopy and recognize different regions for different regions.
- Understand the rules for naming different Organ metallic compounds.
- Evaluate the main aim of Heterocyclic compounds.

**CHEMISTRY PRACTICAL**  
**BSCBED-403.III**

**PRACTICAL OUTCOMES**

- Evaluate the Gravimetric analysis.
- Explore the analysis of Cu as CuSCN and Ni as Ni (dimethylglyoxime).
- Acquire the basic knowledge of Thermo chemistry.

**BOTANY**  
**PLANT PHYSIOLOGY (PART-1)**  
**BSCBED404-I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Examine the processes of diffusion, osmosis and imbibitions.

- Investigate ascent of sap and trans-membrane pathways.
- Evaluate different processes such as transpiration, respiration and photosynthesis in plants.
- Conceptualize ATP phosphorylation and photorespiration.

**BOTANY**  
**PLANT PHYSIOLOGY (PART-II)**  
**BSCBED404-II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Conceptualize the physiology of plants and transport of organic substances.
- Comprehensive evaluation of mineral nutrients.
- Classify plant growth regulators.
- Understand physiology of flowering and phenomenon of photoperiodism, vernalisation and photomorphogenesis.

**BOTANY PRACTICALS**  
**(BSCBED-404.III)**

**PRACTICAL OUTCOMES:**

**On completion of the course, students will be able to:**

- Illustration and understanding of transpirational pull, aerobic and anaerobic respiration, phototropism and geotropism, cyclosis and various other processes.
- Comparative study of necessity of light, CO<sub>2</sub>, and chlorophyll for photosynthesis.
- Demonstrate water and osmotic potential with the help of various setups.
- Identification of viable seeds using TTC Method.

**ZOOLOGY**  
**BIOCHEMISTRY AND IMMUNOLOGY**  
**BSCBED - 405.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the structure and functions of biomolecules i.e., Carbohydrates, proteins and lipids.

- Assess the metabolism of Glucose, amino acids, lipids and minerals.
- Determine the mechanism of action of enzymes.
- Examine the various components of immunity and immune system.

**ZOOLOGY**  
**STRUCTURE AND FUNCTIONS OF CHORDATE**  
**BSCBED - 405.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Evaluate the comparative account of Hemichordata.
- Understand the comparative anatomy of Integumentary, skeleton, alimentary canal, respiratory system, urinogenital system, brain and sense organs of different vertebrate phylums.
- Attain the knowledge of chordate adaptations in Pisces, Amphibia, Reptilia, Aves and Mammals.

**ZOOLOGY PRACTICALS**  
**BSCBED-405.III**

**PRACTICAL OUTCOMES-**

- Dissect and analyze anatomy of edible fish Wallago/Labeo and Rat to study their physiological systems.
- Observe various microscopic slides and museum specimens of phylum Hemichordata, Pisces, Amphibia, Reptilia, Aves and Mammals.
- Comparatively analyze the structure of articulated and disarticulated bones of representative forms of Vertebrate phylums.

**MATHEMATICS**  
**REAL ANALYSIS**  
**BSCBED-406.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Solve properties of the field of real numbers.
- Evaluate real functions- limits of functions and their properties.

- Understand the ratio, root and limit and limit comparison tests.
- Determine the real numbers, least upper bounds and the triangle inequality.
- Explore Rolle's Theorem, Lagrange's and Cauchy's mean value theorems and their geometrical interpretations.
- Solve Riemann integration.

**MATHEMATICS**  
**OPTIMIZATION TECHNIQUES**  
**BSCBED-406.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the theory of optimization methods and algorithms developed for solving various types of optimization problems.
- Solve linear programming problems.
- Explore Bellman's principle of optimality and solve their problems.
- Determine and use applications in linear programming.
- Evaluate Lagrangian method and Kuhn-Tucker conditions

**MATHEMATICS PRACTICALS**  
**BSCBED-406.III**

**COURSE OUTCOMES:**

- Understand the concept of set
- Determine and use application of linear programming and make a file.
- Solve linear transformation by a power point presentation.
- Explain the concept of linear transformation.

**PHYSICS**  
**THERMODYNAMICS & STATISTICAL PHYSICS**  
**BSCBED-407.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand Use the statistical physics methods, such as Boltzmann distribution, Gibbs distribution, Fermi-Dirac and Bose-Einstein distributions to solve problems in some physical systems.
- Apply the concepts and laws of thermodynamics to solve problems in thermodynamic systems such as gases, heat engines and refrigerators etc.
- Analyze phase equilibrium condition and identify types of phase transitions of physical systems
- Develop connections between applications of general statistical theory in various branches of physics
- Design, set up, and carry out experiments; analyze data recognizing and accounting for errors; and compare with theoretical predictions.

<p><b>PHYSICS</b>  <b>ELEMENTARY OF QUANTUM MECHANICS</b>  <b>BSCBED-407.II</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the physical properties of elementary particles, nucleons, atoms, molecules and solids based on quantum mechanics.
- Analyse various phenomenon related to quantum mechanics .
- Comparative evaluation of Schrödinger equations of time dependent and independent.
- Evaluate the importance of the Schrödinger equation, the wave function and its statistical interpretation, the uncertainty principle, stationary and non-stationary states.

<p><b>PHYSICS PRACTICAL</b>  <b>BSCBED-407.III</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Acquire the basic knowledge of the thermodynamics .
- Evaluate techniques to determine thermal conductivity and thermo emf.
- Explain photoelectric effect, Jaeggor method and thompson method of e/m.
- Develop the theory concepts by experimental techniques such as Newton's law of cooling.



**PEDAGOGY OF CHEMISTRY**  
**BSCBED-408.I**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Help student-teachers revisit the key concepts of chemistry.
- Encourage student-teachers to grasp the key concepts through constructivist and experimental pedagogy.
- Skills to be used in the classrooms at upper primary and secondary level.
- Apply the chemistry in daily life.
- Use different methods of teaching chemistry in diverse settings.
- Enable student-teachers to use various techniques and methods of evaluation in chemistry.
- Prepare latest teaching aids organise Co-curricular activities.

**PEDAGOGY OF GENERAL SCIENCE**  
**BSCBED-408.I**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Revisit the key concepts of general science.
- Grasp the key concepts through constructivist and experimental pedagogy.
- Skills to be used in the classrooms at upper primary and secondary level.
- Understand and appreciate of General Science in daily life.
- Construct tests different methods of teaching General Science.
- Use various techniques and methods of evaluation in General Science.
- Prepare and use various teaching aids.

**PEDAGOGY OF MATHEMATICS**  
**BSCBED-408.I**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand nature of Mathematics as a discipline.

- Understand general objectives of teaching Mathematics.
- Formulate instructional objectives in terms of behavioural outcomes.
- Analyze the content in terms of concepts, sub-concepts and relation between them.
- Select and organise learning experiences according to content and level of students.
- Design appropriate teaching – learning strategy/approach suited to particular content.
- Use ICT and various teaching aids in teaching of Mathematics..
- Evaluate Mathematics Text Book.
- Construct achievement test and diagnostic test.
- Understand innovations and implications of researches in the field of Mathematics Education

<p><b>PEDAGOGY OF BIOLOGY</b> <b>BSCBED-408.II</b></p>
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**Course Outcomes:**

**After the completion of the course student will be able to:**

- Revisit the key concepts of biology.
- Deliver key concepts through constructivist and experimental pedagogy
- Develop related skills to be used in the classrooms at upper primary and secondary level.
- Appreciate the role of biology in daily life
- Acquaint student-teachers with such content which would deepen and enrich their knowledge in biology
- Use different methods of teaching biology in different situations.
- Use various techniques and methods of evaluation in biology

<p><b>PEDAGOGY OF PHYSICS</b> <b>BSCBED-408.II</b></p>
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**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand nature of Physics as a discipline.

- Understand general objectives of teaching Physics.
- Formulate instructional objectives in terms of behavioural outcomes.
- Analyze the content in terms of concepts, sub-concepts and their linkages
- Provide learning experiences engaging learners
- Apply Evaluation tools for the assessment purposes.

## **Fifth Semester**

### **ENVIRONMENTAL EDUCATION**

#### **BSCBED –501**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Develop Awareness of the concern for environmental issues
- Understand the concept, objectives and importance of Environmental Education
- Adopt multi-disciplinary approach to environmental problems
- Understand different methods & techniques of teaching Environmental Education
- Design, develop & implement strategies for Environmental Education
- Inculcate environment friendly values through Environmental Education

### **CONTEMPORARY INDIA AND EDUCATION**

#### **BSCBED-502**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Analyze and understand educational concepts, their premises and contexts that are unique to education.
- Understand and appreciate the nature and the purpose of education, their practical ramifications in the school context.
- Analyze the basis of educational goals in the present day Indian society and examine the rationale of educational goals articulated in the reports of various Commissions and policy documents.
- Understand the importance of educational policies and programmes during the pre and post independence period.
- Analyze the forces affecting the educational system.
- Develop competencies to understand the various issues related to education and their addresser.
- Develop vision for futuristic programmes in education.
- Appreciate the role of education in human resource development.

**CHEMISTRY**  
**PHYSICO INORGANIC CHEMISTRY-I**  
**BSCBED-503.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explore metal ligand bonding in transition metals complexes and magnetic properties of transition metals complexes.
- Understand electron spectra of transition metal complexes.
- Acquire the basic knowledge of Thermodynamics –II.
- Generalize the characteristics of Chemical equilibrium.

**CHEMISTRY**  
**PHYSICO ORGANIC CHEMISTRY-II**  
**BSCBED-503.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze classification and nomenclature of Carbohydrates.
- Explore the classification, structure and stereochemistry of Amino acids, Peptides, Proteins and Nucleic acids.
- Understand the basic concept of elementary quantum mechanics.
- Explore the basic ideas-criteria for forming Molecular orbitals and Atomic orbitals.

**CHEMISTRY PRACTICAL**  
**BSCBED– 503.III**

**PRACTICAL OUTCOMES-**

- Explore Synthesis and Analysis techniques.
- Preparation of various complexes-
- Preparation of sodium trioxalato ferrate (III).  $\text{Na}_3[\text{Fe}(\text{C}_2\text{O}_4)_3]$  and determination of its composition by permagnometry
- Preparation of Ni-DMG complex,  $[\text{Ni}(\text{DMG})_2]$ .
- Preparation of copper tetra ammine complex  $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ .
- Preparation of cis-and trans-bisoxalato diaquachromate (III) ion.

**BOTANY**  
**BSCBED – 504.I**  
**CELL BIOLOGY & IMMUNOLOGY**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Ascertain the ultra structure of cell and functions of various cell organelles.
- Perceive chromosomal ultra structure and organization.
- Apprehend cell cycle and events of cell division.
- Establish the role of immunity and MHC's

**BOTANY**  
**BSCBED – 504.II**  
**GENETICS AND PLANT BREEDING**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Solve problems based on Mendel's laws of inheritance and gene action
- Study cytoplasmic inheritance and mutations.
- Understand the concept of plant breeding and hybridization in crop improvement.
- Ascertain the role of mutation and polyploidy in plant breeding.

**BOTANY PRACTICALS**  
**(BSCBED-504.III)**

**PRACTICAL OUTCOMES:**

- Recognition of various stages of mitosis and meiosis in plant cells through squash study.
- Solving the problems related to laws of inheritance and interaction of genes.
- Identification of types of plastids present in various plant cells.

**ZOOLOGY**  
**MICROBIOLOGY AND BIOTECHNOLOGY**  
**BSCBED - 505.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Gather knowledge of history and different scientist's work in the field of microbiology.
- Acquire knowledge of structural organization, genetic material and reproduction in bacteria.
- Get a picture of microbial nutrition, medical importance of bacteria, AIDS and hepatitis.
- Apply the techniques of biotechnology, genetic engineering and animal cloning.

<p><b>ZOOLOGY</b>  <b>APPLIED ZOOLOGY AND ETHOLOGY</b>  <b>BSCBED - 505.II</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Apply the knowledge of different culture processes in microbiological laboratories.
- Understand the economic importance of various non-chordate phylums.
- Apprentice the concept of ethology and brain behavior.
- Conceptualize pheromones, societies and biological rhythms.

<p><b>ZOOLOGY PRACTICALS</b>  <b>BSCBED-505.III</b></p>
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**PRACTICAL OUTCOMES-**

- Extrapolate precautions and various instruments while working in a microbiological laboratory.
- Prepare culture media and establish applications of it for microbes.
- Explore a practical idea of food fermentation and food preservation.
- Determine different microbes present in food materials by different staining methods.
- Comprehend a report by visiting microbiology laboratory, Dairy, food processing factory and wildlife sanctuary.
- Examine food preferences in an insect pest and house fly, phototactic response in Earthworm, antennal grooming in Cockroach and Ant behavior.

**MATHEMATICS**  
**VECTOR CALCULUS AND LINEAR ALGEBRA**  
**BSCBED-506.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Perform the vector operations-addition and subtraction, scalar multiplication, dot product, cross product.
- Determine line, surface and volume integral.
- Evaluate integrals using Green's theorems and Stokes theorem and their applications.
- Explore vector space and subspaces of vector spaces.
- Compose linear transformations, rank and nullity of linear transformation.

**MATHEMATICS**  
**MECHANICS**  
**BSCBED-506.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the theory of Hooke's law.
- Solve rigid body equilibrium problems using the equation of equilibrium.
- Understand the concept of gravity, velocity and accelerations along radial and transverse directions.
- Evaluate the time in the air for any projectile motion.
- Acquire the basic knowledge of simple harmonic motion, rectilinear motion in a resisting medium.

**MATHEMATICS PRACTICALS**  
**BSCBED-506.III**

**COURSE OUTCOMES:**

- Explore concept of vector and scalar.
- Explain vector point function and scalar point function.
- Determine the theorem of vector and scalar point functions.
- Understand the concept of velocity.
- Determine the concept of centre of gravity.



**PHYSICS**  
**MATHEMATICAL PHYSICS**  
**BSCBED-507.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of mathematical physics and be able to use it as a tool .
- Acquire knowledge in Mathematics and Physics, and specialized knowledge in a specific field through the work on the master thesis.
- Analyze problems within field based upon the field's history, traditions, character and social context.
- Evaluate existing theories, methods and interpretations within field of study, and work independently with relevant problems.

**PHYSICS**  
**ATOMIC AND MOLECULAR PHYSICS**  
**BSCBED-507.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the origin of the terms in the hydrogen fine structure Hamiltonian and estimate their order of magnitude and their effect on the hydrogen energy structure
- Analyze meant by LS and JJ coupling, and be able to use appropriate quantum numbers for labeling of energy levels
- Calculate the Zeeman shift in simple atomic systems, use of the Lande g-factor.
- Evaluate the origin of hyperfine structure, and its effect on fine structure levels, and spectral lines.

**PHYSICS PRACTICAL**  
**BSCBED-507.III**

**COURSE OUTCOMES**

- Acquire the basic knowledge of the electronic circuits.
- Evaluate quantitative analysis techniques.
- Explore the Calibration of logic gates, diodes and transistors.

## Sixth Semester

### अनिवार्य हिन्दी

**BSCBED -601**

#### अधिगम अनुवर्तन

इस पाठ्यक्रम की समाप्ति पर विद्यार्थी :

- हिंदी भाषा के उद्भव और विकास का प्रत्यास्मरण कर सकेंगे।
- हिन्दी की लिपियों व बोलियों का अर्थ ग्रहण कर सकेंगे।
- विभिन्न व्यवहार क्षेत्रों में राजभाषा के रूप में हिन्दी भाषा का उपयोग कर सकेंगे।
- हिंदी भाषा के व्यावहारिक रूप को अपने लेखन व वाचन में विकसित कर सकेंगे।

### CHILDHOOD AND GROWING UP

**BSCBED. -602**

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:-**

- Understand the processes of development and learning.
- Appreciate human diversity.
- Understand multidimensional and inter-dependence of development.
- Understand the linkages of child development with family, school, neighborhood and community.
- Discuss various theories of development.
- Apply different theories of development in instructional process.
- Create a productive classroom environment.

### CHEMISTRY

**PHYSICO INORGANIC CHEMISTRY-I**

**BSCBED-603.I**

#### COURSE OUTCOMES:

**On completion of the course, students will be able to:**

- Explore the basic concept of Bioinorganic chemistry.
- Evaluate the Silicones and Phosphazene as example of inorganic polymers.
- Explore the core features of Photochemistry.
- Understand Chromatography and chromatographic methods.

**CHEMISTRY**  
**PHYSICO ORGANIC CHEMISTRY-II**  
**BSCBED-603.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Discuss fats, oils and detergents .
- Study the concept of Spectroscopy II and Rotational spectrum.
- Acquire basic knowledge of solutions, dilute solutions and colligative properties.
- Introduction, lock and key theory : Drugs and Antibiotics

**CHEMISTRY PRACTICAL**  
**BSCBED – 603.III**

**COURSE OUTCOMES**

- Acquire the basic knowledge of the concept of colorimetry.
- Explore the methods of solvent extraction.

**BOTANY**  
**BSCBED – 604.I**  
**MOLECULAR BIOLOGY AND BIOCHEMISTRY**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Analyze structure, properties and functions of nucleic acids.
- Assimilate the process of replication, DNA damage and repair.
- Resolve the problems based on enzyme kinetics.
- Understand Gene concept and regulation.

**BOTANY**  
**BSCBED – 604.II**  
**ECOLOGY AND APPLICATIONS OF BIOTECHNOLOGY**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Conceptualize Ecology and Ecosystem.

- Understand biogeochemical cycles prevailing on earth.
- Scrutinize the reasons for climate change and its consequences.
- Familiarize the techniques and applications of biotechnology.

**BOTANY PRACTICALS**  
**(BSCBED-604.III)**

**PRACTICAL OUTCOMES:**

- Determination of dissolved contents from soil and water samples
- Application of various techniques for culturing various explants of plants.
- Ecological study of field area.
- Determine the dissolved O<sub>2</sub> in given water body by Winkler iodometric method.
- Determine the total hardness and O<sub>2</sub> content of given water sample.
- Determine pH of given soil sample by pH meter.
- Demonstrate the inoculation of anthers explant on the culture medium.
- Calculate the frequency/density/species cover of plant species through quadrat method and compare results with raunkier frequency diagram.
- Isolation of protoplast from various plant tissues and test their viability.
- Uses of various biotechnological tools and techniques.

**ZOOLOGY**  
**ECOLOGY AND BIOSTATISTICS**  
**BSCBED - 605.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Evaluate the basic concepts in ecology and ecosystem.
- Understand different biogeochemical cycles, present on earth.
- Imbibe the different types of ecological succession and habitat ecology.
- Apply the basic formulas and applications of biostatistics in regular research findings.

**ZOOLOGY**  
**ENVIRONMENTALBIOLOGY**  
**BSCBED - 605.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Develop insight of natural resources and their conservation.
- Understand about environmental pollution.
- Evaluate wildlife conservation and Impact of urbanization.
- Review basic concepts of bioaccumulation, biomagnification, biodegradation and space ecology.

### **ZOOLOGY PRACTICALS**

#### **BSCBED-605.III**

#### **PRACTICAL OUTCOMES-**

- Analysis of soil pH and water analysis by measuring pH, alkalinity, dissolved pH, alkalinity, acidity, dissolved O<sub>2</sub> and CO<sub>2</sub>, Salinity (Chloride) and zoo planktons.
- Compute different biostatistics principles viz. frequency tables, histogram, frequency polygon and pie chart.
- Interpret different steps and ways to calculate mean, median, mode, standard deviation and standard error.

### **MATHEMATICS**

#### **MATHEMATICAL STATISTICS**

#### **BSCBD-606.I**

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Demonstrate knowledge of central movements, Karl- Pearson's beta and gamma coefficients.
- Solve problems of probability and the standard statistical distributions.
- Illustrate the concepts of random variables, probability, distribution, distribution function, calculate expected values, probabilities associated with the distributions of random variables.
- Explore the points of inflexion.
- Understand different types of deviations and use applications of distributions.

### **MATHEMATICS**

**LAPLACE AND FOURIER TRANSFORMATION**  
**BSCBED-606.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Explore Laplace transform of a function by definition.
- Solve Laplace transform of a function.
- Understand how the Fourier series is extended to the form of Fourier transform.
- Analyze odd or even functions as a half range Fourier series.
- Understand without being able to apply the knowledge that Fourier transform are just one example of a whole range of possible transform e.g. the Laplace transformation.

**MATHEMATICS PRACTICALS**  
**BSCBED-606.III**

**COURSE OUTCOMES:**

- Understand the concept of Laplace transform and make a table.
- Solve the problem of probability.
- Understand the concept of mean, mode, and median.
- Determine a table for mean, mode and median.

**PHYSICS**  
**NUCLEAR AND PARTICAL PHYSICS**  
**BSCBED-607.I**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the different forms of radioactivity and account for their occurrence
- Analyse master relativistic kinematics for computations of the outcome of various reactions and decay processes
- Comparative evaluation of the astrophysical processes leading to nuclear synthesis
- Evaluate the fission and fusion processes

**PHYSICS**

**EXPERIMENTAL TECHNIQUES**  
**BSCBED-607.II**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand concepts of Solid State Devices: digital electronics and amplifiers.
- Analyze concepts of Compton scattering, X-ray diffraction, and hyperfine coupling.
- Comparative evaluation of tools, methodologies, language and conventions of physics to test and communicate ideas and explanations
- Evaluate the concepts of Nuclear Instruments and various nuclear counters.

**PHYSICS PRACTICAL**  
**BSCBED-607.III**

**COURSE OUTCOMES**

- Acquire the basic knowledge of nuclear physics and experimental techniques.
- Explore the Calibration of GM counter and ballistic galvanometer.
- Develop the theory concepts by experimental techniques such as Planck's constant and Stefan's constant.

## Seventh Semester

### GENDER, SCHOOL AND SOCIETY

BSCBED –701

#### **COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand gender and related concepts.
- understand gender in historical context
- Observe and understand related inequalities, its social causes and impact on society.
- Analyse gender difference in relation to cognition, achievement and career choice.
- Analyse the relationship of gender and development and their implications for policy and practice.
- Participate in gender, school and society discourse.

### CREATING AN INCLUSIVE SCHOOL

BSCBED. –702

#### **COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Demonstrate knowledge of different perspectives in education of children with disabilities.
- Identify needs of children with diversities.
- Plan need-based programmes for all children with varied abilities in the classroom.
- Use human and material resources in the classroom.
- Develop positive attitudes towards children with special needs.
- Use specific strategies involving skills in teaching special needs children in inclusive classrooms.
- Use appropriate learner-friendly evaluation procedures.
- Incorporate innovative practices to respond to education of children with special needs.
- Contribute to the formulation of policy.
- Appreciate the development of inclusive schools.



**GUIDANCE AND COUNSELLING IN SCHOOLS**  
**BSCBED-703**

**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Understand the concept of Guidance and Counselling.
- Develop sensitively towards the problems of adolescent students.
- Understand the process of guidance services in schools
- Use tools to understand the problems of students.
- Appreciate the role of Guidance and counselling at school level.
- Conduct counselling at school.

**DRAMA AND ART IN EDUCATION**  
**BSCBED-704**

**COURSE OUTCOMES:**

**On completion of the course, student will be able to:**

- Understand local culture and art forms.
- Use drama as critical pedagogy.
- Use drama and art forms to invoke collective consciousness.
- Enhance theatre skills
- Use art forms in bringing about social change
- Use art forms in nurturing life skills.
- Use art forms in expanding the landscapes of children's art.
- Appreciate the role of drama and art in education.

## **Eighth Semester**

### **VALUE AND PEACE EDUCATION**

#### **BSCBED -801**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Understand the nature, characteristics and types of human values.
- Understand the five core values - Truth, Righteous conduct, Peace, Love and Non-Violence.
- Appreciate the developments in Peace Education in India and Abroad.
- Understand various methods, techniques and approaches of value development.
- Appreciate the preamble to the constitution and values inherent in it.
- Understand various models of value education

### **HEALTH AND PHYSICAL EDUCATION**

#### **BSCBED-802**

#### **COURSE OUTCOMES:**

##### **On completion of the course, students will be able to:**

- Analyze health risks.
- Understand the Health Education Vision & Mission of India.
- Develop skills for physical fitness, correct postures and habits.
- Develop skills to practice yogasanas and meditation.
- Learn the skills of concentration, relaxation, dealing with stress and strain
- Conduct First Aid.
- Understand and identify tech related health risk..
- Use safety measures in schools.

### **INDIAN CONSTITUTION AND HUMAN RIGHTS**

#### **BSCBED-803**

#### **COURSE OUTCOMES:**

##### **On completion the course, students will be able to:**

- Recall the importance of local self-Government and Panchayati Raj Institutions in India.

- Understand the importance, preamble and salient features of Indian Constitution.
- Develop an understanding of the strength of the Union Government.
- Understand the functioning of the State Government for the unity and the strength of the Democracy.
- Understand the significance of the growing advocacy of Human Rights.
- Appreciate the significance of Fundamental Rights, Duties and Directive Principles of State Policy.

<p><b>SCHOOL INTERNSHIP</b> <b>BSCBED-P2</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Plan learning conditions and activities for specific units of study.
- Use opportunities to observe and participate in the school.
- Understand school culture.
- Understand multiple roles and responsibilities of teacher.
- Understand and reflect one's own professional practices to grow as a practitioner.
- Capacitate to think about educational theories and their application in concrete teaching learning experience.
- Understand the School Climate and diversity of learners.
- Prepare different school registers.
- Prepare students portfolios.
- Take part in different activities of the school.

<p><b>POST INTERNSHIP</b> <b>BSCBED-P3</b></p>
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**COURSE OUTCOMES:**

**On completion of the course, students will be able to:**

- Expected to submit a comprehensive report on the basis their school internship
- Improvement in the instructional activity of the student teachers by using various techniques and practical skills in teaching
- Develop Confidence in facing the classroom situations.

- Guiding in planning their lessons, learning to organise contents, formulating suitable gestures and developing other related skills.
- Create an ICT based lesson plan and also used ICT based resources as a teaching aids

# **Diploma in Guidance & Counselling**

**Name of the Program: *Diploma in Guidance and Counselling.***

**Program Outcomes:**

**Diploma in Guidance and Counselling Programme outcomes are as follows:**

- Help individuals overcome their immediate problems.
- Equip individuals to meet future problems.
- Help counselee become self actualizing and fully functional person.

## **1. Course Outcomes**

### **1GC1**

#### **INTRODUCTION TO GUIDANCE AND COUNSELLING**

**Course outcomes:**

- Understand the meaning and concept of guidance and counselling
- Assumptions and principles of guidance and counselling
- Differentiate among various types of guidance
- Understand the utility of guidance in various fields and sectors.

### **1GC2**

#### **APPROACHES AND TECHNIQUES OF GUIDANCE AND COUNSELLING**

**Course outcomes:**

- Comprehend meaning and concept , process ,techniques of Guidance and counselling.
- Differentiate between Individual and Group Guidance.
- Understand the role of Teachers, Counsellors and NGOs in Guidance and Counselling.
- Develop attributes of Counsellors and Guidance worker .
- Make optimal use of community resources.

### **1GC3**

#### **ORGANISING EFFECTIVE GUIDANCE PROGRAMME AND SUPPORT SERVICES**

**Course outcomes:**

- Understand the meaning and importance of guidance programmes
- Comprehend assumptions of guidance and counselling .
- Apply the knowledge of guidance and counselling in various situations.
- Conduct various guidance Seminars/ Workshops.

### **2GC4**

#### **APPRAISAL IN GUIDANCE AND COUNSELLING**

**Course outcomes:**

- know different psychological tests
- comprehend need and importance of psychological tests
- understand the application of psychological tests
- understand various tools of research
- administer and interpret the tests

### **2GC5**

#### **RESEARCH AND FOLLOW-UP SERVICE IN GUIDANCE AND COUNSELLING**

##### **Course outcomes:**

- understand steps of designing research problem
- differentiate in various sampling techniques
- understand research methods
- comprehend the procedure of calculating mean, median, mode, F ratio test and Chi square
- apply different statistical technique in testing significance hypothesis

### **2GC6**

#### **INTERNSHIP AND PRACTICAL TRAINING**

##### **Course outcomes:**

- Understand the importance of internship in guidance and counselling
- Observe and record the experiences of internship in diaries
- Internship will be provided to all students for one month
- In clinics dealing with psychological and mental health problems
- Writing and presenting a report based
- On field work done during internship



# **Diploma in Yoga**

**1. Name of the Program: *Diploma in Yoga.***

**Program Outcomes:**

**Diploma in Yoga Programme outcomes are as follows:**

1. Demonstrate basic skills associated with Yoga activities included strength & flexibility, balance & co-ordination
2. Perform different Yogic Asanas
3. Develop positive attitude toward life
4. Demonstrate & understand health related fitness components
5. Demonstrate & understand the sound nutritional practices.

## **Course Outcomes**

### **1DY1 Yoga Health and Personality Development**

#### **Course outcome**

- Understand meaning and concept of Yoga.
- Know misconceptions about Yoga.
- Understand eight parts of Asthang Yoga.
- Understand streams of Yoga.
- Understand meaning of physical mental and emotional health.
- Understand the meaning of self actualization.
- Acquaint with the importance of Yoga for holistic development of Personality.
- Analyse benefits of Yogasan Pranayama and Meditation

### **1DY2 Asana Pranayama and Yogic Kriyayen**

#### **Course outcome**

- Understand various streams of Yoga.
- Know procedure and techniques of doing various Asanas.
- Know the benefits of Asanas with various types of Pranayams.
- Practice Asanas Pranayams and Meditation.
- Understand relaxing Yogic Asanas and Exercises.
- Know concept of Yogic food.

### **2DY1 Applied Yoga and Human Physiology**

#### **Course outcome**

- Know the structure of cell.
- Understand functioning of organ system
- Analyse the importance of different yogic asans for keeping the functioning of organ system.
- apply the knowledge of yogic diet in life.

## **2DY2 PRACTICAL –YOGA FOR GOOD HEALTH**

### **Course outcome**

Practice Asana, Pranayam and Meditation.

Demonstrate Asana, Pranayam and Meditation.

**M.Ed.**

## **Program: M.Ed.**

### **Program Outcomes:**

#### **M. Ed Programme specific outcomes are as follows:**

- To understand the aspects of philosophical and sociological bases of education.
- To understand human behaviour and personality, and the capacity to apply this understanding in the educational environment.
- To understand and guide the learners to learn effectively.
- To develop a national and international perspective on the inter-linking and dependence on different educational systems.
- To understand the knowledge of planning and financing in educational institutions.
- Equip with research skills.
- Apply multiple methods of assessment to engage learners in their own growth.
- Apply multiple methods of assessment to engage learners in their own growth.
- Apply the knowledge of ICTs and their application in all forms of systematic systems of education and for teacher empowerment.
- Critically examine the different educational policies and recommendations of committees.

# Course Outcomes

## FIRST SEMESTER

### **Psychological Foundation of Learning and Development**

(Code: M.ED.-1-01)

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Develop the understanding of contribution of the school of psychology.
- Understand theories of learning and their implications in education.
- Understand the concept of mental health and develop adjustment strategies.
- Describe the dynamics of all round development.
- Attain the understanding of highest level of learning.
- Use the strategies for facilitating learning environment.

### **Historical-Political and Economic Foundations of Education**

(Code: M.ED.-102)

#### **Course outcomes:**

**After the completion of the course student will be able to:**

- Recall general development and progress of education prior to independence.
- Recall & recognize development and progress of education after independence.
- Assess and evaluate various “Plan efforts” (in the five year) put into effect from time to time.
- Understand the social, economic, political problems of education.
- Analyse various problems of education at different stage with special reference to different Commissions and Committees.
- Review the policies of Government related to education at various levels.

### **Educational Studies**

(Code: M.ED.-103)

#### **Course outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature of educational studies and map the fields.
- Understand some seminal educational texts and analyse them.
- Analyse the functions performed by education at different levels.

- Analyse NCFTE - 2009 and NCF - 2005 in the light of different concerns and functions of education
- Evaluate National Education Policy and apply the principles relevant to Educational studies.

## **Introduction to Educational Research**

**(Code: M.ED.-104)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Understand of the process of research.
- Remember the methodology of conducting educational research.
- Understand the construction and administration of various tools used for collecting data.
- Understand the use of various statistical techniques for the purpose of analyzing data.
- Write a research report.

## **Communication and Expository Writing**

**(Code: M.ED.-105)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Present and explain ideas in groups.
- Think analytically about a topic in order to categorize and organize information.
- Collect research and a variety of information to support their ideas.
- Use editing skills.
- Create text features such as illustrations, captions, maps etc.
- Implement their knowledge of communication in classroom and life.

## **Self - Development and Yoga**

**(Code M.ED.105-II)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Understand the meaning of 'self', self - concept, self – expression, ideal self-concept, self – realization, self – actualization and various dimensions of self.



- Relate yoga with wholesome personality development and enhancing wellbeing.
- Relate the significance of yoga with life.
- Differentiate between various types of yoga and identify the misconceptions about yoga.
- Understand Ashtang Yoga propounded by Patanjali.
- Practice different Yogasana and Pranayama.
- Develop harmony in one self and with entire existence.

### **CORE –COURSE**

#### **ICT**

**(Code: M.ED. 105. III)**

#### **Course outcomes:**

**After the completion of the course student will be able to:**

- Demonstrate a basic understanding of computer hardware and software.
- Demonstrate problem-solving skills.
- Utilize web technologies.
- Demonstrate basic understanding of network principles.
- Demonstrate awareness of communication components of ICT systems

<h3><b>CORE –COURSE</b></h3>
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<h4><b>Dissertation</b></h4>
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<p><b>(Code: M.ED.-106)</b></p>
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#### **Course outcomes:**

- Identify the research problem
- Discuss the scope for fresh research in area chosen.
- Prepare an outline of research

## **SECOND SEMESTER**

### **Philosophical Foundations of Education**

**(Code: M.ED.-201)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Understand the concept and terms of philosophy.
- Sensitize towards the ultimate questions of life and the role of philosophy.
- Understand the nature and functions of philosophy of education.
- Understand the use of philosophical methods.
- Develop philosophical insight for resolution of educational issues.
- Understand the contributions of great educators to education and society.
- Interpret the methodology of philosophical analysis for solving the perennial problems of education.
- Understand the educational implications of some schools of philosophy in western and Indian thought.
- Appreciate the contribution of Indian & Western philosophers of Education.

### **CORE –COURSE**

#### **Sociological foundations of Education**

**(Code: M.ED.-202)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Understand relationship between education and sociology.
- Understand the impact of Indian constitutional provisions on the development of Indian Social order in view of its secularist and democratic values.
- Acquaint with the sociological problems of Indian society and the role of education.
- Analyze the role of education in bringing social change, social mobility, and modernization and Post modernization.
- Appreciate the role of education as a social agent.

### **CORE –COURSE**

#### **Curriculum Studies**

**(Code: M.ED.-203)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Conceptualise the meaning & perspectives of curriculum.
- Understand the philosophical, sociological and the psychological bases of curriculum development.
- Describe and analyse various approaches to curriculum development and curriculum transaction.
- Visualise the role of teachers and educational practitioners at different levels in implementing curriculum.
- Develop skills for evaluating a curriculum.
- Appreciate and critique various curriculum of various stages.

**CORE –COURSE**

**Pre-Service and In-Service Teacher Education**

**(Code: M.ED.-204)**

**Course outcomes:**

**After the completion of the course student will be able to:**

- Develop an insight and reflect on the concept of teacher education and status of teacher education in India.
- Develop professional ethics in teacher educator.
- Develop understanding for transactional approaches in teacher education.
- Develop competence in organization of various types of a in-service teacher education programme
- Develop different techniques of evaluation in teacher education.

**CORE –COURSE**

**Dissertation**

**(Code: M.ED. 205)**

**Course outcomes:**

- Search Different Sources of literature
- Critically Review the literature and find the research potential.

## **THIRD SEMESTER**

### **Educational Planning & Management (Elementary Level)**

**(Code: M.ED. 301)**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Develop an understanding of elementary education in India.
- Understand structure of elementary education.
- Critically examine the policies and programmes related to elementary education.
- Critically review interventions & trends.
- Develop positive attitude towards educational planning and management.

## **CORE –COURSE**

### **Issues, Curriculum & Assessment of Secondary Education**

**(Code: M.ED. 301)**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Recall and recognise the concept and techniques of assessment and evaluation.
- Critically examine the development of secondary teacher education in India.
- Gain insight and reflect recommendations of various commission about secondary education.
- Develop understanding about future perspectives of secondary education in India.

## **CORE –COURSE**

### **Advanced Educational Research**

**(Code: M.ED. 302)**

#### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the use of various statistical techniques for the purpose of analyzing data.
- Explain the process of research.
- Develop skills in analyzing quantitative data
- Apply different types of statistical methods

### **Educational Technology and Instructional Process**

**M.Ed.-303**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the departure from teacher-centric approach to student-centric approach.
- Shift from technology support education to technology driven education.
- Make use of ICT in various functions of School System.
- Design learning sequences with ICT.
- Appreciate paradigm shift in the use of educational technology.

**CORE –COURSE**

**Perspectives, Research and Issues in Teacher Education**

**(Code: M.ED. 304)**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the perspectives and policy on various practices in Teacher Education.
- Critically examine the role and contribution of various agencies and regulatory bodies in enhancing the quality of Teacher Education.
- Articulate and reflect on persisting and emerging issues in Teacher Education.
- Discuss the trends in Teacher Education.
- Develop research perspective in Teacher Education.

**CORE –COURSE**

**Academic Writing**

**(Code: M.ED. 305-II)**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Develop the skill of different kinds of writing.
- Skills of cite a source, paraphrase and acknowledge.
- Explore and refer academic sources.
- Edit one's own writings
- Distinguish good academic writing from other writings
- Develop the skill of inter-textuality in academic writings
- Write conference paper, book and book report review of a book, radio script.
- Summaries knowledge in different forms.
- Appreciate different forms of writing

<p style="text-align: center;"><b>CORE –COURSE</b> <b>Dissertation</b> <b>(Code: M.ED. 306)</b></p>
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**Course outcomes:**

- Select variables and sample appropriately
- Construct and validate instrument of data collection

**CORE –COURSE**

**Internship in Teacher Education Institution**

**(Code: M.ED.307)**

**Course Outcomes:**

**After the completion of the course student will be able to:**

- Develop an understanding of teacher education institution.
- Develop interface of theory and practice.
- Organize learner centred and participatory learning experiences.
- Critically examine curriculum, syllabus and textbooks.
- Study independently without packing the training schedule with teacher directed activities.

## **FOURTH SEMESTER**

### **CORE –COURSE**

#### **Pedagogy of Social Science at Elementary/ Secondary Level**

**(Code: M.ED. 401)**

##### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the nature and purpose of social science.
- Understand the nature of social science and its interface with the society.
- Develop an understanding of pedagogical process concerned and issues related to social science and its teaching.
- Analyse the development of social sciences with regard to history, polity and economy.
- Appreciate the need for learning economics, political science, history at different school levels.

### **CORE –COURSE**

#### **Pedagogy of Language Education Elementary/ Secondary Level**

**(Code: M.ED. 402)**

##### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understanding of the psychology of language learning.
- Understanding the pedagogy of language<sub>1</sub> and language<sub>2</sub>.
- Analyze language policy.
- Understand language deficit and usage of language strategy.
- Create language resources and their usage.

### **CORE –COURSE**

#### **Educational Planning, Management and Finance at Elementary/ Secondary Level**

**(Code: M.ED. 403-1)**

##### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand the concept, principles and approaches of educational planning.
- Become effective manager of teaching and administration
- Locate human and physical resources and utilize them to optimum benefit for education.
- Understand the financial management of education

- Appreciate new trends in educational management.

### **CORE –COURSE**

#### **Educational Administration of Elementary / Secondary Level**

**(Code: M.ED. 404)**

##### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Understand of structures and system of administration at various levels.
- Understand of school administration.
- Develop an understanding of challenges of educational administration.
- Participate in the administration at various levels.

### **Dissertation**

**(Code: M.ED. 405)**

##### **Course Outcomes:**

**After the completion of the course student will be able to:**

- Analyse & enter data.
- Write the finding in an academic format.
- Bring out the implications.
- Understand the interface between theory and research.
- Use different writing styles of research reports.



# **M.Phil (Education)**

## **Programme: M.Phil Education**

### **Programme Outcomes of M.Phil Education**

- Develop research acumen through critical analysis, discussion, academic debate and seminar presentation.
- Specialize in areas of education.
- Develop the ability to visualize, design, conduct and write research culminating in a dissertation.
- Build capacity to write book reviews, present seminar papers and make conference presentations.
- Develop understanding of socio- psycho philosophical bases of research.

# Course Outcomes

## Course Code FC 01

### FOUNDATION OF EDUCATIONAL RESEARCH

#### COURSE OUTCOMES:

- Understand the methodology of conducting educational research.
- Understand the construction and proper use of various tools used for collecting data.
- Understand the use of various statistical techniques for the purpose of analyzing data.
- Develop various skills required for the application of advanced statistical techniques.
- Develop an understanding of the process of research.

## Course Code FC 02 (Elective Papers)

### (A) Advance Educational Administration and management

#### COURSE OUTCOMES:

- Understand the basic concepts of educational administration and management.
- Understand and appreciate the systems of educational administration in some selected countries of the world.
- Develop and understand the various theories of administration and educational management.
- Understand the modern approaches and role of supervisor for bringing efficiency in managing affairs of institution.

## Course Code FC 02 (Elective Paper)

### Advance Educational Psychology

#### COURSE OUTCOMES:

- Understand the concepts of growth and development, Individual differences and Learning disabilities.
- Develop awareness of basic concepts, nature and process of learning and motivation.
- Understand the theories of personality, intelligence, adjustment and maladjustment.

- Understand the application of various theories in class room situation.
- Develop skills for effective teaching learning process and use of psychological tests.

### **Course Code FC 02 (Elective Paper)**

#### **Educational statistics and statistical inference**

##### **COURSE OUTCOMES:**

- Understand the use of various statistical techniques for the purpose of analyzing data.
- Develop abilities of comprehension and verbalization of research literature.
- Understand the process of research.

### **Course Code FC 03**

#### **PSYCHO-SOCIAL BASES OF EDUCATIONAL RESEARCH**

##### **COURSE OUTCOMES:**

- Understand the nature and process of learning.
- Identify individual differences, personality and motivation.
- Develop skills for effective teaching learning process and use of psychological tests.
- Capacitate to do independent thinking and a deeper insight into the Sociological roots and educational problem.
- Analyze Psycho- Social context of emerging Indian Society.
- Appreciate the emerging role of education in global perspective.
- Develop an insight in the area of commitment, competencies and performance of a teacher in shaping the destiny of new India.

### **Course Code SC 01**

#### **REVIEW OF RESEARCH STUDIES**

##### **COURSE OUTCOMES:**

- Develop deeper understanding of reviewing literature.
- Use review of related literature in research work.

**Course Code SC 02**  
**PARTICIPATORY INTERNSHIP**

**COURSE OUTCOMES:**

- Prepare lesson plans for B Ed and M Ed level.
- Demonstrate essential skills of teaching at B Ed and M Ed level.

**Course Code SC02**  
**PROPOSAL FOR DISSERTATION**

**COURSE OUTCOMES:**

- Develop skills of writing research proposal.
- Develop skills of presenting research proposal.

**Course Code SC 04**  
**SEMINAR**

**COURSE OUTCOMES:**

- Develop skills of writing seminar papers.
- Develop skills of presenting papers for seminar.

**Course Code SC 05**  
**COMPUTER APPLICATION IN EDUCATIONAL RESEARCH**

**COURSE OUTCOMES:**

- Understand the computer application in learning, teaching and research.
- Use computer as resource for teaching, learning and educational research.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

**Programme Outcome, Programme Specific Outcome  
and Course Outcome**

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

### B.Tech - I year

#### Programme Outcome, Programme Specific Outcome and Course Outcome

##### 1. B.Tech - I year

**B. TECH.**  
**FIRST YEAR**



# **PROGRAMME: B. TECH. FIRST YEAR**

## **COURSE OUTCOME**

### **I Semester:**

#### **BSC101 Engineering Physics-I**

CO1: Building of fundamental concepts of interference, diffraction and polarization.

CO2: Develop the of experimental knowledge of interference, diffraction and polarization.

CO3: Develop the fundamental concepts of production and applications of LASER.

CO4: Apply concepts of Maxwell's equations and their physical significance in electromagnetism.

#### **BSC102 Engineering Chemistry-I**

CO1: Illustrate the concepts of common impurities and methods of water treatment.

CO2: Develop the knowledge of preparation of cement, refractories and glass and their uses.

CO3: Building the basic concepts of acids, bases and conductivity.

CO4: Differentiate the various types of polymers and illustrate methods of polymerization and their uses.

#### **BSC103/BSC-BTFT103 Engineering Mathematics-I**

CO1: Building the concepts of Asymptotes, curvature and curve tracing.

CO2: Student will be able to utilize mathematical tools in evaluating multiple integrals and their uses.

CO3: Developing the concept of limits, matrices solution.

CO4: Building the concept of differential and integral calculus.

#### **ESC104 Fundamental of Electrical Science**

CO1: To design and analyze basic electrical circuits(AC and DC).

CO2: To develop the concept of DC generators and motors.

CO3: Building the concept of AC, DC machines and sensors.

CO4: Students will be able to apply the concepts of network theorems.

#### **ESC105 Introduction to IT and Computer Programming**

CO1: Building concepts of basics of computer.

CO2: Student will able to generate a maintainable C program for a given algorithm using control statements.

CO3: Student will able to examine algorithms and flow chart of basics programs.

CO4: Student will able to explain arithmetic operations with numerals in bases other than ten.

### **HMSC106 English-I**

CO1: Assemble the concepts of grammar and composition and apply knowledge for notices and Letter writing.

CO2: Students will able to use modals, tenses, active & passive voice in sentences.

CO3: Student will able to apply functional grammar in course of communication.

CO4: Students will able to utilize the knowledge of composition & grammar in their day to day life.

### **HSMC107 Environmental Studies**

CO1: Building knowledge of the effects and affects of changes in environment.

CO2: Student will be able to organize effective and proper use of resources.

CO3: Student will be able to generate awareness about environment related issues.

CO4: Student will be able to propose a healthy and sustainable environment.

## **II Semester:**

### **BSC201 Engineering Physics-II**

CO1: Building concepts of the theory of relativity and wave mechanics.

CO2: Developing basic concepts of Nano technology.

CO3: Students will be able to distinguish various magnetic materials and apply this knowledge to understand the concept of superconductivity.

CO4: Students will be able to judge various Quantum Mechanical phenomena happening around us.

### **BSC202 Engineering Chemistry-II**

CO1: Students will be able to utilize the knowledge of different types of fuels in various applications.

CO2: Building concepts of corrosion and apply this to prevent a material from corrosion.

CO3: Developing the concept of Phase rule and chromatography.

CO4: Students will be able to apply the knowledge of reaction kinetics and factors affecting the progress of a chemical reaction in various experiments.

### **BSC203/BSC-BTFT203 Engineering Mathematics-II**

CO1: Recall the techniques in calculus and linear algebra.

CO2: Apply tools and concepts at an intermediate to advanced level.

CO3: Students will be able to illustrate the problems related to probability and differential equations.

CO4: Students will be able to apply the concepts of numerical methods to find the solution of algebraic and transcendental equations.

### **ESC204 Engineering Mechanics**

CO1: Students will be able to explain laws and principles of mechanics.

CO2: Students will be able to interpret first and second law of thermodynamics.

CO3: Students will be able to illustrate the problem related to kinematics and work, power and energy.

CO4: Students will be able to generate model structures and processes with calculus-based techniques and develop a solution.

### **ESC205 Programming for Problem Solving**

CO1: Building basics of computational problems and this solution through C Programs

CO2: Students will be able to understand and utilize various constructs of programming language.

CO3: Students will be able to illustrate the programs related to array and also get the concept of list, array and user defined data types.

CO4: Students will be able to apply their algorithms to build programs in the C programming language.

### **HMSC206 English-II**

CO1: Student will able to apply functional grammar in daily life situation.

CO2: Building concepts of report writing and job applications.

CO3: Student will able to develop the concept of Interview facing and group discussion.

CO4: Building the understanding of composition and apply this knowledge in notices and Letter writing.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

### Dept./Branch: Biotechnology

#### Programme Outcome, Programme Specific Outcome and Course Outcome

##### 1. B.Tech (Biotechnology)

# **B.Tech. Biotechnology**

## 1. Name of the Program: B.Tech.

### Program Outcomes:

- ✚ PO1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- ✚ PO2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- ✚ PO3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- ✚ PO4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
- ✚ PO5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- ✚ PO6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- ✚ PO7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- ✚ PO8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- ✚ PO9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- ✚ PO10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- ✚ PO11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- ✚ PO12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## 2. Name of the Specific Program: **B.Tech. Biotechnology**

### **Program Specific Outcomes:**

- ✚ PSO1: To acquire knowledge based on fundamentals of biotechnology, which enables them to understand its application in solving engineering problems in biological sciences.
- ✚ PSO2: Enable them to understand the use biotechnological applications in industries and research.
- ✚ PSO3: Enable students to use interdisciplinary aspects of biotechnology for better understanding of industrial processes and to make them industry ready.
- ✚ PSO4: To acquire knowledge of bioethics, IPR, entrepreneurship, communication and management skills so as to make them guide next generation biotechnologist.



### 3. Course Outcomes:

Following is the outcome of all the courses arranged year wise.

➤ **Semester/Year:** III/II

**Name of the Course:** Introduction to biology (PCC-BT.301)

**Outcomes:**

Upon successful completion of the course, students would be able to:

- Explain basics of biological process common to life
- Illustrate classification and taxonomy—comparing fundamental differences in the living forms
- Distinguish the characteristics of living organisms and characteristics that differentiate the five kingdoms.
- Justify the characteristics of prokaryotic and eukaryotic cells.
- Deduce Mendelian genetics and genetic changes.

➤ **Semester/Year:** III/II

**Name of the Course:** Cell Biology (PCC-BT.302)

**Outcomes:**

By the end of this course students will be able to:

- Explain the structures and purpose of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles
- Interpret that how the cellular components are used to generate and utilize energy in cells for various physiological processes
- Apply the key concepts to explore molecular mechanisms between cell movement and transport
- Differentiate the cellular mechanisms underlying mitotic and meiotic cell division
- Propose change or loss in cell function which include responses to environmental or physiological changes, or alterations of cell function brought about by mutation.

➤ **Semester/Year:** III/II

**Name of the Course:** Biochemistry-I (PCC-BT.303)

**Outcomes:**

By the end of this course students will be able to:

- Identify and explain the structure of biomolecules
- Investigate the fate of biomolecules their interactions in essential processes and pathways in the cells.
- Determine the physiological significance of diversity in biomolecules w.r.t their structure and function
- Assess study of the enzyme action, underlying mechanism and how they can be inhibited by drugs.
- Develop approach to find out the relevance of biomolecules in different sectors such as healthcare, agriculture, cosmetics, etc.

➤ **Semester/Year:** III/II

**Name of the Course:** Fluid Mechanics (PCC-BT.304)

**Outcomes:**

Upon successful completion of the course, students would be able to:

- Explore the pipe flows, fittings and friction factor charts
- Build flow through packed beds and fluidized beds
- Investigate fluid transportation (pumps, compressors and valves)
- Determine flow measurement, agitation and mixing
- Propose the construction and functioning of system employing fluid mechanics

➤ **Semester/Year:** III/II

**Name of the Course:** Bioprocess Calculations (PCC-BT.305)

**Outcomes:**

By the end of this course students will be able to:

- Recall and learn different types of units, conversions and stoichiometric equation.
- Explain different gas laws, humidity, material balance involving condensation and vaporization.

- Distinguish material balance with and without chemical reaction.
- Determine energy balance and fuel properties including transport and thermodynamic properties of fuel

➤ **Semester/Year:** III/II

**Name of the Course:** Indian Constitution (HSMC-BT.306)

**Outcomes:**

By the end of this course students will be able to:

- Summarize and learn the constitutional history
- Understand and build the administrative structure of Indian Constitution
- Differentiate between union and state government
- Investigate the role of election commission
- Put opinion and judge according to law and order

➤ **Semester/Year:** IV/II

**Name of the Course:** Microbiology (PCC-BT.401)

**Outcomes:**

Upon successful completion of the course, students would be able to:

- Explain classical and modern methods used in classification of microorganisms
- Differentiate structural components of bacterial cell and other microorganisms
- Organize and compare various modes of nutrition and metabolism associated
- Distinguish bacterial genetics and growth characteristics
- Determine different preservation techniques used for microorganisms
- Develop relevance of microbes in various applications such as food and beverages, medicines, textiles, bioremediation etc.

➤ **Semester/Year:** IV/II

**Name of the Course:** Analytical techniques in Biotechnology (PCC-BT.402)

**Outcomes:**

Upon successful completion of the course, students would be able to:

- Explain working principle of different instruments

- Apply the concept of tools and techniques in answering various biological processes
- Differentiate the quantification of biological phenomenon through vast approaches using microscopy, spectroscopy, chromatography etc.
- Appraise the limitations of techniques and the challenges associated
- To develop new techniques either of qualitative estimation or quantification of an unidentified process or molecule.

➤ **Semester/Year:** IV/II

**Name of the Course:** Biochemistry-II (PCC-BT.403)

**Outcomes:**

By the end of this course students will be able to:

- Explain and summarize the biomolecules and their structural properties
- Build relationship between chemistry and biology involved in metabolic pathways.
- Differentiate between unique and common metabolic pathways for degradation of various carbon sources
- Investigate and examine the transfer of energy in living systems on the molecular level.
- To design and propose engineered metabolic pathways for generation of more efficient cellular system

➤ **Semester/Year:** IV/II

**Name of the Course:** Biostatistics (PCC-BT.404)

**Outcomes:**

By the end of this course students will be able to:

- Explain probability and the standard statistical distributions
- Differentiate the properties of parametric, semi-parametric and nonparametric testing procedures
- Investigate the ability to perform complex data management and analysis
- Design experiments and surveys for efficiency
- Take decision through hypothesis testing

➤ **Semester/Year:** IV/II

**Name of the Course:** Molecular Biophysics (PCC-BT.405)

**Outcomes:**

Upon successful completion of the course, students would be able to:

- Explain the physical properties of biomolecules also at their physiological conditions
- Interpret the relation between physical and biological properties of biomolecules
- Examine structure and function of biomolecules through different techniques
- Investigate intermediary metabolism and its control
- Generate new approaches to examine and understand biophysical phenomenon

➤ **Semester/Year:** IV/II

**Name of the Course:** Entrepreneurship Development (HSMC-BT.406)

**Outcomes:**

By the end of this course students will be able to:

- Explain creativity, innovations and challenges associated with Entrepreneurship
- Interpret the factors governing opportunities and limitations for a business proposal
- Build strategy and execute a business proposal
- Appraise documents, present and screen business ideas
- Design new business plan and its safe and proper execution

➤ **Semester/Year:** V/III

**Name of the Course:** Molecular Genetics (PCC-BT.501)

**Outcomes:**

By the end of this course students will be able to:

- Recall the basic concept of gene
- Explain mechanism of gene regulation and expression.
- Differentiate and Gain insight of DNA and RNA.
- Learn the functional role of nucleic acids as hereditary material in regulating important cellular mechanisms.

➤ **Semester/Year:** V/III

**Name of the Course:** Food Biotechnology (PEC-BT.502.1)

**Outcomes:**

At the end of the course, the student should be able to:

- Identify the role of microorganisms in manufacturing of different food products.
- Interpret different physical and chemical methods for food preservation
- Apply the concept of use of different enzymes for better yield of various fermented food products.
- Evaluate the role of HACCP and ISO in food manufacturing units.

➤ **Semester/Year:** V/III

**Name of the Course:** Food Science and Engineering (OEC-BT.502.2)

**Outcomes:**

After completing this course, students will able to:

- Explain the composition of different food sources
- Identify different methods to handle foods and their preservation
- Understand food processing and its preservation
- Evaluate different types of microorganism responsible for food waste and their treatment methods.

➤ **Semester/Year:** V/III

**Name of the Course:** Milk and Milk Products Technology (OEC-BT.502.3)

**Outcomes:**

After completing this course, students will able to:

- Gain insight of types of milk and dairy products
- Study different mechanism for protection of milk and milk products from contamination
- Explain the mechanism of industrial production of milk and milk products
- Evaluate different mechanism of processing of milk and dairy products

➤ **Semester/Year:** V/III

**Name of the Course:** Object oriented programming using C<sup>++</sup> (PEC-BT.503.1)

**Outcomes:**

After completing this course, students will able to:

- Explain the importance of C++ programing language.
- Learn how to solve various biological/genomic puzzles using C<sup>++</sup> language.
- Learn and write down C++ script
- Analyse use of C++ programing in simulation and artificial intelligence.

➤ **Semester/Year:** V/III

**Name of the Course:** Perl for Biologist(OEC-BT.503.2)

**Outcomes:**

After completing this course, students will able to:

- Explain the pearl and Perl basics, data types and operators.
- Learn custom functions, references and anonymous data structures, debugging in Perl
- Learn modules and utility of Perl.
- Interpret various biological/genomic puzzles using C<sup>++</sup> language.
- Analyse concept of Bio-Perl, CPAN, Bio-Perl in Bioinformatics

➤ **Semester/Year:** V/III

**Name of the Course:** JAVA for Biologist(OEC-BT.503.3)

**Outcomes:**

After completing this course, students will able to:

- Explain Java programming and compilation of Java programs
- Learn basic commands and scripts of Java programing
- Apply concept of file handling in Java and different classes of Java
- Justify use of concept of Bio-Java, and user interface

➤ **Semester/Year:** V/III

**Name of the Course:** Heat Transfer (PCC-BT.504)

**Outcomes:**

Upon successful completion of this course, the student will be able to:

- Explain the basic laws of heat transfer.
- Account for the consequence of heat transfer in thermal analyses of engineering systems.
- Analyse problems involving steady state heat conduction in simple geometries.
- Develop solutions for transient heat conduction in simple geometries.
- Obtain numerical solutions for conduction and radiation heat transfer problems.
- Analyse the fundamentals of convective heat transfer process.

➤ **Semester/Year:** V/III

**Name of the Course:** Chemical Engineering Thermodynamics (PCC-BT.505)

**Outcomes:**

Upon successful completion of this course, the student will be able to:

- Learn how to apply knowledge of the laws of thermodynamics.
- Analyse the use of laws of thermodynamics in chemistry, physics, and engineering to analyse and solve physical and chemical problems encountered in biochemical engineering.
- Explain chemical reactions, equilibrium reaction coordinate and equilibrium criteria to chemical reaction
- Examine the use of laws of thermodynamics in understanding energy change in biochemical reactions.

➤ **Semester/Year:** V/III

**Name of the Course:** Plant tissue culture and secondary metabolites (PCC-BT.506)

**Outcomes:**

By the end of the course, students should be able to:

- Explain the various components of plant tissue culture media, e.g. minerals, growth



- factors, hormones, and what governs the choice of components,
- Explain the various steps taken to establish and optimise media for a species.
  - Learn tissue and organ culture, cryopreservation, protoplast culture and applications.
  - Learn how to develop insect resistant, herbicide and drought resistant plants.
  - Know about secondary metabolites and their production
  - Specific production of some secondary metabolites such as alkaloids, steroids and saponins

➤ **Semester/Year: VI/III**

**Name of the Course:** Bioinformatics (PCC-BT.601)

**Outcomes:**

By the end of the course, students should be able to:

- Know about primary and secondary database, introduction to Gene Bank, NCBI and other databases.
- Retrieving information from different data bases
- Use of search engines, sequence alignment and database searching
- Learn about predictive methods using nucleotide and protein sequencing.

➤ **Semester/Year: VI/III**

**Name of the Course:** Recombinant DNA Technology (PCC-BT.602)

**Outcomes:**

At the end of the course, the students should be able to:

- Explain the procedure for isolation and purification of nucleic acids for routine laboratory procedures,
- Explain the underlying mechanisms of gene cloning,
- Learn the practical aspects of applying recombinant DNA technology,
- Explain the significance of model organisms in recombinant DNA technology,
- Describe recombinant gene expression systems.

➤ **Semester/Year: VI/III**

**Name of the Course:** Bioprocess Engineering (PEC-BT.603.1)

**Outcomes:**

At the end of the course, the students should be able to:

- Explain the fundamental relationship between biology and bioprocess
- Evaluate the difference between bioprocesses, chemical processes, bioprocess design and operation
- Explain importance of media design for bioprocess
- Learn about different fermentation processes.
- Analyse the functioning of different types of bioreactors
- Know about different methods and techniques used in scale up and scale down of bioprocesses
- Learn the monitoring/control of bioprocess

➤ **Semester/Year: VI/III**

**Name of the Course:** Industrial Biotechnology (OEC-BT.603.2)

**Outcomes:**

At the end of the course, the student should be able to:

- Gain extensive knowledge and critical awareness of current issues arising in the practice of industrial biotechnology and of the role of industrial biotechnology in the global bio-economy.
- Explain the interactions between innovation and governance issues in industrial biotechnology and the ability to use these insights to develop creative responses to complex problems and issues.
- Critically evaluate numerical and graphical data related to the practice of industrial biotechnology.
- Identify and deal effectively with the ethical and professional challenges related to responsible innovation in industrial biotechnology

➤ **Semester/Year: VI/III**

**Name of the Course:** Molecular Farming (OEC-BT.603.3)

**Outcomes:**

After completing this course students will be able to:

- Explain the foreign protein production systems
- Evaluate the novel sprouting technologies for recombinant protein production
- Compare monocot and plant viral expression system
- Expression of therapeutic and human proteins in plants, transgenic chloroplast system, and chloroplast-derived human antibodies, biopharmaceuticals.
- Gain insight of the downstream processing of plant-derived products

**➤ Semester/Year: VI/III**

**Name of the Course:** Genome Analysis (PCC-BT.604)

**Outcomes:**

At the end of the course, the student should be able to:

- Describe recent advances in genomics, transcriptomics, metabolomics and proteomics.
- Explain current genomics technologies and illustrate how these can be used to study gene function.
- Obtain and analyse information and data relating to specific genes using a number of general and plant-specific databases, bioinformatics principles and tools.
- Locate and evaluate current scientific literature and discuss the important findings of these papers in writing.
- Perform a range of practical techniques including DNA sequencing, PCR and proteomics.
- Design a set of experiments to address a particular biological question.

**➤ Semester/Year: VI/III**

**Name of the Course:** Mass Transfer (PCC-BT.605)

**Outcomes:**

At the end of the course, the student should be able to:

- Learn molecular diffusion in fluids and solids
- Familiar with special distillation techniques such as steam distillation and azeotropic distillation

- Learn process of leaching and principle of leaching
- Know about gas absorption and principle of gas absorption
- Different types of drying processes

➤ **Semester/Year: VI/III**

**Name of the Course:** Molecular Diagnostic Techniques (PEC-BT.606.1)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain the cause, mechanism and symptoms of complex human diseases including Alzheimer's disease, cancer, diabetes, multiple sclerosis, obesity, schizophrenia.
- Know how molecular diagnostic techniques can be used in identification of complex human diseases
- Learn the different techniques involved in forensic science
- Explain the concept of bioremediation

➤ **Semester/Year: VI/III**

**Name of the Course:** Medical Biotechnology (OEC-BT.606.2)

**Outcomes:**

After completing this course, students will able to:

- Explain the different types of chromosomal disorders
- Study different diagnosis methods
- Get insight into the vaccines and recombinant vaccines
- Evaluate the different techniques used in advance medical biotechnology

➤ **Semester/Year: VI/III**

**Name of the Course:** Pharmaceutical Biotechnology (OEC-BT.606.3)

**Outcomes:**

After completing this course, students will able to:

- Explain the principles of Pharmaceutical chemistry
- Analyse the behaviour of drug in biological system
- Analyse the bioavailability and bioequivalence of drugs

- Develop different methods for recombinant drugs

➤ **Semester/Year: VII/IV**

**Name of the Course:** Environmental Biotechnology (PCC-BT.701)

**Outcomes:**

Students will develop understanding of:

- Role of biotechnology in environment protection
- Environmental Laws, Environmental standards and Zero discharge.
- Different biotechnological processes used in waste management including bioremediation and biodegradation.
- Biotechnology for hazardous waste management
- Implementation of biotechnological applications in environment management by various examples.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Data Base Management System(PCC-BT.702)

**Outcomes:**

Students will develop understanding of or will be able to

- Program-data independence, data models for database systems, database schema and database instances.
- Recall Relational Algebra concepts, and use it to translate queries to Relational Algebra statements and vice versa.
- Identify Structure Query Language statements used in creation and manipulation of Database
- Identify the methodology of conceptual modelling through Entity Relationship model.
- Identify the methodology of logical model and physical model.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Animal tissue Culture & Production of Recombinant Molecules (PCC-BT.703)

**Outcomes:**

Students will develop understanding of or will be able to

- Explain the principles and requirements of an animal tissue culture laboratory.
- Interpret the various applications of animal cell culture techniques such as vaccine production and clinical detection.
- Analyse the practical aspects involved in cloning of a gene and its requirements using animal cell culture.
- Explain the aspects of using animal model systems for experiments in biology.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Immunology(PCC-BT.704)

**Outcomes:**

At the end of the course, the student will be able to:

- Explain the basic concepts of immunology and immune system which come into play upon infection.
- Interpret types of antigens and antibodies, their structure and functions and use of monoclonal antibodies.
- Analyse the antigen-antibody reaction such as agglutination, radioimmunoassay and ELISA
- Illustrate maturation and differentiation of T-cells and B-cells and functions of MHCs molecules.
- Explain the various immunodeficiency and mechanism of vaccines for different diseases.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Modelling and Simulation of Bioprocess(PEC-BT.705.1)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain and analyze the movement of different physical quantities in any chemical or mechanical process.
- Extend the basic principles and laws of transport.

- Critically analyze and describe the relations and similarities among different types of transport that may occur in any system.
- Differentiate between the concept of heat and mass transfer during transport phenomenon.

➤ **Semester/Year: VII/IV**

**Name of the Course:** System Biology(OEC-BT.705.2)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain types of System Biology
- Interpret the gene control mechanisms at transcriptional and translational level
- Analyse cell communication through quorum sensing and programmed population controlled.
- Analyze the noise in gene expression
- Identify different Network Motifs

➤ **Semester/Year: VII/IV**

**Name of the Course:** Metabolic Engineering(OEC-BT.705.3)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain the types of metabolic pathways and coordination in metabolic reactions
- Differentiate between methods of metabolic characterization at genomic and proteomic level.
- Regulation of genes at transcription and translational level
- Explain the concept of Flux analysis
- Analyse to use concept of metabolic engineering in practice by Gene amplification, Gene disruption, randomized and targeted strain development

➤ **Semester/Year: VII/IV**

**Name of the Course:** Management Issues in Biotechnology(PEC-BT.706.1)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain what is meant by management and managerial effectiveness.
- Identify the roles which are fulfilled while working as a manager
- Identify managerial activities that contribute to managerial effectiveness
- Identify a cause of stress in managerial life from a range covering mismatches between capabilities and role, player-manager tension and everyday stressors.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Biosafety, Bioethics and IPR(OEC-BT.706.2)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain the legal and socioeconomic impacts of biotechnology including ethical concerns of biotechnology research and innovation.
- Explain the Intellectual property rights-patent, copyright, trade mark along with examples.
- Analyse the principles of Bio-safety at national and international level and use of genetically modified organisms and its release
- Know basic elements of biodiversity. Diversity at species and genetic level.

➤ **Semester/Year: VII/IV**

**Name of the Course:** Bionanotechnology(OEC-BT.706.3)

**Outcomes:**

At the end of the course, the student should be able to:

- Explain the concept of Bionanotechnology, Biocompatibility and cytotoxicity studies of Nanomaterials
- Summarize the developments in the field of Bionanotechnology and its applications
- Identify different biopolymers and their compositions
- Explain and analyse the drug delivery targets
- Interpret the use of biocompatible nanomaterial for various application



# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

### Dept./Branch: Chemical Engineering

#### Programme Outcome, Programme Specific Outcome and Course Outcome

##### 1. B.Tech. (Chemical Engineering)

**B.Tech.**  
**Chemical Engineering**

## 1. Name of the Program: B.Tech.

## 2. Program Outcomes:

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **Program Educational Objectives: Chemical Engineering**

- 1) Successfully practice or apply the principles of Chemical Engineering in a variety of employment areas.
- 2) Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.
- 3) Pursue continued life-long learning through professional practice, further graduate education or other training programs in engineering science or other professional fields.

## **Program Outcome:**

During the study of our chemical engineering program, students will demonstrate the following:

- 1) An ability to apply knowledge of mathematics, science, and engineering
- 2) An ability to design and conduct experiments, as well as to analyze and interpret data
- 3) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- 4) An ability to function on multi-disciplinary teams
- 5) An ability to identify, formulate, and solve engineering problems
- 6) An understanding of professional and ethical responsibility
- 7) An ability to communicate effectively
- 8) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- 9) A recognition of the need for, and an ability to engage in life-long learning
- 10) A knowledge of contemporary issues
- 11) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## COURSE OBJECTIVES & OUTCOMES

### B.Tech. Chemical Engineering, III Semester, II Year

**Subject: Mathematics-III**

**Code: BSC-CH301**

**Objective:**

After completing the course, students should be able to:

1. Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution.
2. Solve the problems choosing the most suitable method.
3. Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution.
4. Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations.
5. Formulate and solve differential equation problems in the field of Industrial Organization Engineering.
6. Use an adequate scientific language to formulate the basic concepts of the course.

**Course Outcome:**

After successful completion of this course students will able to

1. Solve simple & identified engineering problems using logarithm, determinants & trigonometry
2. Calculate area and volume of different shapes and bodies.
3. Solve simultaneous equations
4. Develop simple graph of sine & cosine functions
5. Use mathematical tools & software

**Subject: Advance Engineering Chemistry**

**Code: BSC-CH302**

**Objective:**

1. The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
2. The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
3. The student will learn the laboratory skills needed to design, safely conduct
4. The student will acquire a foundation of chemistry of sufficient breadth and depth

**Course Outcome:**

After successful completion of this course students will able to

1. Understand the chemical property of various materials
2. Calculation of hardness of water compound
3. Calculation of molecular weight, molarity, normality and density of compound
4. Understand the corrosion effects in different mediums
5. Face oral examination and interviews.

**Subject: Fluid Mechanics**

**Code: PCC-CH303**

**Objective:**

1. Make velocity measurements using flow meters
2. Demonstrate Reynolds experiment and understand the laminar and turbulent flow behavior.
3. Conduct experiments and calculate the major and minor losses in fluid flow due to friction and pipe fittings.

4. Calculate discharge through weirs and notches. Demonstrate practical understanding of boundary layers, separation and drag
5. Demonstrate and understand the fluid flow behaviour in packed bed and fluidized bed systems

**Course Outcome:**

After successful completion of this course students will able to

1. Knowledge of basic principles of fluid mechanics
2. Ability to analyze fluid flow problems with the application of the momentum and energy equations
3. Capability to analyze pipe flows as well as fluid machinery
4. To understand various valves and pumps
5. principles and components of mechanical equipment
6. Calculation of friction and revolution in mechanical parts

**Subject: Chemical Process Calculations**

**Code: PCC- CH304**

**Objective:**

1. Ability to familiarize with different unit systems and dimensional analysis.
2. Ability to understand concept of ideal gas, real gas, vapor pressure and humidity.
3. Ability to solve material balance problems involving recycle, bypass and purge, without chemical reaction.
4. Ability to solve material balance problems involving recycle, bypass and purge, with chemical reaction.
5. Ability to calculate energy balance using enthalpy changes and solve energy balance involving chemical reactions.

**Course Outcome:**

After successful completion of this course students will able to

1. Students will be able to read and interpret basic process industry drawings.
2. Students will be able to identify and describe basic equipment used in process industries.
3. Students will demonstrate the ability to apply basic concepts of Chemistry and Physics within process industries.
4. Students will be able to describe the importance of quality, safety, health and Environment to the process industry

**Subject: Chemical Engineering Thermodynamics-I**

**Code: PCC-CH305**

**Objective:**

1. To study basic concepts of thermodynamics.
2. To know laws of thermodynamics and their applications.
3. To study applications of thermodynamics
4. To impart fundamental concepts of solution thermodynamics involvin Ideal and non-ideal systems

**Course Outcome:**

After successful completion of this course students will able to

1. Learn the application of First law and second law to the problem of phase Equilibrium and reaction equilibrium
2. Calculate the refrigerant flow rate for a given duty of refrigeration. This helps in estimating loads for refrigeration.
3. Distinguish systems, functions, properties and processes
4. Implement the first law of thermodynamics for non-flow & flow process and access the PVT behavior of the fluids.
5. Calculate the effects of heat changes during chemical reaction.

**Objective:**

At the end of this course, students will demonstrate the ability to

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
2. To address the growth of Indian opinion regarding modern Indian intellectuals
3. Constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
4. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

**Course Outcome:**

After successful completion of this course students will able to

1. Understand critical constitutional challenges in the historical, social and political contexts of emerging states
2. Appreciate the legal and political challenges of founding and consolidating constitutional democracy in the variable developmental contexts of emerging states;
3. understand the underlying values of liberal democratic constitutional systems;
4. Describe and evaluate themes in comparative constitutional law; and
5. Research, write, present and critically analyze constitutional developmental issues in national contexts.

## B. Tech. Chemical Engineering IV Semester, II Year

**Subject: Fluid Particle Mechanics**

**Code: PCC-CH401**

**Objective:**

After successful completion of the course, the students develop:

1. Ability to understand fluid particle systems and equipment
2. Ability to select suitable size reduction equipment, solid-solid separation method and conveying system
3. Ability to analyze mixing processes
4. Understanding of fluid flow through packed and fluidized beds

**Course Outcome:**

After successful completion of this course students will able to

1. Knowledge of basic principles of fluid mechanics
2. Ability to analyze fluid flow problems with the application of the momentum and energy equations
3. Capability to analyze pipe flows as well as fluid machinery
4. To understand various valves and pumps

**Subject: Mass Transfer Operation-I**

**Code: PCC-CH402**

**Objective:**

1. To develop rate expressions for mass transfer in gases, liquids and solids.
2. To identify the fundamental mass transfer mechanisms.
3. To understand about diffusion characteristic of different materials.
4. To understand the mass transfer in drying and humidification operation.

**Course Outcome:**

After successful completion of this course students will able to

1. Understand the basics of Mass Transfer which are important to build a basic knowledge of the mass regarding laws.
2. Identification of mechanisms of mass transfer, Formulation of rate equations.
3. Solutions of the differential equations for steady-state, one-dimensional problems; solutions for non-steady state problems.
4. Understand the mass transfer in packed bed column.

**Subject: Industrial Pollution Monitoring & Control**

**Code: PCC-CH403**

**Objective:**

1. Understanding of legislation and effect of air pollution on human health, vegetation and materials.
2. Knowledge of wastewater treatment method and air pollution control method.
3. Knowledge of solid waste management method to control hazardous and Nonhazardous waste.

**Course Outcome:**

After successful completion of this course students will able to

1. Controlling of Water Pollution and Air Pollution
2. Environment Auditing planning and report writing.
3. Assessment of ISO – 140001.
4. Collection method for water sample and air sample.
5. Analysis of pollutant in various industries.



**Subject: Chemical Engineering Thermodynamics-II****Code: PCC-CH404****Objective:**

1. To build a good foundation in chemical knowledge that allows one to make qualitative and quantitative inquiries
2. To review the importance and relevance of physical analytical and inorganic chemistry in engineering field.
3. To know the physical and chemical property of chemical compound.

**Course Outcome:**

After successful completion of this course students will able to

1. Understand the concepts in different thermodynamic quantities such as heat and work and how they are measured, related or transformed from one to the other
2. chemical equilibrium and its relationship with thermodynamic quantities
3. Mechanism of Colloidal Particles.
4. Manufacturing of Simple inorganic compound.
5. Analysis of Inorganic compound

**Subject: Heat Transfer Operation****Code: PCC-CH405****Objective:**

1. To understand the fundamentals of heat transfer mechanisms in fluids and solids and their applications in various heat transfer equipment in process industries.
2. To analysis the different properties and parameters in various equipment which are used in industries.
3. To prepare energy balance around various equipments

**Course Outcome:**

After successful completion of this course students will able to

1. Understand and solve conduction, convection and radiation problems
2. Design and analyze the performance of heat exchangers and evaporators
3. Design and analyze heating and cooling systems.
4. Prevent the heat loss around various equipments.

**Subject: Entrepreneurship Development****Code: HSMC-CH406****Objective:**

At the end of this course, students will demonstrate the ability to

1. Understand the concept of Business Reforms, Process of Liberalization, and Business Idea.
2. Understand the concept of Small Scale Business Planning, Requirements, Govt. & Institutional Agencies, and Formalities
3. Understand the concept of Market Identification, Survey Key components, Enterprise Management, e-Commerce: Concept and Process

**Course Outcome:**

After successful completion of this course students will able to

1. Acquire skills in basic engineering practice.
2. Identify the hand tools and instruments.
3. Gain measuring skills.
4. Obtain practical skills in the trades.
5. Read and use a manufacturing drawing as a definition for the manufacturing of a part
6. Select proper tools and cutting data for a given material and manufacturing process

**B.Tech. Chemical Engineering, V Semester, III Year**

**Subject: Process Dynamics Instrumentation & Control**

**Code: PCC-CH501**

**Objective:**

1. To learn the basic principle and elements of instruments used in measurement, control and operation of process variables.
2. To learn the principle, construction and working of various instruments used to measure variables like pressure, flow, temperature, etc.
3. To introduce the various process control systems, their orders and performance characteristics.
4. To make students learn how to calculate the response of various control systems.

**Course Outcome:**

1. Understand the dynamic behavior of different processes.
2. Analyze different components of a control loop.
3. Analyze stability of feedback control system.
4. Design controllers for first and second order processes.
5. Analyze frequency response for controllers and processes.

**Subject: Chemical Reaction Engineering-I**

**Code: PCC-CH502**

**Objective:**

1. To apply knowledge from calculus, differential equation, thermodynamics, general chemistry and material and energy balances to solve reactor design problems.
2. To examine reaction rate data to determine rate laws and to use them to design chemical reactors.
3. To accomplish the task of selecting, sizing and determining the optimal operating conditions for the reactor.

**Course Outcome:**

1. Explain basic concepts to distinguish chemical reactions.
2. Calculate rate, rate constant, activation energy and order of reaction.
3. Interpret kinetic data to find order of reactions.
4. Operate different reactors efficiently using basic knowledge about their functioning
5. Calculate volume, space time and space velocity for Ideal reactors.

**Subject: Mass Transfer Operation-II**

**Code: PCC-CH503**

**Course Objective:**

1. The objective of this course is to apply the principles of mass transfer operations to specific applications, separation and/or purification processes.
2. The goal is to provide students with the theoretical/analytical aspects to design mass transfer equipments and to deal with complex problems of separations.

**Course Outcome:**

1. Design distillation column using McCabe–Thiele and Ponchon–Savarit methods and illustrate azeotropic & Extractive distillation.
2. Design humidifier & dehumidifier and classify humidification equipment.

3. Evaluate number of theoretical stages for liquid–liquid system and classify the equipment used for unit operations.
4. Evaluate number of theoretical stages for solid–liquid system and classify the equipment used for unit operations.
5. Estimate rate of drying and classify drying equipment.
6. Design the efficient Crystallizer.

**Subject: Numerical Methods in Chemical Engineering**

**Code: PCC-CH504**

**Course Objective:**

1. This course is designed to give an overview of computational techniques of interest to process engineer.

**Course Outcome:**

1. Simplify engineering and scientific problems into mathematical models using conservation laws and constitutive equations, translate these models to canonical forms.
2. Identify the class and properties of a particular problem or model (single/multi-variable, linear, nonlinear, differential, etc.)
3. Effectively implement numerical algorithms using basic numerical computing and structured programming principles.
4. Develop and apply numerical techniques for solving linear problems and nonlinear problems, including polynomials, single equation problems, and systems of nonlinear equations.
5. Develop and apply numerical techniques for solving ordinary differential equations.

**Subject: Fertilizer Technology**

**Code: PEC-CH505.2**

**Objective:**

1. To teach undergraduate students of chemical engineering about different types of fertilizers used in plants.
2. To know production of urea, ammonia, SSP, TSP and various NPK fertilizers.

**Course Outcome:**

1. Use reactions and unit operations steps in manufacturing of various fertilizers.
2. Characterize fertilizers on the basis of different properties.
3. Identify engineering problems in fertilizer manufacturing.
4. Handle the fertilizers.
5. Select appropriate synthesis fertilizer.

**Subject: Biochemical Engineering**

**Code: OEC-CH506.2**

**Objective:**

1. To understand the fundamentals of biological processes and their applications.
2. To learn about the basic structure and function of cells, including enzyme structure and functions.
3. To learn about the processes in terms of microbial growth and influence of environmental parameters, metabolism.

4. To learn the relationship of cellular function to the formation of products and the performance of processes useful to man, and the kinetics of cellular processes.
5. To know the principles and practice of cell culture including sterilization techniques, bioreactor design, and some of the common unit processes of the downstream processing of biological products.

**Course Outcome:**

At the end of the course, the students will be able to:

1. Understand the different cells and their use in biochemical processes.
2. Understand the role of enzymes in kinetic analysis of biochemical reaction.
3. Apply the basic concepts of thermodynamics, mass and energy balances, reaction kinetics and reactor design for biochemical processes.
4. Analyze bioreactors, upstream and downstream processes in production of bio-products.
5. Demonstrate the fermentation process and its products for the latest industrial revolution

**B.Tech. Chemical Engineering, VI Semester, III Year**

**Subject: Chemical Reaction Engineering-II**

**Code: PCC-CH601**

**Objective:**

1. To apply knowledge from calculus, differential equation, thermodynamics, general chemistry, and material and energy balances to solve reactor design problems in homogenous and heterogenous reactions.
2. To examine reaction rate data to determine rate laws and to use them to design chemical reactors.
3. To accomplish the task of selecting, sizing and determining the optimal operating Conditions for the reactor.

**Course Outcomes:**

1. Explain basic concepts to distinguish chemical reactions.
2. Calculate rate, rate constants, activation energy and order of reaction
3. Interpret kinetic data to find the order of reaction
4. Operate different reactors efficiently using basic knowledge about their Functioning
5. Calculate volume, space time and space velocity for ideal reactors.

**Subject: Transport Phenomena**

**Code: PCC-CH602**

**Objective:**

1. Provide the fundamentals to solve the real life problems involving transports of momentum, energy and mass in biological, mechanical and chemical systems using a unified approach.

**Program Outcome:**

After successful completion of this course students will be able to

1. Understanding of transport processes.
2. Ability to do heat, mass and momentum transfer for analysis.
3. Ability to analyze

**Subject: Petroleum Refining Engineering**

**Code: PCC-CH603**

**Objective:**

1. To study the manufacturing of different petroleum end products from crude oil
2. To study various refinery operations
3. To measure important physical properties of petroleum products

**Course Outcome:**

After study of this subject students will be able to understand

1. The petroleum industry and petroleum refining process
2. The unit processes involved in manufacture of petrochemicals
3. The properties and uses of various petrochemicals and their detailed manufacturing processes.

**Subject: Chemical Technology**

**Code: PCC- CH604**

**Objective**

1. To identify and describe the various process industries and the roles, responsibilities, and expectations for the process technician.
2. To identify and solve engineering problems during production

**Course Outcome:**

1. Students will be able to read and interpret basic process industry drawings.
2. Students will be able to identify and describe basic equipment used in process industries.
3. Students will demonstrate the ability to apply basic concepts of Chemistry and Physics within process industries.
4. Students will be able to describe the importance of quality, safety, health and environment to the process industry.

**Subject: Introduction to Nanotechnology**

**Code: PCC-CH605.1**

**Objective:**

1. Understanding the influence of dimensionality of the object at nanoscale on their properties.
2. Understanding the size and shape controlled synthesis of nanomaterials and their future application in industry.

**Course Outcomes**

1. Explain the effect of quantum confinement on the electronic structure and corresponding Physical and chemical properties of materials at nanoscale
2. Choose appropriate synthesis technique to synthesize quantum, nanostructures of desired size, shape and surface properties.
3. Correlate the properties of nanostructures with their size, shape and surface characteristics.
4. Appreciate enhanced sensitivity of nanomaterial based sensors and their novel application in industry.

**Subject: Material Science and Technology**

**Code: OEC CH606.2**

**Objective:**

1. Use the fundamental science and engineering principles relevant to materials that include the relationships between Nano/microstructure characterization, properties, processing, performance and design of materials.
2. Use lifelong learning skills to develop knowledge and skills, to pursue new areas of expertise and careers and to take advantage of professional development opportunities.

**Program Outcome:**

1. Given type of materials (ceramic, metal, polymers), identify type of bonding present, types of crystal structures expected and expected mechanical properties.
2. Be able to predict expected ordered structures in specific ionic solids.
3. Identify common defects in a material, when they are to be expected and know how they affect materials mechanical properties.
4. Utilise materials index parameters to select materials appropriate to simple design problems, including yielding and fast-fracture.

## B. Tech. Chemical Engineering VII Semester, Final Year

### **Subject: Process Plant Design & Economics**

**Code: PCC-CH701**

#### **Objective:**

1. To understand the basic concepts of flow sheeting, material and energy balances and process development
2. To apply algorithms for feasibility and optimization of flow sheet
3. To gain knowledge of estimation of capital investment, total product costs, depreciation, cash flows, and profitability
4. To carry out process optimization based on economic profitability by connecting economics with design principles for real chemical engineering processes.

#### **Course Outcomes:**

After successful completion of this course students will able to

1. Understand concepts of process design and project management.
2. Synthesize feasible and optimum flow-sheet.
3. Estimation of capital investment, total product costs, and profitability.
4. Optimum design of equipments based on economics and process considerations.

### **Subject: Process Equipment Design**

**Code: PCC-CH702**

#### **Objective:**

1. Acquire basic understanding of design parameter,
2. Complete knowledge of design procedures for commonly used process equipment and their attachments (e.g. internal and external pressure vessels, tall vessels, high pressure vessels, supports etc.)
3. Different types of equipment testing methods.

#### **Course Outcomes:**

1. Knowledge of basics of process equipment design and important parameters of equipment design.
2. Ability to design internal pressure vessels and external pressure vessels.
3. Ability to design special vessels (e.g. tall vessels) and various parts of vessels (e.g. heads).
4. Knowledge of equipment fabrication and testing methods.

### **Subject: Petrochemical Technology**

**Code: PEC-CH703.3**

#### **Objective:**

1. To study the manufacturing of different petroleum end products from crude oil
2. To study various refinery operations
3. To measure important physical properties of petroleum products

#### **Course Outcome:**

After study of this subject students will be able to understand

1. The petroleum industry and petroleum refining process
2. The unit processes involved in manufacture of petrochemicals
3. The properties and uses of various petrochemicals and their detailed manufacturing processes.

### **SUBJECT: Hazards Safety & Risk Analysis**

**Code: PEC-CH704.1**

#### **Objective:**

1. To improve the quality of life of the local community through management and conservation of natural resources.

2. To ensure that the natural environment is used wisely and continues to be available for the benefit and enjoyment of future generations.
3. To decrease vulnerability and improve adaptation capacity among poor local communities associated with Climate Change

**Course Outcome:**

After successful completion of this course students will be able to

1. Enhance the use of recycled material for construction work and optimize the use of conventional energy sources.
2. Take care of issues related to Conservation & Hazard Management while working as chemical engineer.
3. Assess the effects of pollution on resources.
4. Justify need of renewable energy for sustainable development.
5. Identify concept of waste management and methods of recycling.
6. Prepare list of use of do's and don'ts applicable during disasters



# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

### Dept./Branch: Civil Engineering

#### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Tech (Civil Engineering)
2. M. Tech (Civil):
  - a) SE (Structural Engineering)
  - b) WRE (Water Resource Engineering)
3. Diploma (Civil Engineering)

**B.Tech.**  
**Civil Engineering**

## **Program Outcome:-**

**PO1.** Apply the knowledge of mathematics, science, civil engineering fundamentals in the five broad areas of civil engineering namely structure, water resources, geotechnical, transportation and environmental engineering for solution of complex problems in the civil Engineering.

**PO2.** Use first principle of mathematics, physics/chemistry and civil engineering concept to identify, formulate, research literature and analyze complex engineering problem.

**PO3.** Design solution/processes for problems pertaining to civil engineering projects in sub- and super construction, water treatment, highway alignment with due consideration for the structural stability and safety, durability with respect to environmental effect, cultural and societal needs of the public.

**PO4.** Develop improved skills and new skills to enhance the state of their practice in a dynamic professional environment.

**PO5.** Work effectively and conduct themselves ethically in their professional environment. Acquire new knowledge by being a member or part of professional organizations and keeping themselves up to date of the new advances in the electrical engineering technology field.

## **Program Specific Outcome:-**

**PSO1.** Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information for civil engineering.

**PSO2.** Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.

**PSO3.** Apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.

**PSO4.** Conduct standard tests and measurements, and to conduct, analyze, and interpret experiments related to electrical engineering technology.

**PSO5.** Demonstrate the ability to function effectively as a member of a technical team.

**PSO6.** Identify, analyze, and solve narrowly defined engineering technology problems.

## Course Outcome:-

2<sup>nd</sup> Year/3<sup>rd</sup> Sem

PCC-CE301	<b>Civil engineering material</b>
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### Course outcome:

At the end of this course, students will demonstrate the ability to

1. Recall Test all the concrete materials as per IS code
2. Apply Design the concrete mix using ACI and IS code methods
3. Appraise Determine the properties of fresh and hardened of concrete
4. Design special concretes and their specific applications
5. To ensure quality control while testing/ sampling and acceptance criteria

PCC-CE302	<b>Engineering mechanics</b>
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### Course Outcomes:

At the end of this course, students will demonstrate the ability to

1. Use scalar and vector analytical techniques for analyzing forces in statically determinate structures
2. Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems
3. Apply basic knowledge of math and physics to solve real-world problems
4. Understand measurement error, and propagation of error in processed data
5. Understand basic kinematics concepts – displacement, velocity and acceleration (and their angular counterparts);
6. Understand basic dynamics concepts – force, momentum, work and energy;

PCC-CE303	<b>Introduction to fluid mechanics</b>
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### Course Outcomes:

At the end of this course, students will demonstrate the ability to

1. Ability to apply knowledge of properties of fluids to analyze and mathematics to real life problems.
2. Students should be able to demonstrate the knowledge of hydrostatics and buoyancy with mathematical equation to determine the hydro static pressure on submerged bodies.
3. Students should be able to demonstrate the knowledge of Kinematics and Mathematical knowledge for determination of various types of fluids discharge equation and vorticity.
4. Students should be able to demonstrate the ability of application of Bernoulli's equation, Momentum Equation for the application of Venturimeter, Orifice meter and force of the fluid.

<b>PCC-CE304</b>	<b>Surveying and Geomatics-1</b>
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**Course Outcome:-**

1. To develop the understanding of horizontal distance measurements by different methods.
2. To give knowledge about angle measurements.
3. To develop the understanding of traversing.
4. To give knowledge about leveling of different type of terrain.
5. To develop the understanding of surveying by using plane table and contouring.

<b>PCC-CE305</b>	<b>Engineering Geology</b>
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**Course Outcome:-**

The objective of the course is that students are able to:

1. Identify the main and most common igneous, sedimentary and metamorphic rocks encountered by foundations and construction.
2. To identify and define the main morphological and geological characteristics as shown on maps,
3. Analyses geological parameters important in geotechnical studies.
4. To establish and describe topographical and geological sections,
5. Identify potential geological hazards and various structures and ways of preventing and dealing with them

<b>BSC-CE306</b>	<b>Mathematics-III (Probability and Statistics )</b>
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**Course outcome**

1. To understand the Basic Probability systems and used for research projects.
2. Continuous Probability Distributions used for various construction works.
3. Bivariate Distributions used for special design of subjects
4. Basic Statistics to define analysis of various projects and construction.
5. Applied Statistics can understand the data collection for various projects and research.

**2<sup>nd</sup> Year/4<sup>th</sup> Sem**

<b>PCC-CE401</b>	<b>CONCRETE TECHNOLOGY</b>
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**COURSE OUTCOME:**

At the end of this course, students will demonstrate the ability to

1. On completion of the course, the students will be able to:
2. Test all the concrete materials as per IS code
3. Design the concrete mix using ACI and IS code methods
4. Determine the properties of fresh and hardened of concrete
5. Design special concretes and their specific applications
6. To ensure quality control while testing/ sampling and acceptance criteria

<b>PCC-CE402</b>	<b>SURVEYING AND GEOMATICS - II</b>
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**Course Outcome:-**

1. To develop the understanding of trigonometric levelling.
2. To develop the understanding of uses of curves.
3. To develop the understanding of triangulation and traversing in surveying.
4. To develop the understanding of errors in surveying.
5. To develop the understanding of field astronomy

<b>PCC-CE403</b>	<b>INTRODUCTION TO SOLID MECHANICS</b>
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**Course Outcome:-**

1. To develop the understanding of shear stress and strain.
2. To solve the problems of compound stress and to develop the understanding of Mohr's circle and moment of inertia.
3. To develop the understanding of columns and various terms and theories related to them.
4. To formulate and solve the engineering problems related to bending moment and shear force.
5. To solve the problems of composite sections.

<b>PCC-CE404</b>	<b>HYDRAULIC ENGINEERING</b>
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**COURSE OUTCOME –**

Upon completion of course on Fluid Mechanics should be able to demonstrate

1. Ability to apply knowledge of dimensional mathematics to analysis of various engineering structures like Dams, Weirs, Bridges.
2. U.C of Laminar flow and turbulent flow, Students should be able to demonstrate the knowledge with mathematical equation to analyze the properties of Laminar flow and turbulent flow.
3. Students should be able to demonstrate the knowledge of various flows in open channel for the design of efficient channels section with Mathematical knowledge.
4. Students should be able to demonstrate the ability with mathematical equations for the calculation of various parameters of rapidly varied flows.
5. The Students should be able to demonstrate the ability of knowledge and mathematical equations to analyze design and working of various types of Hydraulic machine and pumps

<b>PCC-CE405</b>	<b>ENVIRONMENTAL ENGINEERING-I</b>
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**Course outcome**

1. Identify various water demands and select suitable source of water.
2. Demonstrate a firm understanding of various water quality parameters.
3. Generalize relevant design criteria, procedures and methods for various water treatment processes.
4. Describe structure of drinking water supply system, water transport and its distribution

<b>MC-CE406</b>	<b>Indian Constitution*</b>
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**Course Outcomes:**

**Students will be able to:**

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
4. Discuss the passage of the Hindu Code Bill of 1956.

**3<sup>rd</sup> Year/5<sup>th</sup> Sem**

<b>PCC-CE501</b>	<b>TRANSPORTATION ENGINEERING-I</b>
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**Course Outcome:-**

On completion of the course, the students will be able to:

1. Carry out surveys involved in planning and highway alignment
2. Design cross section elements, sight distance, horizontal and vertical alignment
3. Implement traffic studies, traffic regulations and control, and intersection design
4. Determine the characteristics of pavement materials
5. Design flexible and rigid pavements as per IRC.

<b>PCC-CE502</b>	<b>STRUCTURAL ENGINEERING-I</b>
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**Course Outcome**

1. Demonstrate an ability to apply knowledge of mathematics, science and engineering to the Analysis of Statically Determinate & Indeterminate Structures..
2. Moment-distribution method application in analysis of building structure.
3. Demonstrate the ability to design and conduct numerical experiments as well as analyze the results Strain energy for different type of loads.
4. Demonstrate the ability to design and conduct numerical experiments as well as analyze the results and to communicate effectively in writing to report (both Kani's Method and Column Analogy method).

5. To provide knowledge and solving the lateral load method

<b>PCC- CE503</b>	<b>GEOTECHNICAL ENGINEERING-I</b>
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**Course Outcome:-**

1. To develop the knowledge of basic terms related to soil mechanics.
2. To develop the knowledge various clay structures and to solve the numerical on capillary water, free water and Darcy law.
3. To develop the knowledge of various stresses acting in the soil mass.
4. To develop the knowledge of construction of Mohr's circle and various field tests done o soil.
5. To discuss the various laboratory methods and to develop the knowledge of soil stabilization.

<b>PEC- CE05.1</b>	<b>ENVIRONMENTAL ENGINEERING - II</b>
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**Course outcome**

1. Demonstrate a firm understanding of various sewerage systems and their suitability.
2. Design sewer and drainage systems layout for communities.
3. Visualize waste water quality parameters and their characteristics.
4. Understand relevant wastewater treatment processes, their design criteria and applicability.
5. Make decisions regarding the treatment plant site selection, operation and maintenance and the need of advanced treatment

<b>PEC- CE05.2</b>	<b>INTERNET OF THINGS</b>
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**Course objectives:**

1. To assess the vision and introduction of IoT.
2. To Understand IoT Market perspective.
3. To Implement Data and Knowledge Management and use of Devices in IoT Technology.
4. To Understand State of the Art - IoT Architecture.
5. To classify Real World IoT Design Constraints, Industrial Automation in IoT.

<b>PEC- CE06.1</b>	<b>MATERIAL TESTING AND EVALUATION</b>
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**Course Outcome:-**

1. On completion of the course, the students will be able to:
2. Test all the concrete materials as per IS code
3. Design the concrete mix using ACI and IS code methods
4. Determine the properties of fresh and hardened of concrete
5. Design special concretes and their specific applications
6. To ensure quality control while testing/ sampling and acceptance criteria



<b>PEC- CE06.2</b>	<b>Civil Engineering Social And Global Impact</b>
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**Course Outcome:**

1. Overall field of Civil Engineering
  2. Highlighting the depth of engagement possible within each of these areas
  3. Exploration of the various possibilities of a career in this field
  4. Understanding the vast interfaces this field has with the society at large
  5. Providing inspiration for doing creative and innovative work
- Showcasing the many monuments, heritage structures

<b>OEC- CE06.3</b>	<b>RENEWABLE ENERGY RESOURCES</b>
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**COURSE OUTCOME:**

The objective of this Course is to provide an introduction to

1. Energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternative energy sources and their technology and application.
2. The class will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternatives, renewable energy sources such as solar, biomass (conversions), wind power, waves and tidal, geothermal, ocean thermal, hydro and nuclear.
3. Energy conservation methods will be emphasized from Civil Engineering perspective.
4. The knowledge acquired lays a good foundation for design of various civil engineering systems/ projects dealing with these energy generation paradigms in an efficient manner

<b>HSMC- CE506</b>	<b>ENTREPRENEURSHIP DEVELOPMENT</b>
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**Course Outcome:-**

1. To develop and strengthen entrepreneurial quality and motivation
2. Students and to impart basic entrepreneurial skills and understanding
3. To run a business efficiently and effectively.
4. Student will learn function of entrepreneurship.

**3<sup>rd</sup> Year/6<sup>th</sup> Sem**

<b>PCC- CE601</b>	<b>DESIGN OF STEEL STRUCTURE - I</b>
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**Course outcome**

1. Uses of all loadings and limit state design method for steel structure.
2. Analyze and design the Tension and compression member
3. Explain the behavior of various connections and able to solve the problems various fasters (Bolted and welded) used in steel construction.
4. Use of knowledge of analysis in structural planning and design of various components of buildings.
5. Analyze and design the built up section
6. Analyze and design the roof trusses

**PCC-  
CE602****DESIGN OF CONCRETE STRUCTURES – I****Course Outcome:-**

1. To develop the understanding of basic fundamental design of reinforced structure.
2. To develop the understanding of design of beam for singly reinforcement and doubly reinforcement.
3. To develop the understanding of design of slab and beam for shear and bond.
4. To develop the understanding of design of slab.  
To solve the problems of design of column and footing

**PEC-  
CE603.1****WATER RESOURCES ENGINEERING – I****COURSE OUT COME -**

Upon completion of course on Water Resource Engineering – I, should be able to demonstrate

1. Ability to apply knowledge of water requirement various crops with mathematical equations. They will know the history of irrigation.
2. U.C of Students should be able to demonstrate the knowledge of mathematical equations for the design of Irrigation canal using Kennedy theory and Lacey theory.
3. U.C. the Students should be able to demonstrate the knowledge mathematical equations and various stages of rivers for designs of river control works.
4. U.C. the Students should be able to demonstrate the ability of knowledge water logged irrigation lands and how to overcome by using various techniques.
5. U.C. the Students should be able to demonstrate the ability of knowledge design of various types of irrigation methods including lift irrigation. They should be able to analyze the various types of aquifers

**PEC-  
CE603.2****RURAL WATER SUPPLY AND SANITATION****Course outcome**

1. Identify various water demands and select suitable source of water.
2. Demonstrate a firm understanding of various water quality parameters.
3. Generalize relevant design criteria, procedures and methods for various water treatment processes.
4. Describe structure of drinking water supply system, water transport and its distribution

**PEC-  
CE603.3**

**ROCK MECHANICS**

**Course outcome:**

On successful completion of the course students will be able to:

1. Define the characteristics and the mechanical properties (strength and failure criteria) of rock mass, rock matrix and discontinuities
2. Explain methods for in situ investigation and laboratory testing of rock matrix and discontinuities.
3. Use rock mass classification systems (RMR, Q, GSI)
4. Analysis the stress distribution (isotropic, anisotropic) in situ and around an opening in rock (competent rock, jointed rock mass, blocky rock)
5. Propose designs of excavation supports.

**PEC-  
CE604.1**

**TRANSPORTATION ENGINEERING – II**

**COURSE OUTCOME:**

**At the end of the course, students would be able to**

1. Student will Plans of different types of Crossings, Design calculations of turnouts.
2. Understand the basic criteria for various Requirements of Airport, Planning of Terminal Area acknowledge Types and Selection of Gauges, Selection of Alignment, Ideal Permanent Ways and Cross-sections in different conditions
3. Identify problem based on Types of Turnouts, Points or Switches, layout Plans of different types of Crossings, Design calculations of turnouts.
4. Students will learn Types of Turnouts, Points or Switches.

**6BCE604.2**

**SOLID AND HAZARDOUS WASTE MANAGEMENT**

**COURSE OUTCOME**

1. Introduction to SWM: Waste quantity and quality, generation of waste per capita and region; composition of waste; small scale industry waste; organanic agricultural waste.
2. Waste Collection and Transport: Collection of mixed waste or of source seperated waste, collection logistics, transfer stations; machine park planning; Sub-contractors.
3. Treatment/disposal Technologies: dumping, sanitary landfills, mechanical-biological treatment, incineration, anaerobic digestion, composting; recycling of plastics, batteries, e-waste, Green House Gas emission and emision modeling, CDM, energy recovery.
4. Financial, Social and Institutional aspects: costs of collection, seperation, management; equipment costs; social costs, stake holders, scavengers, public health issues, policy and legislation.

**PEC-  
CE604.3**

## **ENGINEERING HYDROLOGY**

### **COURSE OUTCOME:**

1. Student will acknowledge of Hydrology, Practical use of Hydrology, global warming, hydrological cycle. Rain fall in India, pattern of rain fall
2. Identify problem based on PRECIPITATION-occurrence of precipitation, causes of precipitation, thermal convection, and cyclonic precipitation.
3. Students will learn RUNOFF-Process of Run Off, Losses of precipitation, infiltration loss, and evaporation loss.
4. Understand the basic criteria for various RUNOFF-Process of Run Off, Losses of precipitation, infiltration loss, evaporation loss, evapotranspiration. Factors affecting run off, Meteorological characteristics
5. To find various problems and solve Flood Hydrograph Analysis-Factors affecting hydro graph, components of hydro graph, Unit Hydro graph, Base flow separation

**OEC-  
CE605.1**

## **GEOTECHNICAL ENGINEERING – II**

### **Course Outcome:-**

1. To develop the knowledge of stresses under surface loading and to make students aware of various terminologies related to stresses developed in soil under surface loading.
2. To develop the knowledge of compaction and consolidation.
3. To develop the knowledge of various theories and terms related to stability of slopes.
4. To develop the knowledge of earth pressure and various theories related to earth pressure.
5. To develop the knowledge of bearing capacity of the soil and various methods used to calculate bearing capacity of the soil.

**OEC-  
CE605.2**

## **Metro Systems and Engineering**

1. Apply knowledge of mathematics, science, and engineering
2. Design and conduct experiments, as well as to analyze and interpret data
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. Function on multidisciplinary teams
5. Identify, formulate, and solve engineering problems

**PEC-  
CE605.3**

## **HYDROPOWER ENGINEERING**

### **Course Outcome:-**

1. Understand the hydro power and its development, importance of hydro energy.
2. Understand the energy sources and its future.
3. Know the general ideas about estimation of Hydro energy
4. Gain the knowledge about the types of canal lining and design of power canals
5. Gain the knowledge about components of hydro power plants.
6. Gain the knowledge about tunneling techniques adopted for hydro power plants.

<b>HSMC- CE606</b>	<b>PROFESSIONAL ETHICS AND DISASTER MANAGEMENT</b>
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**COURSE OBJECTIVES:**

1. To appreciate the importance and values and ethics in implementing the technology .
2. Ensure sustainable development, happiness and prosperity.
3. To understand the co-existence with nature .
4. To be aware of potential natural and manmade disasters

### IV Year/VII Sem

<b>PCC- CE701</b>	<b>DESIGN OF STEEL STRUCTURES–II</b>
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**COURSE OUTCOME:**

**At the end of the course, students would be able to**

1. Student will acknowledge of Introduction to Pre Engineered Buildings and tubular sections and their applications.
2. Identify problem based on Design of welded and bolted sections.
3. Students will learn Types of bridges, Loadings, Standard loading for railway bridges.
4. Understand the basic criteria for various Design aspects of foot over bridges. Design of through type truss

<b>PCC- CE702</b>	<b>DESIGN OF CONCRETE STRUCTURES-II</b>
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**Course Outcome:-**

1. To develop the understanding of designing of prestress member.
2. To develop the understanding of designing of beam for torsion and design of continuous and curved beams.
3. To develop the understanding of design of circular domes and water tanks.

4. To develop the understanding of yield line of slabs and retaining walls.  
To give the knowledge about design of culverts and bridges.

<b>PEC- CE703.1</b>	<b>OPEN CHANNEL FLOW</b>
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**Outcomes:**

1. The students will be able to apply their knowledge of fluid mechanics in addressing problems in open channels.
2. They will possess the skills to solve problems in uniform, gradually and
3. Rapidly varied flows in steady state conditions.
4. They will have knowledge in hydraulic machineries (pumps and turbines).

<b>PEC- CE703.2</b>	<b>REPAIR AND REHABILITATION OF BUILDING</b>
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**Outcomes:**

1. To learn various distress and damages to concrete and masonry structures
2. To understand the importance of maintenance of structures
3. To study the various types and properties of repair materials
4. To assess the damage to structures using various test
5. To learn the importance and methods of substrate preparation
6. To learn various repair techniques of damaged structures, corroded structures

<b>PEC- CE704.1</b>	<b>WATER RESOURCES ENGINEERING- II</b>
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**COURSE OUTCOME:**

**At the end of the course, students would be able to**

1. Creating Plan an Irrigation System.
2. Analyzing irrigation canals and canal network for design.
3. Creating Plan and design of diversion head works.
4. Analyzing Design irrigation canal structures.
5. Analyzing gravity and earth dams

<b>PEC- CE704.2</b>	<b>Earthquake Engineering</b>
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**COURSE OUTCOME:**

1. To provide a coherent development to the students for the courses in sector of earthquake engineering.
2. To present the foundations of many basic engineering concepts related earthquake Engineering

3. To give an experience in the implementation of engineering concepts which are applied in field of earthquake engineering.
4. To involve the application of scientific and technological principles of planning, analysis, design of buildings according to earthquake design philosophy.

<b>OEC- CE705.1</b>	<b>FOUNDATION ENGINEERING</b>
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**Outcome**

1. To develop the concept about the shallow foundation and its design
2. To learn about the failure of foundation
3. To learn about pile foundation and its design
4. To develop the learning related to expansive soil
5. Learn about raft foundation and well foundation

<b>OEC- CE705.1</b>	<b>GROUND IMPROVEMENT TECHNIQUES</b>
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**Course Outcome:-**

1. To develop the knowledge of stresses under surface loading and to make students aware of various terminologies related to stresses developed in soil under surface loading.
2. To develop the knowledge of compaction and consolidation.
3. To develop the knowledge of various theories and terms related to stability of slopes.
4. To develop the knowledge of earth pressure and various theories related to earth pressure.
5. To develop the knowledge of bearing capacity of the soil and various methods used to calculate bearing capacity of the soil.

<b>OCE706.1</b>	<b>Non-conventional sources of Energy</b>
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**Course Outcome:-**

1. Apply knowledge of mathematics, science, and engineering
2. Design and conduct experiments, as well as to analyze and interpret data
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. Function on multidisciplinary teams
5. Identify, formulate, and solve engineering problems

**OCE706.2**

**PROJECT PLANNING & CONSTRUCTION  
MANAGEMENT**

**Course Outcome:-**

1. Successfully apply business and management skills in positions within the construction industry.
2. Apply technical skills and knowledge in mathematics, science, construction, and technology in support of planning, analyzing, and solving construction problems.
3. Use industry resources including associations and organizations, professional publications, and governmental data to analyze, evaluate, and apply current trends within the industry.
4. Practice informed decision-making in personal and professional endeavors.
5. Manage a quality construction project from start to completion while maintaining budget, schedule, and safety requirements.

**OCE706.3**

**CONSTRUCTION ENGINEERING AND MANAGEMENT**

**Course Outcome:-**

1. Successfully apply business and management skills in positions within the construction industry.
2. Apply technical skills and knowledge in mathematics, science, construction, and technology in support of planning, analyzing, and solving construction problems.
3. Use industry resources including associations and organizations, professional publications, and governmental data to analyze, evaluate, and apply current trends within the industry.
4. Practice informed decision-making in personal and professional endeavors.
5. Manage a quality construction project from start to completion while maintaining budget, schedule, and safety requirements.



**M.Tech (Civil)**

**SE**  
**(Structural Engineering)**

# **M.Tech Structural Engineering**

## **Program Outcome:-**

**PO1.** Apply the knowledge of mathematics, science, civil engineering fundamentals in the five broad areas of civil engineering namely structure, water resources, geotechnical, transportation and environmental engineering for solution of complex problems in the civil Engineering.

**PO2.** Use first principle of mathematics, physics/chemistry and civil engineering concept to identify, formulate, research literature and analyze complex engineering problem.

**PO3.** Design solution/processes for problems pertaining to civil engineering projects in sub-and super construction, water treatment, highway alignment with due consideration for the structural stability and safety, durability with respect to environmental effect, cultural and societal needs of the public.

**PO4.** Develop improved skills and new skills to enhance the state of their practice in a dynamic professional environment.

**PO5.** Work effectively and conduct themselves ethically in their professional environment. Acquire new knowledge by being a member or part of professional organizations and keeping themselves up to date of the new advances in the electrical engineering technology field.

### **Program Specific Outcome:-**

**PSO1.** Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information for civil engineering.

**PSO2.** Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.

**PSO3.** Apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.

**PSO4.** Conduct standard tests and measurements, and to conduct, analyze, and interpret experiments related to electrical engineering technology.

**PSO5.** Demonstrate the ability to function effectively as a member of a technical team.

**PSO7.** Demonstrate knowledge and understanding of the civil engineering and project management principles and apply them to manage/ complete within the stipulated period and funds.

**PSO8.** Function effectively as an individual and applying the principle of ‘unity in diversity’ with a motivational/sprit of synergy and teamwork.

**PSO9.** Demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity.

## **Course Outcome of M.Tech. Structures**

**Year/Semester :- 1<sup>st</sup> /1<sup>st</sup> Sem.**

**Subject Name :-Theory of Elasticity**

**Subject Code:-STR511**

Upon successful completion of the course students will be able to:-

- a) Recall and remember equilibrium equations.
- b) Identify and explain strain displacement relations.
- c) Illustrate equilibrium equations and compatibility equations in polar system.
- d) Explain normal and tangential stresses on oblique plane.
- e) Illustrate the concept of mohr's circle.

**Subject Name :- Advance Structural Analysis.**

**Subject Code:- STR 512**

Upon successful completion of the course students will be able to:-

- a) Differentiate and explain buckling loads of prismatic and non- prismatic beam column.
- b) Build concept about finite difference and integration.
- c) Understand and can analysis frames using Kani's method.
- d) Select and understand methods for analysis of beams and frames.
- e) Explain and utilize column analogy method.

**Subject Name :- Advance Design of Structures.**

**Subject Code:- STR513**

Upon successful completion of the course students will be able to:-

- a) Recall the basic concepts of limit state design of prismatic members in flexure.
- b) Understand the concept of redistribution of moments in beams.
- c) Explain and calculate deflection due to load, shrinkage and creep.
- d) Understand and explain the concept of yield line theory for slabs.
- e) Differentiate load and resistance factor design.

**Subject Name :-Design of composite structures.**

**Subject Code:- STR532**

Upon successful completion of the course students will be able to:-

- a) Understand the steel concrete structures.
- b) Differentiate and explain various types of composite beams and their design.
- c) Differentiate and illustrate various types of composite floors and their design.
- d) Understand and explain various types of composite columns and their design.
- e) Identify Indian and European codes.

**Subject Name :-Advance steel structure .**

**Subject Code:- STR537**

Upon successful completion of the course students will be able to:-

- a) Investigate the design of communication and transmission line steel towers.
- b) Build knowledge about mats.
- c) Understand the concept of design of industrial structures.
- d) Identify and implement the design of composite steel.
- e) Understand and differentiate in-situ concrete beams and slabs.

**Subject Name :-Advance Mathematics.**

**Subject Code:- STR551**

Upon successful completion of the course students will be able to:-

- a) Implement ordinary and differential equations.
- b) Understand theory of complex variables and mappings.
- c) Investigate Cauch's theorem for infinite series.
- d) Implement and solve matrices and tensors to simple problems.
- e) Solve and differentiate various types of numerical methods.

**Year/Semester :- 1<sup>st</sup> /2<sup>nd</sup> Sem.**

**Subject Name :-Prestressed Concrete.**

**Subject Code:- STR521**

Upon successful completion of the course students will be able to:-

- a) Understand the concept of prestressed elements by working stress and limit state approach.
- b) Differentiate and understand various methods of design of partial pre-stressed beams.
- c) Interpret and implement the design of various types of slabs.
- d) Illustrate shear and bond in prestressed concrete.
- e) Understand the concept of folded plates and shells.

**Subject Name :-Structure Dynamics.**

**Subject Code:- STR522**

Upon successful completion of the course students will be able to:-

- a) Develop the concept of structures modeled as single degree of freedom.
- b) Analyze structures modeled as shear buildings.
- c) Investigate framed structures modeled as discrete multi degree of freedom .
- d) Understand structures modeled with distributed properties.
- e) Gain knowledge and differentiate random vibrations.

**Subject Name :-Theory of plates and shells.**

**Subject Code:- STR523**

Upon successful completion of the course students will be able to:-

- a) Understand the concept of cylindrical bending of long rectangular plates.
- b) Evaluate stresses in long rectangular plates.
- c) Build knowledge about pure bending of plates.
- d) Interpret and illustrate biharmonic plate equations.
- e) Summarize the concept of plates and shells.

**Subject Name :Building Design.**

**Subject Code:- STR540**

Upon successful completion of the course students will be able to:-

- a) Study structural proportioning of architectural drawing and grid.
- b) Investigate the codal provisions for design of buildings.
- c) Investigate and calculate various loads that acts on the building.
- d) Understand structural drawing and detailing.
- e) Analyze and gain knowledge of various softwares used in building design.

**Subject Name :-Advance hydraulic structures.**

**Subject Code:- STR539**

Upon successful completion of the course students will be able to:-

- a) Differentiate various types of head works.
- b) Recall design of sarda type and straight glacis tall.
- c) Understand and design of distributary head regulator and cross regulator.
- d) Investigate and classify various types of dams along with stability analysis.
- e) Gain knowledge about various types of hydraulic structures.

**Subject Name :-.**

**Subject Code:- STR532**

Upon successful completion of the course students will be able to:-

- a) Understand the concept of one dimensional random variables.
- b) Solve binomial, poisson geometric and gamma distribution problems.
- c) Understand the concept of two dimensional random variables.
- d) Solve the problems of regression lines and accidental errors.
- e) Understand and solve the problems of chi square and f distributions for testing of mean.

**M.Tech (Civil)**

**WRE**  
**(Water Resource Engineering)**

## **M.TECH. IN CIVIL ENGINEERING**

### **WATER RESOURCES ENGINEERING**

#### **Program Outcome:-**

**PO1.** Apply the knowledge of mathematics, science, civil engineering fundamentals in the five broad areas of civil engineering namely structure, water resources, geotechnical, transportation and environmental engineering for solution of complex problems in the civil Engineering.

**PO2.** Use first principle of mathematics, physics/chemistry and civil engineering concept to identify, formulate, research literature and analyze complex engineering problem.

**PO3.** Design solution/processes for problems pertaining to civil engineering projects in sub-and super construction, water treatment, highway alignment with due consideration for the structural stability and safety, durability with respect to environmental effect, cultural and societal needs of the public.

**PO4.** Develop improved skills and new skills to enhance the state of their practice in a dynamic professional environment.

**PO5.** Work effectively and conduct themselves ethically in their professional environment. Acquire new knowledge by being a member or part of professional organizations and keeping themselves up to date of the new advances in the electrical engineering technology field.

#### **Program Specific Outcome:-**

**PSO1.** Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information for civil engineering.

**PSO2.** Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.

**PSO3.** Apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.

**PSO4.** Conduct standard tests and measurements, and to conduct, analyze, and interpret experiments related to electrical engineering technology.

**PSO5.** Demonstrate the ability to function effectively as a member of a technical team.

**PSO6.** Identify, analyze, and solve narrowly defined engineering technology problems.



## **Course outcome**

**Semester/Year: I/I**

**Name of the course: NUMERICAL METHODS IN CIVIL ENGINEERING**

**Course code: MECE-501**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To identify the application potential of numerical methods.
2. To Solve Civil engineering problems using numerical methods
3. To Demonstrate application of numerical methods to civil engineering problems
4. To Apply differential equations and integration to solve civil engineering problems
5. To Outline and Propose the finite difference techniques

**Name of the course: ADVANCE HYDRAULICS**

**Course code: MECE-502**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To Unconventional energy sources: solar energy, wind energy, tidal energy geothermal energy, thermonuclear fusion, cold fusion
2. To understand Power plants utilizing unconventional energy sources
3. Special methods of energy production: fuel cells, MHD power plants
4. Unconventional energy transport and accumulation: hydrogen
5. To Measurements at the biogas station and Rankins cycle generator

**Name of the course: Advance Hydrology**

**Course code: MECE-505**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To understand the concept of hydrologic cycle and to quantify evaporation and infiltration processes
2. To understand the concept of unit hydrograph and to review various rational and conceptual rainfall-runoff models
3. To be able to analyses hydrologic time series
4. To be able to perform real time flood forecasting

**Name of the course: Advance Irrigation Engineering**

**Course code: MECE-506**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Develop and describe the use of a soil moisture retention curve.
2. Define basic components of the hydrologic cycle and how they can be measured or estimated.
3. Identify evapotranspiration calculation process and use available models to estimate.
4. Describe movement of water in soils.
5. Identify key components of an irrigation system and their function.

**Name of the course: Design of Dams**

**Course code: MECE-504**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Type of dams and their characteristics
2. How dam sites are selected and evaluated
3. How to investigate dam foundation
4. Basics of soil mechanics; settlement, seepage and aspects of stress in relation to dams and dam foundation
5. Basics of concrete property and dam concrete challenges

**Name of the course: Air and Noise Pollution Lab**

**Course code: MECE-507**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Understanding of basic concepts of air pollution.
2. Study of air pollution episodes. Reasoning of the entire episode, identification of the parameters, conditions, mechanisms.
3. Study of sampling types and methods for ambient air and stack.
4. Study of macro and micro meteorology for understanding the dispersion of pollutants.
5. Simple and complex modeling for point source, line source and area source. 6. Study of pollution control methods, mechanism and devices.

**Semester/Year: II/I**

**Name of the course: HYDROPOWER ENGINEERING**

**Course code: MECE-601**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Understand power requirements, load patterns, firm power and secondary power, types of power plants and its principal components.
2. Design economical diameter of penstock, select turbines and understand cavitation phenomenon of turbines.
3. Plan underground and surface powerhouse structure dimensions its ventilation and lighting.
4. Estimate Tidal power and its generation potential. Understand integration of hydropower and thermal power plants

**Name of the course: WATER POLLUTION AND SEWAGE TREATMENT**

**Course code: MECE-603**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To understand the essential theoretical background of the principles of chemistry applied to the solutions of environmental problems.
2. To apply the principles of chemistry in solving water and wastewater treatment problems.
3. To analyses the chemistry related issues in water and wastewater treatment.
4. To evaluate the characteristics of raw water, treated water, products of biodegradation of wastewaters and the performance of different units of water and wastewater treatment.

**Name of the course: DRAINAGE ENGINEERING**

**Course code: MECE-605**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Understand the hydrologic cycle, principles and processes necessary to effectively manage water resources through well designed drainage and irrigation systems.
2. Apply appropriate techniques and analyses to the effective design of both irrigation and drainage systems.
3. Design, test, and analyze agricultural irrigation and drainage systems and their components. Enhance communication skills, and impart a sense of professional, ethical and societal responsibility gained through knowledge and discussion of contemporary issues.

**Name of the course: Open Channel Hydraulics**

**Course code: MECE-604**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Possess a solid understanding of the basic phenomena and processes that govern free-surface flows
2. Be able to formulate advanced models based on the governing equations for free-surface flows and to solve the equations for commonly encountered flow situations
3. Be able to analyze complex flow problems using dimensional analysis and to develop rules for experiments with scale models
4. In detail understand the impact of flowing water on submerged bodies and structure

**Name of the course: Advance Hydraulics Lab**

**Course code: MECE-607**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To acquire knowledge of fluid mechanics and apply the Mass, Momentum and Energy Conservation Principles for Fluid Flow
2. To learn the concept of boundary layer and apply to the real life hydraulic structures
3. To understand the N-S equations and to apply it to both laminar and turbulent boundary layers
4. To learn the process of Design of an Experiment, Dimensional Analysis and Dispersion of Pollutants in a Fluid Medium

**Name of the course: ROCK MECHANICS**

**Course code: MECE-604**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Overview of rock engineering problems.
2. Geological classification of rocks, engineering classifications and index properties of intact rocks.
3. Characterization of rock discontinuities and their fundamental properties.
4. Classification of rock masses.
5. Strength and deformation behavior of rock masses.

**Name of the course: PLANNING AND DEVELOPMENT OF WATER RESOURCES**

**Course code: MECE-606**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To prepare the students for a successful career as hydrologist and water resources engineers
2. To develop the ability among students to synthesis data and technical concepts for application in hydrology and water resources engineering
3. To provide students an opportunity to work as a part of interdisciplinary team
4. To provide students with a sound foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, analyze, solve engineering problems and to prepare them for their career.
5. To promote student awareness of the life-long learning and to introduce them professional ethics and codes of professional practice in water resource engineering

**Name of the course: HYDRODYNAMICS AND MODELING**

**Course code: MECE-608**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Acquire the knowledge of various types of fluid flow governing equations.
2. Analyze the internal fluid flow phenomena of thermal and fluid system.
3. Acquire enough knowledge to design of the engineering systems using commercial computational code.
4. Design the thermal system using cfd.

**Name of the course: COMPUTATIONAL HYDRAULICS**

**Course code: MECE-612**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Develop dimensionless groups using Buckingham's pi method
2. Determine the drag and lift forces of various shapes
3. Determine the various flow characteristics of pumps and turbine
4. Design the fluid machinery system

**Name of the course: NONCONVENTIONAL SOURCES OF ENERGY**

**Course code: MECE-503**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. The concept of solar energy and their applications in different fields.
2. The ways to harness energy from nonconventional energy sources like geothermal, wind and ocean.
3. The ways of nuclear energy production and management of environmental problems due nuclear waste.
4. The harmful effect of air, water and noise pollution on living things.

**Name of the course: DISASTER MANAGEMENT**

**Course code: MECE-711**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To increase the knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.
2. To increase the knowledge and understanding of the International Strategy for
3. Disaster Reduction (UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy
4. To ensure skills and abilities to analyses potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.
5. To ensure skills and ability to design, implement and evaluate research on disasters

**Semester/Year: III/II**

**Name of the course: GROUND WATER ENGINEERING**

**Course code: MECE-701**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Various components of hydrologic cycle that affect the movement of water in the earth
2. Various Stream flow measurements technique
3. The concepts of movement of ground water beneath the earth
4. The basic requirements of irrigation and various irrigation techniques, requirements of the crops
5. Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design Basic components of river Training works

**Name of the course: SOIL AND ROCK MECHANICS LAB**

**Course code: MECE-616**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Overview of rock engineering problems.
2. Geological classification of rocks, engineering classifications and index properties of intact rocks.
3. Characterization of rock discontinuities and their fundamental properties.
4. Classification of rock masses.

5. Strength and deformation behavior of rock masses.

**Name of the course: WATER AND SOIL CONSERVATION ENGINEERING**

**Course code: MECE-705**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To study occurrence movement and distribution of water that is a prime resource for development of a civilization
2. To know diverse methods of collecting the hydrological information, which is essential, to understand surface and ground water hydrology
3. To know the basic principles and movement of ground water and properties of ground water flow

**Name of the course: HYDRO METEOROLOGY**

**Course code: MECE-707**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To make effective use of modern information technologies and statistical-mathematical methods;
2. To prepare scientific reports and conclusions;
3. To integrate different meteorological, climatological, hydrological ideas and innovations;
4. To organize and execute hydro meteorological investigations, interpret the obtained results;
4. To make meteorological and hydrological forecasts;
5. To disseminate hydrological, meteorological and climatological information for different users

**Name of the course: EARTHQUAKE ENGINEERING**

**Course code: MECE-709**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To provide a coherent development to the students for the courses in sector of earthquake engineering
2. To present the foundations of many basic engineering concepts related earthquake Engineering
3. To give an experience in the implementation of engineering concepts which are applied in field of earthquake engineering
4. To involve the application of scientific and technological principles of planning, analysis, design of buildings according to earthquake design philosophy

**Name of the course: FINITE ELEMENT METHOD**

**Course code: MECE-713**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To provide the fundamental concepts of the theory of the finite element method
2. To obtain an understanding of the fundamental theory of the FEA method;
3. To develop the ability to generate the governing FE equations for systems governed by partial differential equations;
4. To understand the use of the basic finite elements for structural applications using truss, beam, frame, and plane elements
5. To understand the application and use of the FE method for heat transfer problems

**Name of the course: FLOOD CONTROL ENGINEERING**

**Course code: MECE-610**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Various components of hydrologic cycle that affect the movement of water in the earth Various Stream flow measurements technique
2. The concepts of movement of ground water beneath the earth
3. The basic requirements of irrigation and various irrigation techniques, requirements of the crops
4. Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design
5. Basic components of river Training works.
6. Apply math, science, and technology in the field of water resource Engineering.

**Name of the course: URBAN STROME WATER DRAINAGE**

**Course code: MECE-715**

**Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Demonstrate an understanding of basic principles and methods of hydraulics hydrology;
2. Design urban drainage structures such as culverts, OSD systems and street pipe drainage systems;
3. Demonstrate a familiarity with methods of urban storm water design set out in recent manuals, with an emphasis on flood protection
4. Provide an overview of design aspects of flood estimation and flood mitigation;
5. Provide an overview of water sensitive urban design

**Diploma**  
**(Civil Engineering)**



# DIPLOMA IN CIVIL ENGINEERING

## Program outcome

**The Diploma programme aims to:**

1. Demonstrate the application of fundamental knowledge of mathematics, science, and civil engineering to solve simple problems related to civil engineering works.
2. Plan, design, construct and maintain civil engineering structures and buildings.
3. Supervise and manage civil engineering project related activities /practices/ resources effectively.
4. Collect samples, conduct experiments / tests and report results pertaining to civil engineering for execution of quality work
5. Communicate effectively through verbal, written and graphical presentations to diverse personnel
6. Understand the importance of ethical and professional responsibility and practices as civil engineer.
7. Ensure optimum use of resources in the context of environmental sensitivity, sustainable development and occupational safety.
8. Exhibit effective team work and function as leader & members in multidisciplinary civil engineering projects
9. Realize the habit of lifelong learning to stay abreast of the latest developments in civil engineering and allied field
10. Demonstrate necessary knowledge, skills and attitudes required to become an entrepreneur in civil engineering related business.
11. Appreciate and apply modern techniques, materials and tools for civil engineering construction works.
12. Ensure quality materials and workmanship as per specifications and prevailing SOR.

# Course outcome

## II YEAR

### III Semester

**Name of the course: STRENGTH OF MATERIALS - I**

**Subject Code: - DCE 301**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To acquire Advance knowledge of structural behavior under direct loading.
2. To Analyses statically determinate structures like Beam, Column & Truss.
3. It will enable the student to analyze Steel & Concrete Structures used in Civil Engineering construction.
4. Analyze simple statically determinate structures like beam, column and truss under loading conditions.
5. Analyze the behavior of structural members with typical loading.
6. Evaluate the properties of materials of various members under direct loading. To identify the application potential of Simple Stress and Strain.

**Name of the course: FLUID MECHANICS I**

**Subject Code: - DCE 302**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To identify the behaviour of fluid flow in different conditions in pipes, channels, canals, notches, weirs etc. is necessary for civil, environmental and transportation engineers.
2. To recall the basic knowledge about hydraulics will be useful in subjects like Irrigation,
3. Water Resources Management and Public Health Engineering. In this course, basics of hydraulics and its application oriented content has been kept with a focus that students should be able to solve practical problems.
4. To develop Competencies by this course would therefore be useful for students while
5. performing his/her job in the field of Water resources / Irrigation/ PHE.
6. Perform various tests regarding behavior of fluid/liquid.
7. Interpret the problems related to fluid/liquid and apply for solving fluid mechanics problem.
8. Compute discharge and loss of head through pipes, open channels, notches and other Hydraulic structures

**Name of the course: CONCRETE TECHNOLOGY**

**Subject Code: - DCE 305**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Explain the basic properties of ingredients of concrete.
- 2) Explain about the different tests of cement and aggregate.
- 3) Explain about the workability and strength of concrete.

- 4) Explain the different type of concrete and mix design.
- 5) Explain about the concreting techniques.

**Name of the course: SURVEYING I**

**Subject Code: - DCE 304**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Handle various survey instruments for a particular survey work.
- 2) Carry out various civil engineering survey works.
- 3) Collect and analyse survey data for preparing drawings and maps.
- 4) Apply checks for errors elimination.

**Name of the course: BUILDING TECHNOLOGY**

**Subject Code: - DCE 303**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) To understand the bearing capacity of common soil
- 2) To understand the building byelaws and principle of building planning
- 3) To understand the different types of building components and its functions
- 4) To understand the design of buildings, orientation and selection of site.

**Name of the course: NON CONVENTIONAL SOURCES OF ENERGY**

**Subject Code: - DCE 302**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Students will be able to understand the importance of Non-Conventional Source of energy.
- 2) To understand the prospect of energy sources.
- 3) To understand the application of rural electrification and their advantages.
- 4) To understand the principle of energy conversion.

## **IV Semester**

**Name of the course: TRANSPORTATION ENGINEERING**

**Subject Code: - DCE 404**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Understand the factors influencing road vehicle performance characteristics and design
- 2) Apply basic science principles in estimating stopping and passing sight distance requirements
- 3) Design basic traffic signal phasing and timing plan
- 4) Differentiate of flexible and Rigid pavement layers
- 5) Design basic horizontal and vertical alignment of the highway

**Name of the course: SOIL MECHANICS**

**Subject Code: - DCE 405**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Differentiate in different soil exploration techniques.
- 2) Investigate on the factors affecting bearing capacity of soil.
- 3) Know the contact pressure distribution below footings
- 4) Students are knowing about the function and behavior of soil below GL or in foundation of structure or in superstructure.

**Name of the course: WATER SUPPLY & SANITATION**

**Subject Code: - DCE 403**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine about quality of water and waste water and also have general idea about different methods of removing impurities.
2. Examine techniques for treatment of water and waste water like skimming, screening, Sedimentation & filtration.
3. Explain the basic knowledge about the quality of water and wastewater.
4. Explain different techniques for treatment of water and waste water.
5. Examine the methods of softening and disinfection of water.

**Name of the course: FLUID MECHANICS-II**

**Subject Code: - DCE 402**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Define the concepts related to boundary layer theory and drag and lift forces.
2. Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and its components including water hammer pressures.
3. Utilize the concepts of uniform and critical flow through open channels including design of efficient channel sections. Also apply specific energy concepts in the analysis of open channel flow.
4. Demonstrate Gradually Varied Flow & Rapidly Varied Flow analysis and its computation.
5. Explain the different techniques of dimensional analysis in model testing.
6. Demonstrate and apply basic concepts related to Turbines & Pumps in Water resources planning.

**Name of the course: STRENGTH OF MATERIALS – II**

**Subject Code: - DCE 401**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

- 1) Analyze indeterminate structures like fixed and continuous beams of simple structures.
- 2) Apply moment distribution method to beams of simple structures.
- 3) Calculate slope and deflection of various beams of simple structures.
- 4) Analyze columns and struts of simple structures.
- 5) Calculate direct and bending stresses of simple structures.

**Name of the course: SURVEYING –II**

**Subject Code: - DCE 406**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine Field survey and the basic requirement for preparing any engineering maps or drawings.
2. To carry out Field survey professionally various steps involved in the survey work are known with skills of operating modern survey equipment.
3. Examine about these aspects so as to develop their understanding, performance oriented abilities in order to apply their knowledge in construction industry.
4. Calculate heights of different structures using appropriate instruments.
5. Calculate relative altitudes and distances of different points on ground.
6. Perform setting of horizontal curves on field.
7. Carry-out survey work using total station.

## V Semester

**Name of the course: THEORY OF STRUCTURE – I**

**Subject Code: - DCE 501**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To acquire Advance knowledge of structural behavior under direct loading.
2. To Analyses Statically determinate structures like Beam, Column & Truss. The Structural Mechanics-I, will enable the student to analyze Steel & Concrete Structures used in Civil Engineering construction.
3. Analyze simple statically determinate structures like beam, column and truss under loading conditions.
4. Analyze the behavior of structural members with typical loading.
5. Evaluate the properties of materials of various members under direct loading.

**Name of the course: DESIGN OF STEEL STRUCTURES – I**

**Subject Code: - DCE 502**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Analysis and design of steel structure.
2. Design of bolted and welded connections.
3. Analysis and design of axially loaded tension member, axially loaded column, design of lacing and batten system, design of slab base foundation.
4. Explain the basic properties of steel and to understand the behaviour according to it.
5. Explain the different steel structure analysis and design.
6. Explain the design and analysis of angle sections, bolted & welded connection.
7. Design of steel structures according to IS-800-2007 by limit state method.

8.

**Name of the course: DESIGN OF R.C.C STRUCTURES – I**

**Subject Code: - DCE 503**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine about various methods for designing structural components like beam, column, slab, footing etc.
2. Examine the IS provisions for design consideration of different R.C.C. structures.
3. To design various components of the structure.
4. Study of development length and shear reinforcement.
5. To design the axially loaded column, isolated column footing.

**Name of the course: IRRIGATION ENGINEERING – I**

**Subject Code: - DCE 504**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine about hydrological cycle, precipitation and its measurement, hyetograph and hydrograph generation and their importance.
2. Examine evaporation and infiltration.
3. Examine watershed management and its importance.
4. Explain the basic knowledge about the processing of rainfall data before using for further analysis, hyetograph and hydrograph development and their importance, and brief idea regarding watershed management.
5. Explain about the soil and water conservation.
6. Explain about the water harvesting and Dams.

**Name of the course: CIVIL ENGINEERING ESTIMATING & COSTING**

**Subject Code: - DCE 505**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine about basic units, measurement and quantities.
2. Prepare rate analysis of different item works, quantity of items and valuation of properties.
3. Examine about the methods of computing the quantities.
4. Examine the estimate of compound wall, Two room up to plinth, Single storey and two storey residential building, R.C.C Beam, R.C.C column with footing, R.C.C slab, R.C.C weather shed and R.C.C retaining wall.
5. Explain the basic measurements method, rate analysis, quantity of items
6. Explain about specifications and rate analysis.
7. Explain the estimation and valuation.

**Name of the course: ENVIRONMENTAL ENGINEERING – I**

**Subject Code: - DCE 506**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Examine about quality of water and waste water and also have general idea about different methods of removing impurities.
2. Examine about land pollution, air pollution and noise pollution.
3. Explain the basic knowledge about the quality of water and wastewater.
4. Explain different techniques for treatment of water and waste water.
5. Examine the about global environmental issues and pollution control acts

## VI Semester

**Name of the course:** THEORY OF STRUCTURE – II

**Subject Code:** - DCE 601

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To impart basic knowledge about analysis methods of structure.
2. To give a comprehensive insight structural analysis which are used for the analysis of various structures.
3. Analyze indeterminate structures like fixed and continuous beams of simple structures.
4. Apply moment distribution method to beams of simple structures.
5. Calculate slope and deflection of various beams of simple structures.
6. Analyze columns and struts of simple structures.
7. Calculate direct and bending stresses of simple structures.

**Name of the course:** DESIGN OF R.C.C STRUCTURES – II

**Subject Code:** - DCE 603

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Analyze the axially loaded column.
2. Differentiate long and short column design.
3. Apply calculation of point load and uniformly distributed load problem.
4. Identify the type of retaining walls.
5. Distinguish between prestressed concrete method.

**Name of the course:** DESIGN OF STEEL STRUCTURES – II

**Subject Code:** - DCE 602

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Identify the design of column basis.
2. Analyze the design of beams.
3. Illustrate the methods of plastic analysis
4. Prioritize the factors affecting plastic moment capacity
5. Determine the basic components of roof truss

**Name of the course:** CONSTRUCTION MANAGEMENT AND ACCOUNTS

**Subject Code:** - DCE 604

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To investigate the construction works management and equipment use on the site.
2. Experiment with of new construction activities.
3. To explain about scheduling techniques, CPM & PERT.
4. To summarize the knowledge and understanding of construction works and its management on the field.
5. To identify about the construction planning, scheduling & controlling.

6. To distinguish about the material and labour management, equipment management, safety management and disaster management.

**Name of the course: IRRIGATION ENGINEERING II**

**Subject Code: - DCE 605**

**Course Outcomes:**

**Upon successful completion of the course, students would be able:**

1. Justify the crop water relationships
2. Different methods of river training works
3. Identify the duty of wells
4. Experiment with cross drainage works
5. Illustrate the distribution works



# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

Dept./Branch: Computer Science & Engineering

**Programme Outcome, Programme Specific Outcome  
and Course Outcome**

**1. B.Tech (Computer Science & Engineering)**

**B.Tech**

**Computer Science and Engineering**

## 1. Name of the Program: *B.Tech.*

### Program Outcomes:

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **2. Name of the Specific Program**

### ***B.Tech. Computer Science and Engineering***

#### **Program Specific Outcomes:**

1. To produce quality engineering graduates by imparting quality education and research in the field of computer science and information technology in order to respond swiftly the challenges of 21st century.
2. To train students with good extensiveness of information in the field of computer science and related multidisciplinary engineering streams so as to formulate engineering principles, order to offer techno commercially feasible and socially acceptable solutions to real life engineering problems.
3. An ability to apply knowledge of mathematical, scientific, and computer science to evaluate, analyze, synthesize, model and integrate technologies to develop new computer system for applied engineering systems.
4. An ability to generate optimized solution by formulating and implementing analytical tools for upcoming issues in the field of computer science and engineering.

### 3. Course Outcomes

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** BSC-CS301: MATHEMATICS III

**Outcomes:**

After completing the course, students should be able to:

1. Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution.
2. Solve the problems choosing the most suitable method.
3. Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution.
4. Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations.
5. Formulate and solve differential equation problems in the field of Industrial Organisation Engineering.
6. Use an adequate scientific language to formulate the basic concepts of the course.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** PCC-CS302, Discrete Mathematical Structure

**Outcomes:**

At the end of the course, the student should be able to:

1. To develop understanding of Logic Sets and Functions.
2. To use mathematical reasoning techniques including induction and recursion.
3. To understand and apply counting techniques to the representation and characterization of relational concepts.
4. To develop an understanding of how graph and tree concepts are used to solve problems arising in the computer science.
5. To evaluate the solutions of technical problems to other professionals.
6. Know how to apply tools and ideas from mathematics and theoretical computer science to structure and solve complex problems

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** PCC-CS303, Data Structure and Algorithms, through 'C'

**Outcomes:**

At the end of the course, the student should be able to:

1. Understand and remember algorithms and its analysis procedure.
2. Introduce the concept of data structures through ADT including List, Stack, Queues.
3. To design and implement various data structure algorithms.
4. To analyze various techniques for representation of the data in the real world.
5. To develop application using data structure algorithms.
6. To Compute the complexity of various algorithms.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** ESC-CS304, DIGITAL ELECTRONICS

**Outcomes:**

1. Employ the codes and number systems converting circuits and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.
2. Understand different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
3. Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and

- environmental constraints
- Analyze, design and implement sequential logic circuits. Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.
  - Evaluate frequency response to understand behavior of Electronics circuits.
  - Create and analyze of electronic circuits

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** ESC-CS305, ANALOG ELECTRONIC CIRCUITS

**Outcomes:**

- This course develops a deep understanding of the fundamentals and principles of analog circuits and electronic devices in electrical and electronic engineering. Acquire basic knowledge of physical and electrical conducting properties of semiconductors.
- Develop the Ability to understand the design and working of BJT / FET amplifiers.
- Able to design amplifier circuits using BJTs and FET's. and observe the amplitude and frequency responses of common amplifier circuits
- Analyse the effect of negative feedback on different parameters of an Amplifier and different types of negative feedback topologies.
- Evaluate the effect of positive feedback and able to design and working of different Oscillators using BJTs.
- Create the skill to build, and troubleshoot Analog circuits.

**Semester/Year:** III<sup>rd</sup>/II<sup>nd</sup>

**Name of the Course:** HSMC-CS306,

Economics for Engineers

**Outcomes:**

- This course will familiarize the prospective engineers with elementary principles of economics.
- It also deals with acquainting the students with standard concepts and tools that they are likely to find useful in their profession when employed in the firm/industry/corporation in public or private sector.
- It also seeks to create and awareness about the status of the current economic parameters /indicators/ policy debates. All of this is a part of the quest to help the students imbibe soft skills that will enhance their employability.

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** BSC-CS-401, Optimization Techniques

**Outcomes:**

At the end of the course, the student should be able to:

- Solve a problem the best way possible (optimization). As a typical example we report the design of the operation of an industrial installation to maximize production or minimum losses and ultimately to maximize profit.
- Adapt to new situations: Evaluation, analysis and use problem optimization methods.
- Understand importance of optimization of industrial process management
- Apply basic concepts of mathematics to formulate an optimization problem
- Analyse and appreciate variety of performance measures for various optimization problems
- Create various optimization techniques.

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** PCC-CS402, Object Oriented Programming Using C++

**Outcomes:**

- Use the characteristics of an object-oriented programming language in a program.
- Remember the basic object-oriented design principles in computer problem solving.
- Apply the concepts with advanced features of the C++ programming language
- Analyze the procedural and object oriented paradigm with concepts of streams, classes,

functions, data and objects.

5. Understand dynamic memory management techniques using pointers, constructors, destructors, etc.
6. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.
7. Create the real time applications using C++

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** PCC-CS403, Computer Organization & Architecture

**Outcomes:**

1. To understand basic structure of computer.
2. Ability to perform computer arithmetic operations.
3. Ability to understand control unit operations.
4. Ability to design memory organization that uses banks for different word size operations.
5. Ability to understand the concept of cache mapping techniques.
6. Ability to evaluate the concept of I/O organization.
7. Ability to create conceptualizes instruction level parallelism.

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** PCC-CS404, Design & Analysis of Algorithms

**Outcomes:**

Student should be able to:

1. Remember the correctness of algorithms using inductive proofs and invariants.
2. Understand worst-case running times of algorithms using asymptotic analysis.
3. Apply the concepts of divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
4. Analyze the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic-programming algorithms, and analyze them.
5. Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.
6. Create the major graph algorithms and their analyses. Employ graphs to model engineering problems, when appropriate. Synthesize new graph algorithms and algorithms that employ graph computations as key components, and analyze them.

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** ESC-CS405, COMMUNICATION FUNDAMENTALS

**Outcomes:**

Student should be able to:

1. Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.
2. Perform the time and frequency domain analysis of the signals in a digital communication system.
3. Understand the blocks in a design of digital communication system.
4. Analyze Performance of communication system.
5. Able to evaluate and promote the awareness of the life-long learning, business ethics, professional ethics and current marketing scenarios.
6. Create basic concepts of spread spectrum technique and its applications to minimize the effect of noise in data communication.

**Semester/Year:** IV<sup>th</sup>/II<sup>nd</sup>

**Name of the Course:** HSMC-CS406, Entrepreneurship Development

**Outcomes:**

At the end of this course, students will demonstrate the ability to

1. Understand the concept of Business Reforms, Process of Liberalization , Business Idea.
2. Understand the concept of Small Scale Business Planning, Requirements , Govt. & Institutional Agencies, Formalities
3. Understand the concept of Market Identification, Survey Key components , Enterprise Management , E-Commerce: Concept and Process

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PCC-CS501, Computer Graphics

**Outcomes:**

Student should be able to:

1. Remember the structure of modern computer graphics systems
2. Understand the basic principles of implementing computer graphics primitives
3. Apply the key algorithms for modeling and rendering graphical data
4. Analyze, design and problem solving skills with application to computer graphics
5. Gain experience in constructing interactive computer graphics programs using OpenGL.
6. Create practical applications animations to continue professional development

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PCC-CS502, Operating Systems

**Outcomes:**

Student should be able to:

1. Create processes and threads.
2. Understand algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time.
3. Apply the concepts for a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time.
4. Design and implement file management system.
5. To evaluate the components and management aspects of concurrency management
6. To create programmatically to implement simple OS mechanisms

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PCC-CS503, Database Management System

**Outcomes:**

Student should be able to:

1. For a given query remember relational algebra expressions for that query and optimize the developed expressions
2. For a given specification of the requirement design the databases using ER method and normalization.
3. For a given specification construct the SQL queries for Open source and Commercial DBMS - MYSQL, ORACLE, and DB2.
4. For a given query optimize its execution using Query optimization algorithms
5. For a given transaction-processing system, evaluate the transaction atomicity, consistency, isolation, and durability.
6. Implement the isolation property, including locking, time stamping based on concurrency control and serial ling of scheduling.

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PCC-CS504, PROGRAMMING IN JAVA

**Outcomes:**

Student should be able to:

1. To remember of the structure and model of the Java programming language, (knowledge)
2. Understand the Java programming language for various programming technologies



(understanding)

3. Develop software in the Java programming language, (application)
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
5. Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)
6. Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PEC-CS505.1, Software Engineering

**Outcomes:**

Student should be able to:

1. Understand the process of developing new technology and the role of experimentation set out the answers to key questions about software engineering.
2. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
3. Identify, formulates, and solves engineering problems.
4. An ability to work in one or more significant application domains
5. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle
6. Ability to create the techniques and tools necessary for engineering practice

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PEC-CS505.2, Information Theory and Coding

**Outcomes:**

Student should be able to:

1. Calculate the information content of a random variable from its probability distribution.
2. Relate the joint, conditional, and marginal entropies of variables in terms of their coupled probabilities.
3. Define channel capacities and properties using Shannon's Theorem construct efficient codes for data on imperfect communication channels.
4. Generalize the discrete concepts to continuous signals on continuous channels.
5. To analyze an understanding of the theoretical principles of source coding.
6. Describe the information resolution, compression, and efficient coding properties.

**Semester/Year:** V<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:** PEC-CS505.3, System Analysis and Design

**Outcomes:**

1. Knowledge and understanding - Understand the principles and tools of systems analysis and design - Understand the application of computing in different context - Understand the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality
2. Cognitive skills (thinking and analysis). - Solve a wide range of problems related to the analysis, design and construction of information systems - Analysis and Design of systems of small sizes
3. Communication skills (personal and academic). - Be able to present projects
4. Practical and subject specific skills (Transferable Skills). - Plan and undertake a major individual project, prepare and deliver coherent and structured verbal and written technical reports.
5. Evaluate information systems projects to identify various aspects of feasibility of these projects.
6. Develop team-building and communication and interviewing skills, which are essential to



**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC-CS602                      Application and Development Using Java

**Outcomes:**

1. Understand Advantages of Servlet technology in Web development over CGI
2. Able to develop a web application using Servlet, JSP and Struts.
3. Develop Swing-based GUI.
4. Develop client/server applications and TCP/IP socket programming.
5. Update and retrieve the data from the databases using SQL
6. Create distributed applications using RMI.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC CS603.1                      Formal Language & Automata Theory

**Outcomes:**

Student should be able to:

1. Understand a formal notation for strings, languages and machines.
2. Design finite automata to accept a set of strings of a language.
3. For a given language determine whether the given language is regular or not.
4. Apply context free grammars to generate strings of context free language .
5. Analyze equivalence of languages accepted by Push Down Automata and languages generated by context free grammars
6. Evaluate the hierarchy of formal languages, grammars and machines.
7. Distinguish between computability and non-computability and Decidability and undesirability.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC-CS603.2                      Object Oriented Modeling And Design

**Outcomes:**

Student should be able to:

1. Analyse, design, document the requirements through use case driven approach.
2. Identify, analyse, and model structural and behavioural concepts of the system.
3. Develop, explore the conceptual model into various scenarios and applications.
4. Apply the concepts of architectural design for deploying the code for software.
5. Ability to analyze and model software specifications.
6. Ability to evaluate object-based views for generic software systems.
7. Ability to create robust software components.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC CS603.3                      Software Testing

**Outcomes:**

Upon successful completion of this course student will:

1. Have an ability to apply software testing knowledge and engineering methods.
2. Have an ability to design and conduct a software test process for a software testing project.
3. Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.
4. Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
5. Have an ability to use various communication methods and skills to communicate with their

- teammates to conduct their practice- oriented software testing projects.
6. Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems
  7. Have an ability to use software testing methods and modern software testing tools for their testing projects.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC CS604.1 Artificial Intelligence

**Outcomes:**

Upon successful completion of this course student will be able:

1. Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
2. Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
3. Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing.
4. Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.
5. Evaluate and solve problems with uncertain information using Bayesian approaches.
6. Apply concept Natural Language processing to problems leading to understanding of cognitive computing.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC CS604.2 Real Time Systems

**Outcomes:**

Student should be able to:

1. An ability to remember advanced concepts in theory of computer science;
2. An ability to understand advanced concepts in applications of computer science;
3. An ability to apply knowledge of advanced computer science to formulate the analyze problems in computing and solve them;
4. An ability to analyze emerging concepts in theory and applications of computer science;
5. An ability to evaluate, design and conduct experiments as well as to analyze and interpret data; and
6. An ability to create real time applications.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

PCC CS604.3, Logical and Functional Programming

**Outcomes:**

1. The course offers a comprehensive introduction to the principles of logic and functional programming, using one representative programming language in each case.
2. The issues addressed in each case include facts, rules, and query formation in logic programming, simple and composite terms, lists and recursion.
3. Students acquire expertise in writing logic programs for a number of simple applications.
4. In the functional programming part of the course, students become familiar with simple and composite functions, recursion and iteration and the typed system employed by most functional programming languages.
5. Evaluate and use of recursion for expression of algorithms
6. Create practical into formal concepts used as a theoretical basis for both paradigms

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

OEC-CS605.1                      Open Source Technologies

**Outcomes:**

Upon successful completion of this course student will:

1. Able to recognize the benefits and features of Open Source Technology.
2. Interpret, Contrast and compare open source products among themselves
3. Understand and demonstrate Version Control System along with its commands.
4. To analyze basic idea of Open source technology.
5. To evaluate their software development process.
6. To understand the role and create the future of open source software in the industry along with the impact of legal, economic and social issues for such software

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

OEC-CS605.2                      Introduction to Data Analytics

**Outcomes:**

Upon successful completion of this course student will:

1. Understand injecting data into Hadoop.
2. Learn distributed systems with Apache Hadoop.
3. Understand how to apply Hadoop ecosystem components.
4. Analyze the important processing tool in Hadoop with programming language like written in Java, Learn about the master – slave nodes.
5. Evaluate the concepts of Hadoop.
6. Learn installation of VM player and Hadoop, Important Configuration files in a Hadoop Cluster, Linux commands, Importing Hadoop Jars, Data Loading Techniques.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

OEC-CS605.3                      Introduction to Web Security

**Outcomes:**

1. To develop a human resource specialized in cybercrime investigation, which can be assistance to our law enforcement agencies.
2. To understand some of the factors driving the need for network security
3. To identify and apply particular examples of attacks
4. To analyze and define the terms vulnerability, threat and attack
5. To identify and evaluate physical points of vulnerability in simple networks
6. To create symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.

**Semester/Year:** VI<sup>th</sup>/III<sup>rd</sup>

**Name of the Course:**

MC-606                      Indian Constitution

**Outcomes:**

At the end of this course, students will demonstrate the ability to

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.

2. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
3. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:**

PCC-CS701 Compiler Construction

**Outcomes:**

At the end of this course, students will demonstrate the ability to :

1. For a given grammar, understand the specification develop the lexical analyser
2. For a given parser specification design top-down and bottom-up parsers
3. Develop syntax directed translation schemes
4. Analyze block control flow, DAG representation, optimization and code generation.
5. Evaluate, define and implement various parsing techniques
6. Create and implement various storage allocation strategies, parameter passing and data structures using symbol table

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:** PCC-CS702 Relational Database Management System

**Outcomes:**

Upon successful completion of this subject students should be able to:

1. Install, configure, and interact with a relational database management system.
2. Describe, define and apply the major components of the relational database model to database design.
3. Learn and apply the Structured Query Language (SQL) for database definition and manipulation; Utilize a database modeling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships.
4. Analyze the basic concepts of Concurrency Control & database security.
5. Evaluate options to make informed decisions that meet data storage, processing, and retrieval needs.
6. Able to create, build, populate, and document a secure, normalized database that meets business requirements using industry standards and best practices

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:** PEC-CS703 .1, Image Processing & Pattern Recognition

**Outcomes:**

At the end of the course, students will demonstrate the ability to:

1. Mathematically represent the various types of images and analyze them.
2. Process these images for the enhancement of certain properties or for optimized use of the resources.
3. Develop algorithms for image compression and coding
4. Use Image Pre-processing methods
5. Use Image segmentation methods
6. Choose shape description methods appropriate to a problem
7. Create classification methods appropriate to a problem

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:**

PEC-CS703 .2                      Cloud Computing

**Outcomes:**

At the end of this course, students will demonstrate the ability to :

1. Analyze the Cloud computing setup with it's vulnerabilities and applications using different architectures.
2. Design different workflows according to requirements and apply map reduce programming model.
3. Apply and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms.
4. Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds
5. Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application
6. Broadly educate to know the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:**

PEC-CS703 .3                      Distributed Systems

**Outcomes:**

1. Remember about the communication and interconnection architecture of multiple computer systems.
2. Understand the inherent difficulties that arise due to distributed-ness of computing.
3. Apply the knowledge of networks & protocols, mobile & wireless computing and their applications to real world problems.
4. Analyze core architectural aspects of distributed systems;
5. Evaluate details the main underlying components of distributed systems (such as RPC, file systems)
6. Create and apply important methods in distributed systems to support scalability and fault tolerance;

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:**

PEC-CS 704.1                      Android Programming

**Outcomes:**

At the end of this course, students will demonstrate the ability to:

1. Understand the importance of life-long learning, and be prepared to learn and understand new technological developments in their field.
2. Understand the ethical and technical context of their computer Science contributions and their obligations therein.
3. Demonstrate and utilize necessary technical knowledge and skills both in breadth and depth, to pursue the practice or advanced study of computer science.
4. Demonstrate the advantages of using object oriented programming for program development.
5. Demonstrate some of the methods used to secure data and communications.
6. Create a class that describes and implements an abstract data type in computer science.

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup> **Name of the Course:** PEC-CS 704.2

**Deep Learning & Neural Networks**

**Outcomes:**

1. Identify the deep learning algorithms which are more appropriate for various types of

learning tasks in various domains.

2. Implement deep learning algorithms and solve real-world problems.
3. Implement, train, and evaluate neural networks using existing software libraries
4. Analyze present and critically assess current research on neural networks and their applications
5. Evaluate the concepts and techniques introduced in the course to your own research
6. Create and carry out a research project on neural networks within given time limits

**Semester/Year: VII<sup>th</sup>/IV<sup>th</sup> Name of the**

**Course:**

PEC-CS 704.3

Data Mining & Warehousing

**Outcomes:**

At the end of this course, students will demonstrate the ability to :

1. Examine the types of the data to be mined and apply preprocessing methods on raw data.
2. Discover interesting patterns, analyze supervised and unsupervised models and estimate the accuracy of the algorithms.
3. Identify the scope and necessity of Data Mining & Warehousing for the society.
4. Describe the designing of Data Warehousing so that it can be able to solve the root problems.
5. To understand various tools of Data Mining and their techniques to solve the real time problems.
6. Design data warehouse with dimensional modelling and apply OLAP operations.

**Semester/Year: VII<sup>th</sup>/IV<sup>th</sup>**

**Name of the Course:**

OEC-CS 705.1

Introduction to IOT

**Outcomes:**

At the end of this course, students will demonstrate the ability to :

1. Understanding of IoT value chain structure (device, data cloud), application areas and technologies involved
2. Understand IoT sensors and technological challenges faced by IoT devices, with a focus on wireless, energy, power, RF and sensing modules
3. Market forecast for IoT devices with a focus on sensors
4. Explore and learn about Internet of Things with the help of preparing projects designed for Raspberry Pi
5. To Implement Data and Knowledge Management and use of Devices in IoT Technology.
6. Create data from various sources in real-time and take necessary actions in an intelligent fashion.

**Semester/Year: VII<sup>th</sup>/IV<sup>th</sup>**

**Name of the Course:**

OEC-CS 705.2 Introduction to NLP

**Outcomes:**

1. To remember a given text with basic Language processing features, design an innovative application using NLP components.
2. Able to understand the fundamental concept of NLP, Regular Expression, Finite State Automata along with the concept and application of word tokenization, normalization, sentence segmentation, word extraction, spell checking in the context of NLP.
3. Able to understand the concept of Morphology such as Inflectional and Derivational Morphology and different morphological parsing techniques including FSTs.
4. Able to understand the concepts related to language modeling with introduction to Ngrams, chain rule, smoothing, Witten Bell discounting, backoff, deleted interpolation, spelling and word prediction and their evaluation along with the concept of Markov chain, HMM, Forward and Viterbi algorithm, POS tagging.
5. Able to understand the concept of different text classification techniques, sentiment analysis, concepts related to CFG in the context of NLP.



6. Able to understand the concept of lexical semantics, lexical dictionary such as WordNet, lexical computational semantics, distributional word similarity and concepts related to the field of Information Retrieval in the context of NLP.

**Semester/Year:** VII<sup>th</sup>/IV<sup>th</sup>

**Name of the Course:**

OEC-CS 705.3 Introduction to ML

**Outcomes:**

1. To understand the concept of Machine learning and range of problems that can be solved by machine learning.
2. To compare different types of learning algorithms and apply machine learning concepts in real life problems.
3. To develop an appreciation for what is involved in learning from data.
4. To analyze a wide variety of machine learning algorithms.
5. To evaluate and understand how to apply a variety of learning algorithms to data.
6. To perform evaluation of learning algorithms and model selection.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

### Dept./Branch: Electrical Engineering

#### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Tech (Electrical Engineering)
2. M. Tech (Electrical)
  - a) CSE (Control System Engineering)
  - b) PS (Power System)
3. Diploma (Electrical Engineering)

**B.Tech.**  
**Electrical Engineering**

**1. Name of the Program: B.Tech.**

**Program Outcomes:** develop skills which give more practical knowledge of technology like Information Technology, research & development, networking, Telecommunication, automobile, textile, aeronautical and other growing industries as well.

**2. Name of the Specific Program: B.Tech (EE)**

**Program Specific Outcomes:** concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism. Develop the skill to understand the computer engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, and electronics.

### 3. Course Outcomes

**Semester/Year: III/II**

**Course Name: Electrical Circuit Analysis**

**Course Code: PCC-EE301**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basic elements of the circuit, terminology used and various quantities involved.
2. To apply network theorems for the analysis of electrical circuits.
3. To analyse circuits behaviour in the sinusoidal steady-state condition (single-phase and three-phase circuit).
4. To evaluate electrical circuit using Laplace Transforms
5. To synthesize different electrical circuit of two port network, transmission line and different parameter of electrical circuit in the relevant domain.

**Course Name: Analog Electronics**

**Course Code: PCC-EE302**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the characteristics of transistors.
2. To apply analog electronics for the analysis of electrical circuits.
3. To analyse and design and various rectifier and amplifier circuits.
4. To evaluate electronic circuit using microcontroller
5. To synthesize different electronic circuit of BJT, MOSFET and operational amplifiers different parameter of electronic circuit in the relevant domain.

**Subject Name: Electrical Machines I**

**Subject Code: PCC-EE303**

**Course Outcome:**

By the end of this course, students would be able

1. To understand how energy conversion in a magnetic field takes place and the role of energy conversion in various electrical machines.
2. To identify various terminals of a dc machine and understand the role of different parts of the machine along with their working.
3. To identify difference in the role and construction of single phase and three phase transformers and understand the use of these machines in our daily world.
4. To correlate the theoretical knowledge gained with the practical and should understand poly-phase connections, open delta connection and role of tertiary windings in a transformer.

**Name of the Course: Electrical Measurements & Measuring Instruments.**

**Course Code: PCC-EE304**

**Outcomes:**

1. Students should have an understanding of the different standards & errors, general theory of analog measuring instruments.
2. To apply & learn the potentiometers bridges magnetic measurements instrument transformers.

3. To analyse the transducers, students learn the physical properties such as temperature, pressure, flow, force, and many others can be converted into electrical signals, which can then be conveniently measured and recorded.
4. Learn to Measure various electrical parameters with accuracy, precision, resolution.
5. Students evaluate the Use of AC and DC bridges for relevant parameter measurement.
6. Learn the selection of appropriate passive or active transducers for measurement of physical phenomenon.
7. To synthesize the use of Signal Generator, frequency counter, CRO and digital IC tester for appropriate measurement.
8. Understand the test and troubleshoot electronic circuits using various measuring instruments.
9. Maintain various types of test and measuring instruments.

**Semester/Year: IV/II**

**PCC-EE401 Digital Electronics**

On completion of this course content the student should be able to

1. Understand the basics of binary numbers.
2. Identify various types of gates and understand their applications.
3. Analyze working of multiplexers & de-multiplexers.
4. To design and compare various type of gates and flip-flops.

**Course Name: Electrical Machine-II**

**Course Code: PCC-EE402**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the concepts of rotating magnetic fields and operation of ac machines.
2. To apply principles of ac machine for the analysis of electrical circuits.
3. To analyse performance characteristics of ac machines
4. To evaluate electrical machine using MAT Lab.
5. To synthesize different electrical parameter of revolving field theory, torque, starting and speed control of ac machines and parallel operations.

**Course Name: Power Electronics-I**

**Course Code: PCC-EE403**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basics of Power Electronics.
2. To apply advance techniques over conventional electronics.
3. To analyse Analyze and compare the various convertor system.
4. To evaluate the various parameters of power electronics convertors
5. To synthesize converters and design the components of them, under various load types.

**Name of the Course: Signals and System**

**Course Code: PCC-EE404**

**Outcomes:**

1. To understand the mathematical description and representation of continuous and discrete time & signals and systems.
2. Apply & develop the input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.
3. To analyse, understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.
4. Evaluate the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s- domain.
5. Synthesize the basic concept of probability, random variables & random signals and develop the ability to find correlation, CDF, PDF and probability of a given event.

**Course Name: Electrical Material**

**Course Code: PCC-EE405**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the different properties and important characteristics with application of specific conductor materials.
2. To create the clear concept of superconducting materials as per extra ordinary applications.
3. To synthesize the behaviour of dielectric materials on the basis of various properties
4. To identify and understand the characteristics of magnetic materials including various alloys.
5. To evaluate the practical implementation of semiconductor materials with their electric and electronic properties.

**Course Name: Indian Constitution**

**Course Code: MC-EE406**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the term and meaning of Constitution and its salient features and the right that a common citizen uphold in the country.
2. To identify and separate the administrative structure of central governance with the role of executives.
3. To synthesize and understand the power of state government and its cabinets on an account of administration including role and positions.
4. To critically assess the concept of federalism with enumerating the function of local governance in rural and urban areas.
5. To understand and get familiar with the whole process of election in India with working and power of the autonomous authority of election commission in order to prioritize the welfare of the scheduled, backward and women.

**Semester/Year: V/III**

**Course Name: Power Electronics-II**

**Course Code: PCC-EE501**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basics of Various convertors.
2. To apply advance techniques over conventional electronics.
3. To analyse Analyze and compare the various convertor system.
4. To evaluate the various parameters of power electronics convertors
5. To synthesize ac voltage controllers, cyclo-converters , switching mode regulators and inverter ac voltage controllers, cyclo-converters , switching mode regulators and inverter

**Name of the Course: Control Systems**

**Course Code: PCC-EE502**

**Outcomes:**

1. To understand and develop the mathematical model of the physical systems.
2. To apply and analyze the response of the closed and open loop systems.
3. To analyse the stability of the closed and open loop systems.
4. To evaluate and Design the various kinds of compensator.
5. To synthesize, develop and analyze state space models

**Course Name: Microprocessors**

**Course Code: PCC-EE503**

**Course Outcome:**

Upon successful completion of the course, students would be able:

- 1 To understand basic architecture of the microprocessors, terminology used and various signal involved.
- 2 To apply assembly language programming for the analysis.
- 3 To analyse circuits interfacing of peripheral devices such as General Purpose I/O, ADC, DAC, timers, counters, memory.
- 4 To evaluate synchronous and asynchronous Communication using RS232, SPI, I2C.
- 5 To synthesize different LED, LCD, sensor, Stepper motor keyboard and DC Motor interfacing.

**Name of the course: POWER GENERATION & CONTROL**

**Subject Code: 5EE4N**

**Course outcomes**

At the end of the course, the student will have the ability to

1. Understand various sources of electrical energy and different factors related to generating stations .
2. Analyze general layout, major equipments and auxiliaries in thermal power station.
3. Illustrate the basics of hydro power station.
4. Assess the theory and practices of conventional and non-conventional power generation method.
5. Understanding of environmental impact of different generating stations.
6. Compute economic schedule for energy generating system.
7. Understanding of cause and effect of low power factor and different method to improve it.
8. Understanding of power plant economics and calculate tariff for different customers.
9. Students will learn about Location, site selection, general layout and operation of thermal power plant.



### **PEC-EE504.1 Electrical Machine Design**

By the end of this course, students would be able to

1. Understand the basic principles of electrical machine design and factors and limitations in design.
2. Calculate the magnetizing current, coils for given ampere-turns, real and apparent flux densities.
3. Apply the design principles in the designing of real time machines like dc machines, ac machines etc.
4. Correlate the theoretical knowledge gained with the practical and understand the limitations and constraints in the design of real time machines and should also precisely understand the difference between theory and practical machines.

### **Course Name: Transmission and Distribution of Electrical Power**

**Course Code: OEC-EE 505.1**

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the basics of Transmission and distribution with its single line diagram and decide the scheme and types of overhead conductors with appropriate supports and insulators and underground cables along with their maintenance.
2. To analyze the transmission line parameters and investigate different types of effect such as skin effect, proximity effect and Ferranti effect also investigate the string efficiency and the effect of CORONA losses with the method of its improvement
3. To analyze performance of transmission line on the basis of length i.e. short medium and long.
4. To critically assess the concept, advantages and limitations of Extra High Voltage AC (EHVAC) transmission lines with available routes in India and also able to compare it to HVDC transmission lines.
5. To evaluate the role of various types of substations and choose suitable equipment for Distribution substations.

### **Course Name: Power Plant Engineering**

**Course Code: OEC-EE 505.2**

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand *the concept of* Coal based thermal power plants , Gas turbine and combined cycle power plants, Basics of nuclear energy conversion , Hydroelectric power plants
2. To apply power plant engineering for the analysis of generating stations.
3. To analyse circuits behaviour in the sinusoidal steady-state condition (single-phase and three-phase circuit).
4. To evaluate energy, economic and environmental issues, power tariffs.
5. To synthesize different electrical power generation and power tariffs pollution control technologies.

**Semester/Year: VI/III**

**Name of the course: Electrical Traction System**

**Subject Code: PCC-EE602**

**Course outcomes**

Course outcomes this course provides the knowledge Electrical Traction System. After study through lectures and assignments, students will be able to

1. Understand different kinds of drive and control systems as used in electric traction along with the details of its power supply arrangement.
2. Study and analyze of train movement and energy consumption and simplified speed time curves for crest speed, average speed and schedule speed.
3. Learn speed/ torque characteristics of traction motors and analyze behavior of electric motor during starting, running, and breaking.
4. Awareness of technology of electric and hybrid electric vehicles
5. Achieve thorough knowledge about supply of power for electric traction, Feeding and distribution systems, current collecting device and protective device of electric traction.
6. To impart the knowledge of electric traction, electric welding and electrolytic process

**Course Name: Electromagnetic Field Theory**

**Course Code: PCC-EE603.1**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the basic laws of electromagnetism.
2. To obtain the electric and magnetic fields for simple configurations under static conditions
3. To analyse time varying electric and magnetic fields.
4. To evaluate Maxwell's equation in different forms and different media.
5. To synthesize the concept of propagation of EM waves.

**Name of the Course: Digital Signal Processing**

**Course Code: PEC-EE 603.2**

**Outcomes:**

1. To understand, Interpret, represent and process discrete/digital signals and systems.
2. To apply the thorough understanding of frequency domain analysis of discrete time signals.
3. To analyse the Ability to design & analyze DSP systems like FIR and IIR Filter etc.
4. To evaluate Practical implementation issues such as computational complexity, hardware resource limitations as well as cost of DSP systems or DSP Processors.
5. To synthesize the understanding of spectral analysis of the signals.

**Course Name: Power System Protection**

**Course Code: PEC-EE 604.1**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basic elements of the circuit, terminology used and various quantities in protection system.
2. To apply protection techniques respective to the different section i.e. generation, transmission system.
3. To analyse Analyze and compare specified protection systems
4. To evaluate the various parameters to approach various protection system
5. To synthesize different type of circuit breakers performance based on which selection of circuit breaker can be made for a given application

**Course Name: Line Commutated and Active Rectifiers**

**Course Code: PCC-EE604.3**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the concept of Diode and Thyristor Rectifier.
2. To obtain 6-phase ac voltage from 3-phase.
3. To analyse the operation of line-commutated rectifiers.
4. To evaluate operation of PWM rectifiers – operation in rectification and regeneration
5. To Synthesize Single phase inverter and three phase inverter,

**Name of the course: Analog and Digital Communication**

**Subject Code: OEC-EE 605.2**

**Course outcomes**

Course outcomes this course provides the knowledge of analog and digital communication system analysis and design. After study through lectures and assignments, students will be able to

1. Gain the knowledge of components of analogue communication system.
2. To analyze various methods of baseband/band pass Analogue transmission and detection.
3. Analyze and allocate performance objectives to components of an analogue communication system and to design analogue communication systems.
4. To evaluate the performance of analogue communications in the presence of noise.
5. Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.
6. Perform the time and frequency domain analysis of the signals in a digital communication system.

**OEC-EE605.3 Power System Dynamics & Control**

By the end of this course, students would be able to

1. Understand the problem of power system stability and its impact on the system.
2. Analyze linear dynamical systems and use of numerical integration methods.
3. Understand the methods to improve stability.
4. Model different power system components for the study of stability.

**Semester/Year: VII/ IV**

Course Name: HVDC Transmission System

Course Code: PCC-EE701

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the advantages of dc transmission over ac transmission .
2. To apply HVDC for the analysis of analysis of line commutated and Voltage Source converters
3. To analyse stability enhancement using HVDC control
4. To evaluate multi terminal and multi infeed system.
5. To synthesize different control of HVDC converters and transmission technology.

**Course Name: Power Systems - II**

**Course Code: PCC-EE702**

**Course Outcome:**

Upon successful completion of the course, students would be able

1. To understand numerical methods to analyse a power system in steady state.
2. To apply stability constraints in a synchronous grid.
3. To analyse different methods to control the voltage, frequency and power flow.
4. To evaluate the monitoring and control of a power system.
5. To Synthesize the basics of power system economics.

**Course Name: Electric Drives**

**Course Code: PEC-EE 703.1**

**Course Outcome:**

Upon successful completion of the course, students would be able:

- 1 To understand torque-speed characteristics of dc motors and induction motors, terminology used and various graphs involved.
- 2 To apply steady-state operation of multi-quadrant chopper fed dc drives, and regenerative braking.
- 3 To analyse speed-control of dc motors and induction motors.
- 4 To evaluate control structure of DC drive, inner current loop and outer speed loop, dynamic model of dc motor.
- 5 To synthesize power electronic converters used for dc motor and induction motor speed control.

**Name of the course: Industrial Electrical Systems**

**Subject Code: PEC-EE704.1**

**Course outcomes**

Course outcomes this course provides the knowledge of Industrial Electrical Systems analysis and design. After study through lectures and assignments, students will be able to

1. To understand the basics of electrical system components and electrical safety practices.
2. To learn about the electrical wiring systems for residential, commercial and industrial
3. Understand the need for good illumination and hence understand the Laws of Illumination.

4. Knowledge of the Entities in the illumination systems and their units, measurement of illumination- determination of total luminous flux emitted by different sources
5. Enable the students to design of interior and exterior lighting systems- illumination levels for various purposes light fittings- factory lighting- flood lighting-street lighting.
6. To impart the knowledge of HT connection, industrial substation, Transformer selection and PCC, MCC panels.
7. An understanding of Distribution Automation System –SCADA systems, PLC based control system and Automation.

**Course Name: Wind and Solar Energy Systems**

**Course Code: OEC-EE705.1**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To Understand wind energy utilization across the Indian and global scenario.
2. To evaluate the various technologies for wind generators and their controls.
3. To Identify the key factors to collect maximum efficiency from the solar resource.
4. To Understand and develop the smart automation for the controlling of converters used in Solar systems.
5. To synthesize the operation of solar PV and wind farm under grid connected and disconnected mode also able to deal with the challenges come during synchronization and asynchronization.

**Course Name: Electrical and Hybrid Vehicles**

**Course Code: OEC-EE 705.2**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basics of Basics of vehicle performance.
2. To apply configuration and control of Motor drives.
3. To analyse Analyze and compare the various Energy Management Strategies.
4. To evaluate the various parameters of Electric Drive-trains
5. To synthesize models to describe hybrid vehicles and their performance.

**Course Name: Power Quality and FACTS**

**Course Code: PCC-EE706.2**

**Course Outcome:**

Upon successful completion of the course, students would be able

1. To understand the characteristics of ac transmission and the effect of shunt and series reactive compensation.
2. To apply the working principles of FACTS devices and their operating characteristics.
3. To analyse the basic concepts of power quality.
4. To evaluate the working principles of devices to improve power quality.
5. To Synthesize the Voltage Sag/Swell mitigation

**M.Tech (Electrical)**

**CSE**

**(Control System Engineering)**

**1. Name of the Program: M. Tech.**

**Program Outcomes:** develop skills, which give more practical knowledge of technology like Information Technology, research & development, networking, Telecommunication, automobile, textile, aeronautical and other growing industries as well.

**2. Name of the Specific Program: M. Tech.(CSE)**

**Program Specific Outcomes:** concerned with the study, design and application of equipment, devices and systems, which use electricity, electronics, and electromagnetism. Develop the skill to understand the computer engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, and electronics.

**3. Course Outcomes**

**Semester/Year: I/I**

**Course Name:** Real Time Instrumentation

**Course Code:** 1MTCSE 4.1

**Course Outcome:**

1. To understand of basic real-time operating system concepts, including interrupt processing, multitasking, inter-process communication.
2. To apply simple high-level real-time software design, specifically transforming a design specification into a description of software processes needed to support the design.
3. To analyse difference equations and discrete-time transfer functions as a means of describing discrete-time systems, and to be able to determine their stability.
4. To evaluate Use transfer functions, state-space, and block diagrams to describe and manipulate continuous time systems.
5. To synthesize what PID control is, how it is used effectively, and how it is implemented in a digital computer.

**Course Name:** Advance Power Electronics

**Course Code:** 1MTCSE4.2

**Course Outcome:**

1. To understand the Constructional features & operating characteristics of different modern power semiconductor devices.
2. To apply the resonant converters they are able to understand different converters according to their need.
3. To analyse induction motor drive students learn the operation of motors i.e. they are able to fed the inverters for the better world.
4. To evaluate the working of Power Electronics Devices.
5. To synthesize the Working of AC/DC Drives

**Course Name:** Writing Skills and Presentation-I

**Course Code:** 1MTCSE5

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basic elements of the journals and conference papers.
2. To apply different tools for the analysis of Research papers.
3. To analyse various online tools, understand Research ethics –Legal issues, copyright, and plagiarism
4. To deliver seminar, prepare a report and a review paper based on analysis.

**Semester/Year: II/I**

**Course Name: Non-Linear And Adaptive Control**

**Course Code: 2MTCSE3**

**Course Outcome:**

1. To understand Lyapunov Stability and Boundedness
2. To apply Identification and Parameter Estimation
3. To analyse Bayesian and Non-Bayesian Adaptive Control
4. To evaluate Direct and Indirect Adaptive Control
5. To synthesize Self Tuning Regulators, Model Reference and Pole Placement Algorithms & Convergence, Stability and Robustness Properties

**Course Name: Measurement System & Error Analysis**

**Course Code: 2MTCSE4.3**

**Course Outcome:**

1. To understand the measurement systems, errors of measurement,
2. To apply working principles of sensors and transducers.
3. To analyse principle of working of various transducers used to measure Temperature, comparative study of various transducers.
4. To evaluate the terminologies of electrochemical sensors and their applications in industry
5. To synthesize sensors for power, density, humidity, pH measurement

**Semester/Year: III/II**

**Course Name: Drives and control**

**Course Code: 3MTCSE2.1**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand Ability in control strategy of chopper based Drives
2. To apply. Control and Estimation of Motor Drives.
3. To analyse Skill in Transient analysis of drive system
4. To evaluate typical drive issues
5. To synthesize Competency in developing Dynamic model of drive system

**Course Name: Intelligent Control**

**Course Code: 3MTCSE2.2**

**Course Outcome:**



1. To understand the concept of intelligent control and their applications.
2. To apply the design of fuzzy logic and artificial Neural Networks through case study or project based exercise.
3. To analyse the Genetic Algorithm system through case study.
4. To evaluate the Use and apply engineering tools to simulate various intelligent system.
5. To synthesize the impact of engineering solution in global context.

**Course Name:** Digital Signal Processing

**Course Code:** 3MTCSE2.3

**Course Outcome:**

1. To understand the frequency response of FIR and IIR filters.
2. To apply Understand the relationship between poles, zeros, and stability.
3. To analyse the spectrum of a signal using the DFT, FFT, and spectrogram.
4. To evaluate Design, analyse, and implement digital filters in Matlab and C,C++.
5. To synthesize to perform forward and inverse z-transforms and to use them in performing convolution and analysis of discrete-time systems, casual and non-casual.

**Semester/Year: IV/ II**

Dissertation

**M.Tech (Electrical)**

**PSE**

**(Power System Engineering)**

### **1. Name of the Program: M. Tech.**

**Program Outcomes:** develop skills, which give more practical knowledge of technology like Information Technology, research & development, networking, Telecommunication, automobile, textile, aeronautical and other growing industries as well.

### **2. Name of the Specific Program: M. Tech.(PSE)**

**Program Specific Outcomes:** concerned with the study, design and application of equipment, devices and systems, which use electricity, electronics, and electromagnetism. Develop the skill to understand the computer engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, and electronics.

### **3. Course Outcomes**

**Semester/Year: I/I**

**Course Name: Advanced power system analysis**

**Course Code: *MTPS1.1***

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the state estimation and power flow.
2. To apply power system analysis for the stability of the electrical system.
3. To analyse fault studies for the stability and reliability of the power system.
4. To evaluate load flow by using MAT Lab.
5. To synthesize different electrical parameter of load flow, fault studies and system optimization.

**Course Name: Power System Stability**

**Course Code: *MTPS 1.2***

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

- 1 To understand basic modeling of different types of machine in power system and dynamic stability of power system and introduction to classical model of multi machine system.
- 2 To apply equal area criterion and its application to transient stability studies.
- 3 To analyse Modified Euler Method, Runge – Kutta fourth order method. Multi machine transient stability studies using modified Euler method and Runge – kutta fourth order method.
- 4 To evaluate Factors affecting steady state and transient stabilities.
- 5 To synthesize different Methods of improving steady state, dynamic and transient stabilities, series capacitor compensation of lines, excitation control, and power stabilizing signals.

### **MTPS 1.4.1- RENEWABLE POWER GENERATION SOURCES**

On completion of this course content, the student should be able to

1. Understand the basic characteristics of Solar Energy Resources-photo-voltaic cell characteristics and equivalent circuits-photovoltaic for battery charging.
2. Identify forces developed by blades, Aerodynamics Models and understand braking system and monitoring system.
3. Analyse working of Power performance wind driven induction generators.
4. To design Micro-hydel electric systems and OTEC systems.

### **Course Name: Industrial Control Electronics**

#### **Course Code: MTPS 1.4.2**

#### **Course Outcome:**

1. To understand the latest electronic devices available in industry.
2. To apply effectively & provide detailed explanation to the structure and operation of common linear components
3. To analyse the use tools/test equipment to analyse electronic components
4. To evaluate & Perform basic electronics troubleshooting
5. To synthesize the learning of different industrial control devices

### **Course Name: Writing Skills and Presentation-I**

#### **Course Code: MTPS 1.5**

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basic elements of the journals and conference papers.
2. To apply different tools for the analysis of Research papers.
3. To analyse various online tools, understand Research ethics –Legal issues, copyright, and plagiarism
4. To deliver seminar, prepare a report and a review paper based on analysis.

### **Semester/Year: II/I**

### **Course Name: POWER SYSTEM OPTIMIZATION & CONTROL**

#### **Course Code: *MTPS2.1***

#### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the optimal generation scheduling and power system security.
2. To apply power system optimization and control for the stability of the electrical system.
3. To analyse load frequency control for the stability and reliability of the power system.
4. To evaluate unit commitment solution method by using MAT Lab.
5. To synthesize automatic generation control, optimal load flow solution and power system security.

**Course Name: Power Quality**

**Course Code: MTPS 2.4.2**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basic IEC and IEEE definitions - power quality
2. To apply different tools for the solutions and mitigations – equipment and techniques.
3. To analyse lightning-load switching – impact on users – protection – mitigation.
4. To evaluate impacts - calculation and simulation – harmonic power flow
5. To synthesize shunt and series compensators-DStatcom.

**Course Name: System Theory**

**Course Code: MTPS 2.4.3**

**Course Outcome:**

1. To understand represent any system in any canonical form.
2. To apply response of system.
3. To analyse Design PID compensator.
4. To evaluate working of different pneumatic circuits like Single acting cylinder. Double acting cylinder, hydraulic braking systems by using directional control valves.
5. To synthesize the knowledge of control valves, installation, different valve accessories.

**Semester/Year: III/II**

**MTPS 3.1 EHV AC/DC TRANSMISSION& FACTS**

On completion of this course content, the student should be able to

1. Understand the basics of power transmission over long distance, EHV transmission problems of EHV transmission.
2. Identify -phase Bridge rectifier or Graetz circuit and major components of a converter station.
3. Analyze properties of bundled conductors, geometric mean radius of bundle, inductance and capacitance, and voltage gradients of conductors.
4. To design various types of FACTS controllers like shunt, series and shunt-series combined.

**Course Name: SMART GRID TECHNOLOGIES & APPLICATION**

**Course Code: MTPS3.2**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the smart grid and power quality management in smart grid.

2. To apply smart grid in the power system.
3. To analyse of information and communication technology for the smart grid.
4. To evaluate the micro grid and distributed energy resources.
5. To synthesize real time pricing automatic meter reading, integration of renewable energy sources.

**Semester/Year: IV/ II**

Dissertation

**Diploma**  
**(Electrical Engineering)**

### **1. Name of the Program: Diploma**

**Program Outcomes:** develop skills which give more practical knowledge of technology like Information Technology, research & development, networking, Telecommunication, automobile, textile, aeronautical and other growing industries as well.

### **2. Name of the Specific Program: Diploma (EE)**

**Program Specific Outcomes:** concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism. Develop the skill to understand the computer engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, and electronics.

### **3. Course Outcomes**

**Semester/Year: III/II**

**Name of the Course:** Electrical & Electronic Measurement.

**Course Code:** 3DEE03

**Outcomes:**

1. Students should have an understanding of the different standards & errors, general theory of analog measuring instruments.
2. To apply & learn the potentiometers bridges magnetic measurements instrument transformers.
3. To analyse the transducers, students learn the physical properties such as temperature, pressure, flow, force, and many others can be converted into electrical signals, which can then be conveniently measured and recorded.
4. Learn to Measure various electrical parameters with accuracy, precision, resolution.
5. Students evaluate the Use of AC and DC bridges for relevant parameter measurement.
6. Learn the selection of appropriate passive or active transducers for measurement of physical phenomenon.
7. To synthesize the use of Signal Generator, frequency counter, CRO and digital IC tester for appropriate measurement.
8. Understand the test and troubleshoot electronic circuits using various measuring instruments.

**Course Name: Electronics Devices and Circuits**

**Course Code: 3DEE04**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the function and operation of Semiconductor devices in different Electronics Circuits.
2. To apply the compensation techniques and biasing in BJT and FET.



3. To Understand working of amplifier-based circuits and it's application.
4. To analyse different electronics circuits using amplifiers and oscillators.
5. To synthesize basic differential amplifier using transistor and its configuration.
6. To apply different type of topologies in the feedback amplifier .
7. To understand the function and operation of Voltage Regulators and their application.

**Name of the course: NON CONVENTIONAL ENERGY SOURCES**

**Subject Code: 3DEE05**

**Course outcomes**

At the end of the course, the student will have the ability to

1. **Learn** fundamentals of solar radiation & measurement.
2. **Understand** principal of solar energy collectors and **storage** systems.
3. **Learn** various applications of solar energy.
4. **Perform selection** of sites for wind farm and different types of wind generators.
5. **Understand** basic of ocean and wave energy and other non-conventional energy sources.
6. **Comprehend about** other non-conventional sources and **Need** of Appropriate technology.

**Name of the course: ELECTRICAL ENGINEERING MATERIALS**

**Subject Code: 3DEE06**

**Course outcomes**

*Course outcomes this course provides the knowledge electrical engineering materials. After study through lectures and assignments, students will be able to*

1. **Apply** the concept of conductor, semiconductor, dielectric and magnetic materials to measure properties of these materials.
2. **Understand** the use of Thermal properties and applications.
3. **Understand** basic of Magnetic **properties**.
4. **Concept** of Electrical properties and luminescent materials.
5. **Learn** fundamentals of photosensitive materials

**Course Name: Computer Programming- “C”**

**Course Code: 3DEE07**

**Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the fundamentals of structured programming & flow charts.
2. To develop basic understanding of programming languages, the concept of algorithm and algorithmic thinking.
3. To analyse real life problems based on sorting techniques.
4. To analyse a problem, develop an algorithm to solve it.
5. To evaluate operations on arrays and pointers.
6. To synthesize different decision making operations and functions.

**Semester/Year: IV/II**

**Name of the Course: Industrial Instrumentation.**

**Course Code: 4DEE02**

**Outcomes:**

1. To understand the Constructional features & operating characteristics of different transducers.
2. Student learns how to perform on Display devices of different practical objects.
3. To apply the conditioning, they are able to convert the signal according to their need.
4. To analyse the signal system students learn the recovery of signals i.e. they filter the different erroneous signal for better world.
5. To evaluate the Computer based instrumentation taught them how to perform the different data on digital system and they learn different intelligent system.
6. Develop skills to Execute and carry different activities in process industry.
7. To synthesize Students get detailed information about the applications of analytical techniques in medicine, industry etc.

**Course Name: Electrical Workshop-I****Course Code: 4DEE07****Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand the importance of workshop in electrical science
2. To apply various techniques to investigate and testing of faults.
3. To analyse various loads i.e. domestic /Agriculture/commercial.
4. To evaluate Different types of wire joints
5. To synthesize Specification, wiring, dismantling, fault investigations, repairing assembling and testing the electrical appliances.

**Semester/Year: V/III****Course Name - Environmental Studies****Course Code – 5DEE06**

Course Outcomes -

Upon successful completion of the course, students will be able –

1. To understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
2. To analyze the character of environmental problems and ways of addressing them, including interactions across local to global scales.
3. To apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
4. To integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems
5. To understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities, and ecosystems.

**Course Name - MANAGEMENT****Course Code – 5DEE07.1**

Course Outcomes –

1. Understand the basic nature and functions of management Organizing, leadership and motivation.
2. Develop the knowledge regarding human resource development.
3. Acquire knowledge about financial management and marketing management.
4. Understand the labors and legislation and pollution control act.
5. Develop the knowledge regarding entrepreneurship development.

## **Semester/Year: VI/III**

**Course Name: Power Electronics**

**Course Code: 6DEE02**

### **Course Outcome:**

Upon successful completion of the course, students would be able:

1. To understand basics of Power Electronics.
2. To apply advance techniques over conventional electronics.
3. To analyse Analyze and compare the various convertor system.
4. To evaluate the various parameters of power electronics convertors
5. To synthesize converters and design the components of them, under various load types

**Name of the course: ELECTRICAL TRACTION SYSTEM**

**Subject Code: 6DEE06.2**

### **Course outcomes**

Course outcomes this course provides the knowledge Electrical Traction System. After study through lectures and assignments, students will be able to

1. **Understand** different kinds of drive and control systems as **used** in electric traction along with the details of its power supply arrangement.
2. **Study** and **analyze** of train movement and energy consumption and simplified speed time curves for crest speed, average speed and schedule speed.
3. **Learn** speed/ torque characteristics of traction motors and **analyze** behavior of electric motor during starting, running, and breaking.
4. **Awareness** of technology of electric and hybrid electric vehicles
5. **Achieve** thorough **knowledge** about supply of power for electric traction, Feeding and distribution systems, current collecting device and protective device of electric traction.
6. **To impart** the knowledge of electric traction, electric welding and electrolytic process.
7. **Application** of electric energy for industrial heating and welding.

**Name of the Course: Control System Engineering**

**Course Code: 6DEE04**

### **Outcomes:**

1. To understand and develop the mathematical model of the physical systems.
2. To apply and analyze the response of the closed and open loop systems.
3. To analyse the stability of the closed and open loop systems.
4. To evaluate and Design the various kinds of compensator.
5. To synthesize, develop and analyze state space models

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology Dept./Branch: Electronics & Communication

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Tech. (Electronics & Communication)
2. M. Tech (Electronics & Communication)
  - a) CSP (Communication and Signal Processing)
  - b) ES (Embedded System)
3. Ph.D (Electronics & Communication)

**B.Tech.**

**Electronics & Communication**

### **1. Name of the Program: B.Tech.**

**Program Outcomes:** It helps to develop skills which give more practical knowledge of technology like Communication, Biomedical, Information Technology, research & development, networking, automobile, aeronautical and other growing industries as well.

### **2. Name of the Specific Program: B.Tech (EC)**

**Program Specific Outcomes:** concerned with the study, design and application of equipment, devices and systems which uses power, electronics, and electromagnetism. Develop the skill to understand the Communication, computer engineering, power engineering, radio-frequency engineering, signal processing, instrumentation, and electronics.

### **3. Course Outcomes**

**After completion of course, students will able to do followings-**

**Semester/Year: III/II**

#### **3EC 1 Analog Electronics – I**

1. To understand the characteristics of transistors.
2. To apply analog electronics for the analysis of electrical circuits.
3. To analyse and design various rectifier and amplifier circuits.
4. To evaluate electronic circuit using microcontroller.
5. To synthesize different electronic circuit of BJT, MOSFET and operational amplifiers different parameter of electronic circuit in the relevant domain.

#### **3EC2 Mathematics III (Probability and Statistics)**

1. Understand the concepts of Probability spaces, conditional probability
2. Understand the concepts of Bivariate distributions and their properties
3. Understand the concepts of Curve fitting by the method of least squares

#### **3EC 3 Electronic Measurements & Instrumentation**

1. Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
2. Successfully apply the procedures and steps for diagnosing a problem.
3. Develop improved skills and new skills to enhance the state of their practice in a dynamic professional environment.

#### **3EC4 Electronic Materials & Processes**

1. Ability to apply knowledge of mathematics, science, and engineering to materials systems.
2. Ability to understand the behavior of materials and interpret data.
3. Able to describe the properties of different electronic material and their properties.
4. Ability to apply and integrate knowledge of structure, properties, processing, and performance to solve materials selection and design problems within realistic constraints.

#### **3EC5 Digital Electronics**

1. Define the scope of Digital electronics.
2. State some applications of digital electronics in our day-to-day life.
3. Draw the symbol, characteristics & applications of some important logic gates.

### **3EC6.2 Data Structures & Algorithms**

1. For a given algorithm student will able to analyze the algorithms to determine the time and computation complexity and justify the correctness.
2. For a given Search problem (Linear Search and Binary Search) student will able to implement it.
3. For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
4. Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space.

### **Semester/Year:IV/II**

#### **4EC1 Networks Analysis and Synthesis**

1. Understand basics electrical circuits with nodal and mesh analysis.
2. Appreciate electrical network theorems.
3. Apply Laplace Transform for steady state and transient analysis.
4. Determine different network functions.

#### **4EC2 Electromagnetic Field Theory**

1. Successfully apply the procedures and steps for diagnosing a problem.
2. Work competently in one or more core electrical engineering technology areas of practice.
3. Design solutions for complex engineering problems and design system components or processes that meet the specified needs.

#### **4EC3 Telecommunication Engineering**

1. Demonstrate the application of communication engineering technology standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.
2. Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined communication engineering technology activities.
3. Apply knowledge of engineering technology that require limited application of principles but extensive practical knowledge.
4. Conduct standard tests and measurements, and to conduct, analyze, and interpret experiments related to communication engineering technology.

#### **4EC4 Analog Electronics – II**

1. Understand the principles of semiconductor Physics.
2. Understand and utilize the mathematical models of semiconductor junction's and MOS transistors for circuits and systems.
3. Testing of active & passive components.
4. Able to understand the system used in real life like rectifier, oscillator etc.

#### **4EC5 Microprocessors and Applications**

1. Students will able to understand the basics of assembly language programming.
2. Students will be able to apply the interfacing design of peripherals like, I/O, A/D, D/A, timer etc.
3. Able to develop systems using different microcontrollers.
4. Understand RSIC processors and design ARM microcontroller based systems.

#### **4EC6.1 Object Oriented Programming**

1. Understand the features of C++ supporting object oriented programming.
2. Understand how to produce object-oriented software using C++.
3. Understand advanced features of digital IC's stream I/O, logic families.
4. Able to design the logic circuit using various digital IC's.

## **Semester/Year: V/III**

### **5EC1 Automatic Control System**

1. Ability to characterize a system and find its steady state behavior.
2. Student would be capable to investigate stability of a system using different tests.
3. Design various controllers.
4. Solve linear, non-linear and optimal control problems.

### **5EC2 Principles of Communication**

1. Analyze and compare different analog modulation schemes for their efficiency and bandwidth.
2. Analyze the behavior of a communication system in presence of noise.
3. Investigate pulsed modulation system and analyze their system performance.
4. Analyze different digital modulation schemes and can compute the bit error performance.

### **5EC3 Signal & System**

1. Identify, analyze, and solve narrowly defined engineering technology problems.
2. Apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
3. Identify the need for and an ability to engage in self-directed continuing professional development.

### **5EC4 Antenna & Wave Propagation**

1. Understand various microwave system components their properties.
2. Appreciate that during analysis/ synthesis of microwave systems, the different mathematical treatment is required compared to general circuit analysis.
3. Design microwave systems for different practical applications.

### **5EC5 Power Electronics**

1. Understand construction and operating principle of various power electronic devices.
2. Study construction and operation of controlled rectifiers, choppers and inverter and industrial control circuits.
3. Able to describe the design specification for motors, power converters etc.

### **5EC6.2 Biomedical Instrumentation**

1. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and environmental considerations.
2. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
3. Able to design and test the circuits/systems to measure the various parameters of human body.

## **Semester/Year: VI/III**

### **6EC1 Digital Communication**

1. Know different electronic communication systems.
2. Understand concept of modulation and demodulation of AM / FM.
3. Understand the operation of AM/ FM transmitter and receiver.
4. Understand the concept of radio wave propagation.

### **6EC2 Digital Signal Processing**

1. Able to represent signals mathematically in continuous and discrete time and frequency domain.
2. Get the response of an LSI system to different signals.
3. Design of different types of digital filters for various applications.



4. Student would be able to understand the functioning of digital processors.

### **6EC3 Microwave and Radar Engineering**

1. Understand propagation of electromagnetic waves.
2. Able to describe the basic principles of transmission lines.
3. Able to demonstrate the construction working principle & operation of various types of antennas.
4. Understand block diagram of AM & FM radio receivers and their operation.
5. Understand alignment procedure for AM & FM radio receiver.

### **6EC4 VLSI Technology**

1. To use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnection.
2. To create models of moderately sized CMOS circuits that realize specified digital functions.
3. To apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects.
4. Have an understanding of the characteristics of CMOS circuit construction and the comparison between different state-of-the-art CMOS technologies and processes.
5. To complete a significant VLSI design project having a set of objective criteria and design constraints.

### **6EC5 Audio Video Systems**

1. Mathematically model the speech signal.
2. Analyze the quality and properties of speech signal.
3. Modify and enhance the speech and audio signals.
4. Have an understanding to design the basic audio processing system, filters.

### **6EC6.1 VLSI Design**

1. To use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnection.
2. To create models of moderately sized CMOS circuits that realize specified digital functions.
3. To apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects.

## **Semester/Year: VII /IV**

### **7EC1 Optical Fiber Communication**

1. Understand the principles fiber-optic communication, the components and the bandwidth advantages
2. Understand the properties of the optical fibers and optical components.
3. Understand operation of lasers, LEDs, and detectors.
4. Analyze system performance of optical communication systems.
5. Design optical networks and understand non-linear effects in optical fibers.

### **7EC2 Mobile Communication**

1. Understand the working principles of the mobile communication systems.
2. Understand the relation between the user features and underlying technology.
3. Analyze mobile communication systems for improved performance.

### **7EC3 Artificial Neural Networks**

1. Graduates will have a broad understanding of the fundamental theories, concepts, and applications of computer science.
2. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
3. An ability to analyze a problem and identify and define the computing requirements appropriate to its solution.

4. An ability to use current techniques, skills, and tools necessary for computing practice.
5. An ability to communicate effectively.

#### **7EC4 VHDL**

1. Design and analyze combinational logic circuits.
2. Design & analyze modular combinational circuits with MUX/DEMUX, Decoder, Encoder.
3. Design & analyze synchronous sequential logic circuits.

#### **7EC5 Computer Architecture**

1. Learn how computers work.
2. Know basic principles of computer's working.
3. Analyze the performance of computers.
4. Know how computers are designed and built.
5. Understand issues affecting modern processors (caches, pipelines etc.)

#### **7EC6.2 Advanced Microprocessors**

1. Do assembly language programming.
2. Do interfacing design of peripherals like, I/O, A/D, D/A, timer etc.
3. Develop systems using different microcontrollers.
4. Understand RSIC processors and design ARM microcontroller based systems.

### **Semester/Year: VIII/IV**

#### **8EC1 Advanced Microprocessors & Micro-Controllers**

- 1 To understand basic architecture of the microprocessors, terminology used and various signal involved.
- 2 To apply assembly language programming for the analysis.
- 3 To analyse circuits interfacing of peripheral devices such as General Purpose I/O, ADC, DAC, timers, counters, memory.
- 4 To evaluate synchronous and asynchronous Communication using RS232, SPI, I2C.
- 5 To synthesize different LED, LCD, sensor, Stepper motor keyboard and DC Motor interfacing.

#### **8EC2 Nanotechnology**

1. Understand various sources of energy and different factors related to atoms, molecules.
2. Analyze general layout, major equipments and auxiliaries innanodevices.
3. Illustrate the basics of quantum theory.
4. Understanding of impact of different nano system.
5. Understanding of cause and effect of low power systems.
6. Students will learn about fabrication, application and further development scope in nanotechnology.

#### **8EC3 Computer Networking**

1. Understand the concepts of microprocessors, their principles and practices.
2. Write efficient programs in assembly language of the 8086 family of microprocessors.
3. Organize a modern computer system and be able to relate it to real examples.
4. Develop the programs in assembly language for 80286, 80386 and MIPS processors in real and protected modes.
5. Implement embedded applications using ATOM processor.

#### **8EC4.2 Digital Image Processing**

1. Mathematically represent the various types of images and analyze them.
2. Process these images for the enhancement of certain properties or for optimized use of the resources.
3. Develop algorithms for image compression and coding.
4. Able to write the coding /program for image processing tool using appropriate software.

**M.Tech (Electronics & Communication)**

**CSP**

**(Communication and Signal Processing)**

**1. Name of the Program: M.Tech. Communication and Signal Processing (CSP)**

**Program Outcomes:**

- PO1.** An ability to adapt existing models, tools and techniques etc. for efficiently solving problems related to communication and signal processing.
- PO2.** The ability to formulate model to conduct, analyse and interpret communication related experiments.
- PO3.** Ability to communication product design for emerging applications.
- PO4.** Can identify, model, design and analyse communication tool as per requirements.
- PO5.** Able to understands of latest communication-based technologies for research and application point of view.

**1. Name of the Program: M.Tech. Communication and Signal Processing (CSP)**

**Program Specific Outcomes:**

- PSO1.** Students will be able to apply principles of communication techniques for signal transmission and reception.
- PSO2.** Students will be skill with communication tool use for experimentation purposes.
- PSO3.** Students can able to apply their knowledge to newly develop techniques for modern communication products and tools.
- PSO4.** Students can identify, define, analyse, formulate, and solve modern signal processing algorithms related to communication technologies, like 3G, 4G etc.

## **2. Course Outcomes**

Upon successful completion of the course, students would be able:

### **Semester/Year: I/ I**

#### **Name of the Course: MTCSP 1.1 Introduction to Embedded System**

- Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.
- Become aware of the architecture of the ARM processor and its programming aspects
- Become aware of interrupts, hyper threading and software optimization.
- Design real time embedded systems using the concepts of RTOS.
- Analyse various examples of embedded systems based on programming languages.

#### **Name of the Course: MTCSP 1.2 ANTENNA THEORY**

- Illustrate the different types of arrays and their radiation patterns.
- Analyse a complete radio system, from the Transmitter to the Receiver end with reference to antenna.
- Quantify the fields radiated by various types of antennas
- Design wire antennas, loop antennas, reflector antennas, lens antennas, horn antennas and micro strip antennas
- Analyze antenna measurements to assess antenna's performance
- Know the concept of radio wave propagation and spectrum analysis.
- Discuss on Modern Antenna

#### **Name of the Course: MTCSP 1.3 SIGNAL THEORY**

- Explain the concept of orthogonal signal representation and process to generate set of orthogonal function.
- Illustrate and formulate fundamental probability distribution and density functions, as well as functions of random variables
- Explain the concepts of expectation and conditional expectation, and describe their properties
- Analyse continuous and discrete-time random processes
- Explain the concepts of stationary and wide-sense stationary, and appreciate their significance
- Apply the theory of stochastic processes to analyse linear systems
- Apply the above knowledge to solve basic problems in filtering, prediction and smoothing

#### **Name of the Course: MTCSP 1.4 DIGITAL SIGNAL PROCESSOR AND ARCHITECTURE**

- Interpret, represent and process discrete/digital signals and systems and its architecture
- Thorough understanding of frequency domain analysis of discrete time signals and architecture.
- Ability to design & analyse modern DSP processors.

- Practical implementation issues such as computational complexity, hardware resource to design DSP processor
- Ability to design new processor architecture for complex computation.

## **Semester/Year: II / I**

### **Name of the Course: MTCSP 2.1 SATELLITE COMMUNICATION AND PHASED ARRAYS**

- Able to define orbital mechanics and launch methodologies
- Understand the satellite communications subsystems
- Able to design link power budget for satellites and compare competitive satellite services
- Understand the DTH and compression standards
- Students will introduce with concept of phase arrays.

### **Name of the Course: MTCSP 2.2 DIGITAL COMMUNICATION SYSTEM**

- Understand the basics of information theory, source coding techniques and calculate Entropy of source.
- Describe and determine the performance of line codes and methods to mitigate inter symbol interference.
- Learn the generation and detection of base band system.
- Understand the generation, detection signal space diagram, spectrum, bandwidth efficiency, and probability of error analysis of different band pass modulation techniques.
- Describe and determine the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel.
- Understand various spreading techniques and determine bit error performance of various digital communication systems.

### **Name of the Course: MTCSP 2.3: EMBEDDED SYSTEMS FOR WIRELESS AND MOBILE COMMUNICATION**

- Discuss the cellular system design and technical challenges in context of embedded applications.
- Analyse the various embedded Mobile radio propagation, fading, diversity concepts and the channel modelling.
- Analyse the embedded design parameters, link design, smart antenna, beam forming and MIMO systems.
- Analyse embedded devices, such as Multiuser Systems, CDMA, WCDMA network planning and OFDM Concepts.

**Name of the Course: MTCSP 2.4 INFORMATION THEORY AND CODIN**

- Design the channel performance using Information theory.
- Comprehend various error control code properties and bandwidth utilization.
- Apply linear block codes for various error detection and correction methods.
- Apply convolution codes for performance analysis & cyclic codes for error detection and correction.
- Design BCH & RS codes for Channel performance improvement against burst errors

**Semester/Year: III / II**

**Name of the Course: MTCSP-3.2.1-Telecommunication Switching and Network**

- Describe and apply fundamentals of telecommunication systems and associated technologies.
- Apply the principles of queuing theory in evaluating the performance of congested telecommunication networks.
- Solve problems and design simple systems related to tele-traffic and trunking efficiency.
- Understand and explain the reasons for switching, and the relative merits of the possible switching modes, e.g. packet and circuit switching.
- Understand the principles of the internal design and operation of telecommunication switches, and the essence of the key signalling systems that are used in telecommunication networks.

**Name of the Course: MTCSP 3.1.3 ADAVANCED OPTICAL COMMUNICATION**

- Apply the fundamental principles of optics and light wave to design optical fiber communication systems.
- Differentiate losses in optical fiber link and state transmission characteristics of optical fiber.
- Design optical fiber communication links using appropriate optical fibers light sources, detectors.
- Explore the concept of designing and operating principles of modern optical systems and networks
- Apply different network access schemes and packet switching in OFC systems.
- Design and manage networks with appropriate consideration.

**Semester/Year: IV / II**

**DISSERTATION**

**M.Tech (Electronics & Communication)**

**ES**

**(Embedded System)**



## **1. Name of the Program: M.Tech. Embedded System (ES)**

### **Program Outcomes:**

- PO1.** An ability to adapt existing models, tools and techniques etc. for efficiently solving problems related electronics systems.
- PO2.** The ability to design new systems for embedded applications.
- PO3.** Ability to apply new concept to enhance the performance of electronics products.
- PO4.** Can identify, model, design and analyse new processor as per higher computation requirements.
- PO5.** Able to understands of latest embedded technologies for research and practical applications.

## **2. Name of the Program: M.Tech. Embedded System (ES)**

### **Program Specific Outcomes:**

- PSO1.** Students will be able to apply principles of electronic product design for embedded applications.
- PSO2.** Students will be skill with latest embedded tools and its implementation.
- PSO3.** Students can able to apply their knowledge to newly develop embedded systems as per requirements.
- PSO4.** Students can identify, define, analyse, formulate, and solve various algorithm and skill with embedded programming's.

### **3. Course Outcomes**

Upon successful completion of the course, students would be able:

#### **Name of the Course: MTES 1.1 Introduction to Embedded System**

- Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.
- Become aware of the architecture of the ATOM processor and its programming aspects
- Become aware of interrupts, hyper threading and software optimization.
- Design real time embedded systems using the concepts of RTOS.
- Analyse various examples of embedded systems based on programming languages.

#### **Name of the Course: MTES 1.2 MICROCONTROLLER FOR EMBEDDED SYSTEM DESIGN**

- Demonstrate the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering technology standards to the building, testing, operation, and maintenance of electronic(s) systems.
- Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined microcontroller technology activities.
- Describe of science, engineering, and technology to build solution for problems that require limited application of principles but extensive practical knowledge.
- Conduct standard tests and measurements, and to conduct, analyse, and interpret experiments related to embed systems

#### **Name of the Course: MTES 1.3 DIGITAL SYSTEM DESIGN**

- Can develop a digital system design and apply it to solve real life problems.
- Students can analyse, design and implement combinational logic circuits.
- Classify different semiconductor memories.
- Understand, design and implement sequential logic circuits.
- Analyse digital system design using PLD.
- Simulate and implement combinational and sequential circuits using VHDL systems.

#### **Name of the Course: MTES 1.4 DIGITAL SIGNAL PROCESSOR AND ARCHITECTURE**

- Interpret, represent and process discrete/digital signals and systems and its architecture
- Thorough understanding of frequency domain analysis of discrete time signals and architecture.
- Ability to design & analyse modern DSP processors.
- Practical implementation issues such as computational complexity, hardware resource to design DSP processor
- Ability to design new processor architecture for complex computation.

## **Semester/Year: II / I**

### **Name of the Course: MTES 2.1 CPLD AND FPGA ARCHITECTURES AND APPLICATION**

- Exposure with Digital design with proper design flow
- Understanding the process of partitioning the design into different blocks
- Selection of design type such as application specific integrated circuit (ASIC), Field-programmable gate arrays (FPGA) and complex programmable logic devices (CPLD)
- Use of design languages such as hardware design language (HDL), e.g. Verilog, VHDL, High level language, such as C
- HDL code FPGA implementation
- Case studies on Modern CPLD's and FPGA

### **Name of the Course MTES 2.2: EMBEDDED REAL TIME OPERATING SYSTEM**

- Able to understand the principles of various operation systems.
- Understand the issue and challenges for real time operation systems handling.
- Design and analyse the performance of various operations systems.
- Able to solve various issues embedded system related operations systems.
- Can be able to develop new OS and analyse of various OS's.

### **Name of the Course: MTES 2.3: EMBEDDED SYSTEM FOR WIRELESS AND MOBILE COMMUNICATION**

- Discuss the cellular system design and technical challenges in context of embedded applications.
- Analyse the various embedded Mobile radio propagation, fading, diversity concepts and the channel modelling.
- Analyse the embedded design parameters, link design, smart antenna, beam forming and MIMO systems.
- Analyse embedded Multiuser Systems, CDMA, WCDMA network planning and OFDM Concepts.

### **Name of the Course: MTES 2.4: HDL FOR EMBEDDED SYSTEMS**

- In-depth study of combinatorial and sequential logic and finite state machines.
- Describe to digital design flows and design trade-offs.
- Able define FPGA structure and design flow for state machines using various HDL language
- Conduct standard tests using Modelsim simulation environment and Testbench construction.
- Realisation of all above concepts in hardware designs.

## **Semester/Year: III / II**

### **Name of the Course: MTES 3.1.3 ADVANCED COMPUTER ARCHITECTURES**

- Understand the principles processor design
- Can be able to design and proposed new computer architecture with higher performance matrices.
- Design and analyse the performance of various CPUs
- Explore the concept of embedded programming and understanding.
- Can be able to new research for higher performance processor design.

### **Name of the Course: MTES 3.3.3 MEMORY DESIGN AND TESTING**

- Show working knowledge of numerical solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations used for designing digital systems.
- Work numerical differentiation and integration whenever and wherever usual methods are not applicable to design the memories for various systems.
- Work practically to test the interfacing the memories with the various storage systems.
- Demonstrate the statistical tests of hypotheses based on the given sample and interpret the results so as to take appropriate decision.

## **Semester/Year: IV / II**

### **DISSERTATION**

**JAIPUR NATIONAL UNIVERSITY, JAIPUR**



**School of Engineering and Technology**

**Dept./Branch: Food Technology**

**Programme Outcome, Programme Specific Outcome  
and Course Outcome**

**1. B.Tech. (Food Technology)**

**B.Tech.**  
**Food Technology**

# 1. Name of the Program: B.Tech.

## Program Outcomes:

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **2. Name of the Specific Program: B.Tech. Food Technology**

### **Program Specific Outcomes:**

1. Apply scientific thinking in the analysis, synthesis and evaluation of knowledge within the discipline of food science, nutritional sciences or dietetics.
2. Develop theoretical and practical knowledge which will help to understand the basic food safety issues in the food market.
3. Develop and evaluate quality of new food products using objective and subjective methodologies
4. Understand the basic concepts as well as future trends in Food Technology.
5. Prepare for effective communicate discipline-specific information in written and oral forms to scientific audiences as well as effectively interact within scientific teams.



## Course Outcomes:

**Semester:** Third

**Year:** Second

**Paper Title:** Basic and Food Microbiology

**Paper Code:** BSC-FT301

### Course Outcome

By the end of this course students will be able to:

- Recall the basic terms and concepts of introductory microbiology
- Understand the structure and role of various microorganisms associated with food spoilage and contamination.
- Apply various microbiological techniques to grow, isolate and detect various microorganisms associated with different kind of foods.
- Investigate and compare the contamination, spoilage and preservation of different food commodities.
- Judge the various microorganisms related with food poisoning.
- Develop the food items includes the beneficial use of various microorganisms.

**Semester:** Third

**Year:** Second

**Paper Title:** Food Chemistry

**Paper Code:** PCC-FT302

### Course Outcome

Upon successful completion of the course, students would be able to:

- Remember the basic terms and facts of chemistry of food constituents.
- Understand the role and function of various food constituents in food industries.
- Apply various chemical and biochemical (enzymatic) reactions that influence food quality with emphasis on food industry applications.
- Analyze the changes takes place due to various chemical and biochemical reactions in various food commodities.
- Determine the various mechanisms responsible for changes in processed or raw food items.
- Judge the properties of different food components and interactions among these components modulate the specific quality attributes of food systems.

**Semester:** Third

**Year:** Second

**Paper Title:** Fluid Mechanics

**Paper Code:** PCC-FT303

### Course Outcome

By the end of this course students will be able to:

- Recall necessary fundamental concepts of fluid flow.
- Understand the role of various parameters during fluid flow phenomenon.
- Apply macroscopic (i.e. integral balances) and microscopic (i.e. differential balances) approaches to solve fluid flow operation problems.
- Analyze various fluid flow phenomenon encountered in food processing industries.
- Evaluate the flow rate during fluid flow operation using different instruments like, orifice, venturi, rotameter and Pitot tube etc.
- Propose the changes required in fluid flow operation at industrial level and modify their design according to need.

**Semester:** Third

**Year:** Second

**Paper Title:** Process Calculations

**Paper Code:** PCC-FT304

### Course Outcome

Upon successful completion of the course, students would be able to:

- Recall the basics of units and measurements, their conversion methods.
- Understand the role of various chemical reactions in mass and energy balance.
- Apply mass and energy balance in different food processing operations like mixing, drying etc.
- Investigate different changes takes place during mass and energy balance like condensation, vaporization, enthalpy changes etc.
- Judge the steady and unsteady state mass and energy balance operations.
- Design energy and mass balance operations for different food processing operations using relevant thermal property data.

**Semester:** Third

**Year:** Second

**Paper Title:** Indian Constitution

**Paper Code:** MC – FT305

**Course Outcome**

By the end of this course students will be able to:

- Summarize and learn the constitutional history
- Understand and build the administrative structure of Indian Constitution
- Differentiate between union and state government
- Investigate the role of election commission
- Put opinion and judge according to law and order

**Semester:** Third

**Year:** Second

**Paper Title:** Food Additives and Contaminants

**Paper Code:** PCC-FT306

**Course Outcome**

By the end of this course students will be able to:

- Name the particular food additive desirable to fulfill the specific purpose in food processing.
- Understand the functions of different food additives in improving the shelf life, quality, texture and other physical and sensory characteristics of foods.
- Experiment with different colors and flavors to enhance the food quality.
- Analyze the extraction and isolation techniques of various additives for their better utilization.
- Justify the role of food additives in different kind of food commodities.
- Propose the type of food additive required for developing a new kind of food product in the market.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Biochemistry and Nutrition

**Paper Code:** BSC-FT401

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall the basic terms related to enzymes and food constituents.
- Understand the metabolism of different food constituents and mechanism of enzyme action.
- Experiment with the ways to increase the nutritional quality of different foods.
- Analyze the dietary allowance and standards for different age groups.
- Determine the disorders in the metabolism of food constituents.
- Propose the diet/meal plan for different age group people.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Principles of Food Processing and Preservation **Paper Code:** PCC – FT402

**Course Outcome**

By the end of this course students will be able to:

- Recall the various traditional methods of food preservation.
- Understand the principles of various traditional and modern methods of food preservation.
- Utilize various methods of food processing & preservation at industrial level successfully.
- Compare the effectiveness of different methods of processing and preservation for single food item.
- Determine the method to calculate the processing time for different food commodities.
- Propose the quantity of preservatives required for the safe and long storage of food.

**Semester:** Fourth

**Year:** Second

**Paper Title:**Heat Transfer Operations

**Paper Code:** OEC-FT 403.1

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the basic laws of heat transfer.
- Understand the role of fundamental laws and properties for the successful operation of conduction, convection and radiation.
- Experiment with conduction, convection and radiation in different conditions of temperature, pressure and volume.
- Analyze problems involving steady state heat conduction, convection and radiation in simple geometries.
- Justify the applicability of heat transfer operations in food industries.
- Develop solutions for transient heat conduction in simple geometries as well as heat and mass balance calculations in evaporation operation.
- Obtain numerical solutions for conduction and radiation heat transfer problems.

**Semester:** Fourth

**Year:** Second

**Paper Title:**Refrigeration & Air-Conditioning

**Paper Code:** OEC-FT 403.2

**Course Outcome**

By the end of this course students will be able to:

- Remember the basics of small and large commercial storage.
- Understand the principles of refrigeration and air conditioning.
- Apply various methods i.e type of cycles and insulations to increase the efficiency of cooling system.
- Analyze the properties of air and water by using Psychometrics.
- Determine the applications of refrigeration & air conditioning in food processing industries.
- Create the cooling system according to the need of the product.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Food Hygiene, Sanitation and Plant Utilities

**Paper Code:** PCC-FT404

**Course Outcome**

By the end of this course students will be able to:

- Remember the general principles of food hygiene.
- Understand the requirement of hygiene and sanitation in food processing industries.
- Apply various housekeeping methodologies to fulfill the requirement of hygiene in food industries.
- Analyze various sanitation and hygiene systems implemented at industrial level.
- Evaluate the quality of various types of water used in food industries.
- Design the hygiene for food processing industries.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Food Laws And Food Regulation

**Paper Code:** PCC-FT405

**Course Outcome**

Upon successful completion of the course, students would be able:

- Identify the various laws are made for which kind of food commodity.
- Understand the role of different food laws for assuring food quality and food safety.
- Apply various guidelines of food laws according to the requirement of food processing operations at industrial scale.
- Analyze the critical limit for different food processing lines mentioned in different food laws.
- Assess various monitoring procedures implemented for assuring food safety and quality.
- Generate documents required for the certification/licensing of food laws in food industries.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Fermentation Technology

**Paper Code:** PCC-FT406

**Course Outcome**

At the end of the course, student will be able to:

- Remember the basics of fermentation and microbial growth.
- Understand the role of enzymes in different food industries.
- Experiment with preparation of different alcoholic beverages.
- Analyze the optimization of fermentation process for different fermented products.
- Judge the quality of different fermented food products.
- Design the fermentation process using a suitable fermenter.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Cereals and Legumes Processing Technology

**Paper Code:** PCC-FT501

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Remember the basic structure and processing of cereal grains and legumes.
- Understand the working principles of different milling equipments.
- Choose suitable milling equipment according to the need of specific cereal grain or legumes.
- Examine various pretreatments given to grains before milling process.
- Assess the milling quality of different grains.
- Design a milling system according to the final product desired after milling.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Egg, Poultry, Meat and Fish Processing Technology

**Paper Code:** PCC-FT502

**Course Outcome**

By the end of this course students will be able to:

- Remember the facts, basic terms and global status of meat, fish and poultry products.
- Understand the processing steps of meat, fish and poultry line.
- Experiment with preservation techniques of egg.
- Analyze the difference in processing of different products for domestic and export market.
- Judge the quality of poultry, meat and fish by using different preservation methods.
- Propose different byproduct utilization from meat, fish and poultry processing industry.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Milk and Milk Products Technology

**Paper Code:** PCC-FT503

**Course Outcome**

By the end of this course students will be able to:

- Remember the concept of cooperative dairy and white revolution in India.
- Understand the principle behind various milk processing operations.
- Apply material balance equations to standardize the fat/SNF in different milk product manufacturing.
- Examine the quality of milk on the basis of different quality parameters.
- Judge the quality of finished dairy products in terms of chemical, nutrition and microbiologically.
- Propose different methods of cleaning and sanitation in dairy industry.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Mass Transfer Operation

**Paper Code:** OEC –FT 504.1

**Course Outcome**

By the end of this course students will be able to:

- Recall the general concepts and terms related to mass transfer like Adsorption, diffusion etc.
- Understand the principle and mechanism of various mass transfer operations.
- Utilize various mathematical equations and derivations to solve the mass transfer problems in food industries.
- Compare the different equipments used for single mass transfer operation.
- Assess the efficiency of various operations theoretically like distillation, extraction etc.
- Propose suitable mass transfer equipment for a particular mass transfer operation at industrial level.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Chemical Reaction Engineering

**Paper Code:** OEC –FT 504.2

**Course Outcome**

By the end of this course students will be able to:

- Remember the basic terms and concepts of chemical reaction engineering.
- Understand the kinetics and effect of temperature and pressure on reaction rates.
- Experiment with different kind of reactors.
- Examine the efficiency of different reactors.
- Assess the interpretation of data in different reactors.
- Design single, multiple reactions as well as reactors.

**Semester:** Fifth

**Year:** Third

**Paper Title:**Statistical Quality Control

**Paper Code:** PEC-FT 505.1

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall the basic terms and concepts of statistics.
- Understand the role of different statistical tools in food industries.
- Experiment with different software packages like design expert to design the number of experiments.
- Investigate the bulk sampling, sensory data in spreadsheets and get result in few minutes.
- Judge the efficiency of different methods/tools and select the better one.
- Propose a better tool for solving the particular problem arise at industrial level.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Computer Applications in Food

**Paper Code:** PEC-FT 505.2

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall fundamentals of mathematical applications in computer.
- Understand the role of various computational tools utilized in computer aided food operations.
- Apply various computational techniques to make the food operation easy and efficient.
- Analyze and compare the various techniques for single food process operation.
- Determine the various food properties by using different computer techniques.
- Generate results for different software packages and utilize them for quality improvement of food.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Optimization Techniques

**Paper Code:** HSMC-FT505.3

**Course Outcomes**

Upon successful completion of the course, students would be able to:

- Remember the basic terms and concepts of optimization techniques.
- Understand the various tools for optimizing the parameters.
- Apply various network analyses to know the time period to complete a particular work.
- Compare various techniques for a particular problem and select the best one.
- Evaluate feasibility of a tool to solve a particular problem.
- Generate a better solution using different techniques at a time.

**Semester:** Fifth

**Year:** Third

**Paper Title:** Entrepreneurship and Agribusiness Management **Paper Code:** HSMC-FT506

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Remember the basic terms and concepts of entrepreneurship.
- Understand the role of financial institutions in promoting the entrepreneurship.
- Build knowledge about the market research and government policies related to entrepreneurship.
- Compare the different consumption patterns of food around the globe.
- Give opinion on the different export and import policies related to food processing.
- Propose a suitable and better approach to become an entrepreneur.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Fruits and Vegetables Processing Technology

**Paper Code:** PCC-FT601

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember the basic concepts and status of fruits and vegetables around the globe.
- Understand the basic processing steps of the fruits and vegetables.
- Experiment with the value addition of products from different fruits and vegetables.
- Examine the quality of products prepared from different fruits and vegetables.
- Draw an opinion on the specifications made by regulatory authorities for different products from fruits and vegetables.
- Propose different recipes and value addition for different fruits and vegetables.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Oils and Fats Processing Technology

**Paper Code:** PCC-FT602

**Course Outcome**

By the end of this course students will be able to:

- Remember the basic terms and concepts of fats and oils.
- Understand the properties and process techniques of oil extraction from various oil seeds.
- Apply that theoretical process at industrial scale to set up a oil extraction line.
- Compare various techniques like physical, solvent extraction of oil and choose better one.
- Judge the quality of oil from different techniques.
- Build a better storage facility to maintain the quality of seeds to obtain higher yield and better quality of oil.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Bakery and Confectionary Technology

**Paper Code:** PCC-FT603

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Remember the basic terms and concepts of bakery and confectionary.
- Understand the manufacturing steps of different bakery and confectionary products.
- Build a sound depth about the dough chemistry useful in preparation of bakery products.
- Asses the quality of prepared bakery and confectionary products by sensory evaluation techniques.
- Investigate the different steps to prepare different bakery and confectionary products.
- Propose different recipes to prepare better and value added bakery and confectionary products.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Advance Techniques in Food

**Paper Code:** OEC –FT604.1

**Course Outcome**

By the end of this course students will be able to:

- Recall the traditional methods of food preservation.
- Understand the principles and mechanism behind various preservation techniques.
- Choose the preservation technique according to the need of the product.
- Compare the results of modern techniques with traditional one and utilize them for better results.
- Assess the role of image processing and robotics in food processing industries.
- Develop a process to set up modern methods of food preservation at industrial scale.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Biotechnological Tools in Food Analysis

**Paper Code:** OEC –FT604.2

**Course Outcomes**

At the end of the course student will be able to:

- Remember the basic terms and concept of different biotechnological tools.
- Understand the principles, mechanism and working of different biotechnological tools.
- Choose a better biotechnological tool according to the need of product.
- Investigate the spoilage of food using a suitable biosensor.
- Determine the advantage and disadvantages of various biotechnological tools.
- Propose a suitable biotechnological tool for food analysis.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Food Process Engineering

**Paper Code:** PEC-FT605.1

**Course Outcomes**

Upon successful completion of the course, students would be able to:

- Recall the fundamentals of unit and dimensions and their conversion.
- Understand the mechanism and role of different food processing operation.

- Apply various mathematical equations and empirical formulae to calculate the freezing, drying time and evaporator efficiency.
- Analyze the working of different process operations like freezing, drying and evaporation etc.
- Assess the quality of food on the basis of thermal process time calculations.
- Design thermal process operation, evaporation and drying operation.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Unit Operations in Food Engineering

**Paper Code:** PEC-FT605.2

**Course Outcome**

At the end of the course student would be able to:

- Remember the basic terms and facts of unit operations in food industries.
- Explain the various unit operations used in food industries.
- Solve problems of different unit operations on the basis of mathematical equations and empirical formulae.
- Analyze the effect of various unit operations on food quality.
- Determine various parameters i.e energy for size reduction, filtration and centrifugation time etc.
- Design various unit operations on the basis of product requirement in process line.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Food Storage and Transport Engineering

**Paper Code:** PEC-FT605.3

**Course Outcome**

At the end of the course student will be able to:

- Identify the various types of storage structures.
- Understand the concept of various types of traditional storage structures.
- Utilize the concept of traditional storage structure in developing modern storage structure.
- Analyze the requirements to continuous monitoring and control of the cold chain facility.
- Give opinion on the improved storage structure and modify them according to product stored.
- Design various types of cold stores according to the product desirability.

**Semester:** Sixth

**Year:** Third

**Paper Title:** Food Analysis and Quality Control

**Paper Code:** PCC-FT606

**Course Outcome**

At the end of the course student will be able to understand

- Remember the basic terms and concepts of quality control, assurance and chromatography.
- Understand the mechanism and working of various food analysis instruments.
- Investigate the compositions, color and small molecular weight compounds by the use of colorimeter and chromatographic techniques.
- Choose the best instrument for the specific analysis of food items.
- Judge the sensory quality of different foods by using different sensory evaluation techniques.
- Propose a particular instrument for specific analysis of different food items.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Instrumentation and Process Control

**Paper Code:** ESC-FT701

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall the basic terms and concepts of process control variables.



- Understand the principles and mechanism of transducers, Lapalace transformations to measure the process variables.
- Experiment with process equipment for various process variables.
- Compare various process equipments for single process variable.
- Judge the suitability of particular process equipment for specific process variable.
- Propose process equipment to measure the specific process variable.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Food Packaging

**Paper Code:** PCC-FT702

**Course Outcome**

At the end of the course, the students will able to:

- Remember the basic terms and concepts of packaging.
- Understand the manufacturing process of various types of packaging material like glass, steel, paper, plastic, Tin etc.
- Choose a specific packaging material according to the need of product to be packed.
- Analyze to check the quality of packaging material.
- Evaluate to check the suitability of packaging material for a specific food item.
- Design a packaging material according to the product need and packaging laws and regulations.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Plant Design and Project Engineering

**Paper Code:** PCC-FT703

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Remember the basic terms and concepts of plant design and project engineering.
- Understand the concepts of cost estimation, feasibility analysis, project engineering and plant establishment.
- Choose the best layout for plant establishment.
- Judge the different plant locations with the help of feasibility survey.
- Compare the different investment alternatives.
- Design a best plant layout on the basis of different analysis and surveys.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Food Product Development, Marketing and Sales **Paper Code:** HSMC-FT704

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Remember the basic terms of food product development, marketing & sales.
- Understand the concepts of market measurement and advertising.
- Apply the results of market survey and research in to product development.
- Compare the different parameters and standardize them for better results.
- Develop a best product on the basis of available resources and product integrity.
- Judge the label and nutrition facts specifications according to regulations for nutrition, product naming, and claims.
- To develop formulations to meet cost targets, ingredient statement, nutrition profile and sensory attributes.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Food Industry Waste Management and By Product Utilization **Paper Code:** PCC-FT705

**Course Outcome**

At the end of the course, the students will able to:

- Remember the various types of industrial waste.
- Understand the working of various waste treatment plant systems.
- Utilization of the microorganisms in a better way for treatment of food and water.
- Compare the different treatment systems and use the best one according to the desirability.
- Determine the various environmental pollutants discharged from food processing industries.
- Design a waste treatment system on the basis of requirements and efficiency.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Nutraceuticals, Functional and Therapeutic Foods **Paper Code:** PEC-FT706.1

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall the basic terms of nutraceuticals and functional foods.
- Understand the role of various functional ingredients in the food system.
- Utilize the functional ingredients in daily diet system.
- Analyze role of different beverages as functional foods.
- Justify the importance of antioxidants and phytochemicals as nutraceuticals.
- Propose a diet plan for patients of various diseases.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Flavour Technology

**Paper Code:** PEC-FT706.2

**Course Outcome**

At the end of the course, the student should be able to:

- Remember the basic terms of flavor, taste and aroma.
- Understand the functions and uses of different food flavours in improving quality, smell and taste and other sensory characteristics of foods.
- Experiment with extraction methods of different flavorings.
- Analyze different compounds responsible for flavour of foods.
- Judge the effect of processing on different flavoring compounds.
- Propose a suitable processing method for retaining the flavoring in different foods.

**Semester:** Seventh

**Year:** Fourth

**Paper Title:** Industrial Safety and Hazards

**Paper Code:** PEC-FT706.3

**Course Outcome**

Upon successful completion of the course, students would be able to:

- Recall the basic terms used for safety and hazards.
- Understand the various safety measures should taken at industrial level.
- Organize a step wise process to ensure the safety at industrial level.
- Analyze various types of energy hazards and take corrective action.
- Justify the role of various safety tools at industrial level.
- Design the safety, measurement and calculation of risk analysis.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Engineering and Technology

## Dept./Branch: Mechanical Engineering

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Tech (Mechanical Engineering)
2. M. Tech (Mechanical)
  - a) IPE (Industrial and Production Engineering)
3. Diploma (Mechanical Engineering)

**B.Tech.**

**Mechanical Engineering**

## **1. Name of the Program: B.Tech.**

### **Program Outcomes:**

- PO1.** Successfully apply fundamental mathematical, scientific, and engineering technology principles in formulating and solving engineering problems.
- PO2.** Successfully apply the procedures and steps for diagnosing a problem.
- PO3.** Work competently in one or more engineering technology areas of practice.
- PO4.** Develop improved skills and new skills to enhance the state of their practice in a dynamic professional environment.
- PO5.** Work effectively and conduct themselves ethically in their professional environment.

## **2. Name of the Specific Program (Mechanical Engineering)**

### **Program Specific Outcomes:**

- PSO1.** Develop ability to apply knowledge of mathematics, science, and engineering to mechanical engineering problems and to design and conduct experiments, as well as to analyze and interpret data.
- PSO2.** Apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.
- PSO3.** Apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.
- PSO4.** Conduct standard tests and measurements, and to conduct, analyze, and interpret experiments related to mechanical engineering technology.
- PSO5.** Demonstrate the ability to function effectively as a member of a technical team.
- PSO6.** Identify, analyze, and solve narrowly defined engineering technology problems.
- PSO7.** Apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
- PSO8.** Identify the need for and an ability to engage in self-directed continuing professional development.
- PSO9.** Demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity.

### **3. Course Outcomes**

#### **Semester/Year: III / II**

##### **Name of the Course: MECHANICS OF SOLIDS**

##### **Outcomes:**

**Upon successful completion of the course, students would be able:**

1. To solve advanced solid mechanics problems using classical methods
2. To understand the theory of elasticity including strain/displacement and Hooke's law relationships.
3. To analyze solid mechanics problems using classical methods and energy methods.
4. To solve torsion problems in bars and thin walled members.
5. To solve for stresses and deflections of beams under unsymmetrical loading;

##### **Name of the Course: MATERIAL SCIENCE**

##### **Outcomes:**

1. Micro structural arrangements, phases, properties and defects of engineering materials like ferrous and non ferrous metals and their alloys.
2. Polymers & ceramics.

##### **Name of the Course: ENGINEERING THERMODYNAMICS**

##### **Outcomes:**

1. To present a comprehensive and rigorous treatment of classical thermodynamics while retaining an engineering perspective.
2. To lay the groundwork for subsequent studies in such fields as fluid mechanics, heat transfer and to prepare the students to effectively use thermodynamics in the practice of engineering.
3. To develop an intuitive understanding of thermodynamics by emphasizing the physics and physical arguments.

##### **Name of the Course: PRODUCTION ENGINEERING- I**

##### **Outcomes:**

1. Select appropriate Manufacturing Processing to manufacture any component.
2. Interpret foundry practices like pattern making, mould making, Core making and Inspection of defects.
3. Differentiate various metal forming processes such as Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.
4. Classify different plastic moulding processes, Extrusion of Plastic and Thermoforming.
5. Select appropriate Joining Processes to join Work piece.

##### **Name of the Course: AUTOMOBILE ENGINEERING**

##### **Outcomes:**

1. Identify the different parts of the automobile
2. Explain the working of various parts like engine, transmission, clutch, brakes.
3. Describe how the steering and the suspension systems operate.
4. Understand the environmental implications of automobile emissions.

5. Develop a strong base for understanding future developments in the automobile industry.

**Name of the Course: MATHEMATICS-III**

**Outcomes:**

1. Apply the principles of Vector algebra to solve a variety of basic problems in engineering and Applied Science.
2. Apply the principles of Analytical Geometry and vector analysis to determine the equations of the straight lines and planes in Three Dimensional Space.
3. Differentiate the functions involving Exponential, Logarithmic, trigonometric, Inverse Trigonometric, Hyperbolic and Inverse Hyperbolic Functions..
4. Apply the principles of Differential Calculus to solve a variety of practical problems in Engineering and Applied Science.

**Semester/Year: IV / II**

**Name of the Course: KINEMATICS OF MACHINES**

**Outcomes:**

1. Familiarize with mechanisms and motion analysis of mechanisms.
2. Understand methods of mechanism motion analysis and their characteristics.
3. Analyse motion of planar mechanisms, gears, gear trains and cams.

**Name of the Course: FLUID MECHANICS & MACHINES**

**Outcomes:**

1. State the Newton's law of viscosity and explain the mechanics of fluids at rest and in motion by observing the fluid phenomena. Compute force of buoyancy on a partially or fully submerged body and analyze the stability of a floating body.
2. Derive Euler's Equation of motion and Deduce Bernoulli's equation.
3. Examine energy losses in pipe transitions and sketch energy gradient lines.
4. Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation for laminar flow in a pipe

**Name of the Course: PRODUCTION ENGINEERING II**

**Outcomes:**

1. Understand the application of the different joining techniques, and be able to select an appropriate technique according to a specific requirement.
2. Learn the principles and operations of different Metal Forming Processes

**Name of the Course: DESIGN OF MACHINE ELEMENTS – I**

**Outcomes:**

1. Apply basic stress and strain analysis techniques to machine elements
2. Utilize standard failure theories and fatigue analysis to develop safety factors for machine elements.
3. To learn to use standard practices in design of machine elements and standard data
4. Function effectively within engineering work teams

**Name of the Course: I.C. ENGINES**

**Outcomes:**

1. Describe and explain different types of reciprocating internal combustion engines (ICE), their typical design features and performance characteristics.
2. Describe and analyse the power cycle of internal combustion engines using ideal gas cycles, air cycles, and fuel-air cycles. Compute indicated power and thermal efficiency.
3. Describe and explain the gas exchange process and power boosting by means of turbo charging.
4. Describe and explain engine heat transfer and its relation to thermal loading of engine components and cooling.

**Name of the Course: PROCESS PLANNING & COST ESTIMATION**

**Outcomes:**

1. Upon completion of this course, the students will be able to
  - a) Use various process planning techniques
  - b) Use various types of jigs and fixtures
  - c) Maintain necessary documents
  - d) Estimate costing of different processes and products

**Name of the Course: INDUSTRIAL ENGINEERING & MANAGEMENT**

**Outcomes:**

1. Define and apply productivity concept to engineering applications
2. Demonstrate techniques to increase productivity
3. Describe the implementation of work and time study at a workplace
4. Assess the importance of ergonomics for design of machines

**Semester/Year: V / III**

**Name of the Course: DYNAMICS OF MACHINES**

**Outcomes:**

1. To equip the student with fundamental knowledge of dynamics of machines so that student can appreciate problems of dynamic force balance, transmissibility of forces, isolation of systems, vibrations.
2. Develop knowledge of analytical and graphical methods for calculating balancing of rotary and reciprocating masses. Evaluate fault currents for different types of faults.
3. Develop understanding of vibrations and its significance on engineering design.

**Name of the Course: DESIGN OF MACHINE ELEMENTS- II**

**Outcomes:**

1. Draw free body diagrams for the given component, analyze the loads and calculate the resulting stresses, deflections etc. and dimensions of the machine elements.
2. Estimate the factor of safety and expected life of the component.

**Name of the Course: MEASUREMENT & METROLOGY**

**Outcomes:**



1. Understand metrology, its advancements & measuring instruments,
2. Acquire knowledge on different standards of length, calibration of End Bars, linear and angular measurements, Screw thread and gear measurement & comparators.
3. Equip with knowledge of limits, fits, tolerances and gauging.
4. Acquire knowledge of measurement systems and methods with emphasis on different transducers, intermediate modifying and terminating devices.
5. Understand the measurement of Force, Torque, Pressure, Temperature and Strain.

**Name of the Course: TURBOMACHINES**

**Outcomes:**

1. Recognize typical designs of turbo machines.
2. Explain the working principles of turbomachines and apply it to various types of machines.
3. Determine the velocity triangles in turbomachinery stages operating at design and off-design conditions.
4. Recognize and discuss today's and tomorrow's use of turbomachines for enabling a sustainable society
5. sustainable society

**Name of the Course: COMPUTER AIDED MACHINE DRAWING**

**Outcomes:**

1. To improve the visualisation skills and understand the conventions used in engineering drawing.
2. To inculcate understanding of the theory of projection and make drawings using orthographic projections and sectional views.
3. To impart fundamental knowledge of drawing of different machine parts.
4. To enable the students with concepts of dimensioning and standards related to drawings.
5. To enable the students draw the assembly of various machine components.
6. Recognize to use engineering tools, software for drawing and engage in life long learning.

**Name of the Course: COMPOSITE MATERIAL TECHNOLOGY**

**Outcomes:**

1. Understands the purpose and the ways to develop new materials upon proper combination of known materials (either as they stand or following modification).
2. Is able to predict a wide range of mechanical and transport properties of materials as a function of parameters such as volume fraction, orientation & regularity arrangement and particle aspect ratio.
3. Is capable of comparing/evaluating the relative merits of using alternatives (corresponding to various simple and composite materials) for important engineering and other applications.

**Name of the Course: ENTREPRENEURSHIP**

**Outcomes:**

1. Entrepreneurship and Innovation minors will be able to sell themselves and their ideas.
2. Entrepreneurship and Innovation minors will be able to find problems worth solving.

3. Entrepreneurship and Innovation minors will be able to mobilize people and resources.

**Name of the Course: PROFESSIONAL ETHICS & DISASTER MANAGEMENT**

**Outcomes:**

1. The students will understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories.
2. The students will understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field .
3. The students will be aware of responsibilities of an engineer for safety and risk benefit analysis.
4. The students will be aware of professional rights and responsibilities of an engineer.
5. The students will acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.

**Semester/Year: VI / III**

**Name of the Course: HEAT TRANSFER**

**Outcomes:**

1. Basic heat transfer mechanisms (conduction, convection and radiation).
2. Heat transfer by conduction in solids for steady-state and transient conditions.
3. Heat transfer by convection in closed conduits and on external surfaces.

**Name of the Course: NEWER MACHINING METHODS**

**Outcomes:**

1. Student should be able to understand various material processing techniques for critical components.
2. Student should be able to understand various micro machining processes.
3. Student should be able to understand selection of latest additive manufacturing processes.
4. Student should be able to understand and select various measurement techniques in micro machining processes.
5. To capture the international market with latest mechanical industry needs with the knowledge and support of advanced manufacturing techniques, so student with this judgment will be absorbed in any mechanical industry.

**Name of the Course: VIBRATION ENGINEERING**

**Outcomes:**

1. Develop mathematical model to represent dynamic system.
2. Estimate natural frequency of mechanical element / system.
3. Analyze vibratory response of mechanical element / system.
4. Estimate parameters of vibration isolation system

**Name of the Course: POWER PLANT ENGINEERING**

**Outcomes:**

1. Comprehend various equipment/systems utilized in power plants.
2. Demonstrate site selection methodology, construction and operation of Hydro Electric Power Plants.
3. Discuss working, site selection, advantages, and disadvantages of steam power plants.

**Name of the Course: OPERATION RESEARCH****Outcomes:**

1. Understand the theoretical workings of the simplex method, the relationship between a linear program and its dual, including strong duality and complementary slackness.
2. Perform sensitivity analysis to determine the direction and magnitude of change of a model's optimal solution as the data change.
3. Understand the applications of integer programming and a queuing model and compute important performance measures.

**Name of the Course: MECHATRONICS****Outcomes:**

1. Identify the suitable sensor and actuator for a Mechatronics system.
2. Select suitable logic controls.
3. Analyze continuous control logics for standard input conditions.
4. Design hydraulic/pneumatic circuits.

**Name of the Course: ADDITIVE MANUFACTURING****Outcomes:**

1. Upon completion of this course, the students can able to compare different method and discuss the effects of the Additive Manufacturing technologies and analyze the characteristics of the different materials in Additive Manufacturing.
2. Describe the differences and of the application of a range of additive manufacturing processes.
3. Select and use correct CAD formats in the manufacture of a 3D printed part.
4. Set up and fabricate a 3D part using an additive manufacturing machine.

**Name of the Course: ENERGY & ENVIRONMENT****Outcomes:**

1. To identify and describe present state of energy security and its importance.
2. To identify and describe the basic principles and methodologies adopted in energy audit of a utility.
3. To describe the energy performance evaluation of some common electrical installations and identify the energy saving opportunities.

**Name of the Course: NON-DESTRUCTIVE TESTING & EVALUATION****Outcomes:**

4. Students will learn about different types of defects and damage in Engineering materials and structures.
5. Effect of those on the mechanical behaviour of the materials, how to evaluate the integrity of structural components.
6. Choice of right techniques for different applications.

7. Evaluation of safety & Reliability of metallic as well as composite structural components.

## Semester/Year: VII / IV

### **Name of the Course: REFRIGERATION AND AIR CONDITIONING**

#### **Outcomes:**

1. Demonstrate fundamental principles of refrigeration and air conditioning.
2. Identify and locate various important components of the refrigeration and air conditioning system.
3. Illustrate various refrigeration and air conditioning processes using psychometric chart.
4. Design Air Conditioning system using cooling load calculations.

### **Name of the Course: COMPUTER INTEGRATED MANUFACTURING**

#### **Outcomes:**

1. Understand the principle of automation.
2. Compare NC and CNC machines.
3. Construct part programmes using ISO format for given simple components.

### **Name of the Course: OPERATIONS MANAGEMENT**

#### **Outcomes:**

1. Understand the core features of the operations and production management function at the operational and strategic levels, specifically the relationships between people, process, technology, productivity and quality and how it contributes to the competitiveness of firms.
2. Explain the various parts of the operations and production management processes and their interaction with other business functions (strategy, engineering, finance, marketing, HRM, project management and innovation).

### **Name of the Course: FINITE ELEMENT METHODS**

#### **Outcomes:**

1. Solve differential equations using weighted residual methods.
2. Develop the finite element equations to model engineering problems governed by second order differential equations.
3. Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional element.
4. Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system.

### **Name of the Course: PRODUCT DEVELOPMENT AND LAUNCHING**

#### **Outcomes:**

1. Product launch and marketing activities, marketing planning and budget.
2. Learn about product performance management & reporting.
3. Learn about product lifecycle management and portfolio planning.
4. Role of product management leadership and staff selection methodologies.

### **Name of the Course: PROJECT MANAGEMENT**

#### **Outcomes:**

1. Manage the selection and initiation of individual projects and of portfolios of projects in the enterprise.

2. Students will identify the resources needed for each stage, including involved stakeholders, tools and supplementary materials
3. Students will describe the time needed t
4. successfully complete a project, considering factors such as task dependencies and task lengths

**Name of the Course: OPTIMIZATION TECHNIQUES**

**Outcomes:**

1. Understand the theoretical workings of the simplex method, the relationship between a linear program and its dual, including strong duality and complementary slackness.
2. Perform sensitivity analysis to determine the direction and magnitude of change of a model's optimal solution as the data change.
3. Understand the applications of integer programming and a queuing model and compute important performance measures.

**Name of the Course: TOTAL QUALITY MANAGEMENT**

**Outcomes:**

1. Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems.
2. Identify the key aspects of the quality improvement cycle and to select and use appropriate tools and techniques for controlling, improving and measuring quality.
3. Critically appraise the organizational, communication and teamwork requirements for effective quality management.
4. Critically analyze the strategic issues in quality management, including current issues and developments, and to devise and evaluate quality implementation plan

**Semester/Year: VIII / IV**

**➤ Industrial training.**

**M.Tech (Mechanical)**

**IPE**

**(Industrial & Production Engineering)**

## **1. Name of the Program: M.Tech.**

### **Program Outcomes:**

**PO1.** The ability to apply knowledge, techniques, skills and modern tools of manufacturing technology listed below to the solution of manufacturing and industrial engineering problems:

1. Materials
2. Manufacturing Processes
3. Quality
4. Automation
5. Industrial Engineering

**PO2.** The ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology..

**PO3.** The ability to formulate, conduct, analyze and interpret experimental results..

**PO4.** The ability to apply creativity in designing manufacturing systems, components and processes.

**PO5.** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and production and industrial engineering.

## **2. Name of the Specific Program (Industrial & Production Engineering)**

### **Program Specific Outcomes:**

**PSO1.** Students will be able to apply principles of Production Engineering both in private and public organizations..

**PSO2.** Students will be well equipped with Industrial Management skills and interdisciplinary technologies

**PSO3.** Students will be able to apply their knowledge of Production and Industrial Engineering for Research and development of a product..

**PSO4.** Identify, define, analyse, formulate, and solve problems related to manufacturing and service systems by applying tools of Industrial Engineering.

**PSO5.** Employ computational and experimental tools for effective decision making and support purposes.

**PSO6.** Design optimised systems and process to meet desired needs within social, economic, technical, environmental, and financial constraints.

**PSO7.** Solve problems in social, environmental and academic domains..



### **3. Course Outcomes**

#### **Semester/Year: I/ I**

##### **Name of the Course: ADVANCED NUMERICAL METHODS AND APPLIED STATISTICS**

###### **Outcomes:**

###### **Upon successful completion of the course, students would be able:**

1. Show working knowledge of numerical solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations
2. Work numerical differentiation and integration whenever and wherever usual methods are not applicable.
3. Work numerically on the differential equations using different methods through the theory of finite differences.
4. Demonstrate the statistical tests of hypotheses based on the given sample and interpret the results so as to take appropriate decision.

##### **Name of the Course: METAL FORMING**

###### **Outcomes:**

1. Understand and apply the mechanism of deformation for different metal forming processes and develop analytical relation between input and output parameters of process
2. Understand and analyze the concept of yield criteria applicable to different material deformation processes.
3. Understand the different types of defects, causes and apply their remedial measures in metal forming processes.

##### **Name of the Course: METROLOGY & COMPUTER AIDED INSPECTION**

###### **Outcomes:**

1. Students will be able to design tolerances and fits for selected product quality.
2. They can understand the standards of length, angles, they can understand the evaluation of surface finish and measure the parts with various comparators
3. They can choose appropriate method and instruments for inspection of various gear elements and thread elements

##### **Name of the Course: TOTAL QUALITY MANAGEMENT**

###### **Outcomes:**

1. Explain the different meanings of the quality concept and its influence.
2. Describe, distinguish and use the several techniques and quality management tools
3. Identify the elements that are part of the quality measuring process in the industry.
4. Explain the regulation and the phases of a quality system certification process.

##### **Name of the Course: INDUSTRIAL ENGINEERING SYSTEMS**

###### **Outcomes:**

1. Produce graduates who will draw upon the fundamental knowledge, skills, and tools of Industrial engineering to develop scale-appropriate system-based engineering solutions that satisfy constraints imposed by a global society.
2. Define and apply productivity concept to engineering applications
3. Describe the implementation of work and time study at a workplace
4. Assess the importance of ergonomics for design of machines.
5. Understand the methods used by organizations to obtain the right quantities of stock or inventory.

## **Semester/Year: II / I**

### **Name of the Course: ADVANCED MACHINING PROCESS**

#### **Outcomes:**

By the end of this course semester,

1. Students will be able to Explaining the details of types of advanced manufacturing and machining processes, their evolution and need.
2. Identifying the correct advanced manufacturing processes by formulating and determining the correct AMPs for development of various complex shaped geometries.
3. Hands on experiments on the Advanced Machines such as EDM, WEDM etc.
4. Design and development of experimental apparatus of any one advanced or derived and hybrid manufacturing process (Team Project). Perform good workplace ethics in completing assigned projects as directed

### **Name of the Course: ADVANCED COMPUTER INTEGRATED MANUFACTURING SYSTEM**

#### **Outcomes:**

1. Describe various types of automation and production concepts
2. Distinguish various automated flow lines in high volume production systems
3. Analyze and Design appropriate automated assembly systems
4. Apply Computer aided process planning, MRP and CNC part programming

### **Name of the Course: MACHINE TOOL DESIGN**

#### **Outcomes:**

1. Understand the concept of machine tool design..
2. Understand the laws of spindle, bed, column and guide/slide ways design
3. Understand the mechanism of adaptive control and man machine system in machine tool design.

### **Name of the Course: SUPPLY CHAIN MANAGEMENT**

#### **Outcomes:**

1. Understand the decision phases and apply competitive & supply chain strategies.
2. Understand drivers of supply chain performance.
3. Analyze the influence of forecasting in a supply chain.
4. Understand the role of aggregate planning, inventory, IT and coordination in a supply chain

### **Name of the Course: HUMAN RESOURCE DEVELOPMENT & INDUSTRIAL RELATIONS**

#### **Outcomes:**

1. To have an understanding of the basic concepts, functions and processes of human resource development
2. Evaluate the developing role of human resources in the global arena.
3. To be able to shape ethical behaviour of employees through right policies.

### **Semester/Year: III / II**

**Name of the Course: MATERIALS MANAGEMENT**

**Outcomes:**

1. Develop an ability to perform the role of a materials manager in an organization.
2. Shall be able to improve due date performance through use of MRP techniques with in capacity constraints.
3. To lead the teams for effective decision making and coordinate to effect purchase at minimum cost.

**Name of the Course: NANOTECHNOLOGY**

**Outcomes:**

1. Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on environment.
2. Apply principles of basic science concepts in understanding, analysis and prediction of matter at Nano scale.
2. To introduce advanced ideas and techniques required in emergent area of nanotechnology

**Name of the Course: RAPID PROTOTYPING**

**Outcomes:**

1. Describe product development, conceptual design and classify rapid prototyping systems; explain stereo lithography process and applications.
2. Explain direct metal laser sintering, LOM and fusion deposition modeling processes

### **Semester/Year: IV / II**

**DISSERTATION**

**Diploma**  
**(Mechanical Engineering)**

# 1. Name of the Program: DIPLOMA

## Program Outcomes:

By the culmination of this program, the Diploma holder acquires the ability to

- PO1.** An ability to apply knowledge of basic Mathematics, science and Engineering to solve the broadly defined Mechanical Engineering problems.(Basic Knowledge)
- PO2.** An ability to apply discipline-specific knowledge to solve broadly defined Mechanical engineering problems.(Discipline knowledge)
- PO3.** An ability to conduct standard tests and measurements and to conduct, analyze and interpret experiments.(Experiment and practices)
- PO4.** An ability to apply the knowledge, techniques, skills and modern tools of their discipline to narrowly-defined engineering technology activities.(Engineering tools).
- PO5.** Demonstrate knowledge to asses societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering practice.(The Engineer & society)

# 2. Name of the Specific Program (Mechanical Engineering)

## Program Specific Outcomes:

- PSO1.** The program make diplomas design, develop, test society needed products and engage in manufacturing or processing such quality products with utmost environment safety and committed for sales of products and provide good service to customer.
- PSO2.** The Program must demonstrate that diplomas can apply specific program principles to design, fabrication, test, operation or demonstration of basic Mechanical systems or processes.
- PSO3.** The Mechanical Engineering Diploma Students acquire technical and managerial skill that make them an employable graduate.
- PSO4.** The Mechanical Engineering Diploma Students will be able to function in software industry in the areas of Design and development of software tools such as AUTO CAD, Solid works, Ansys.
- PSO5.** The Mechanical Engineering Diploma Students acquire theoretical background of each course that they are capable of applying it for solving real-time (Physical) problems

### **3. Course Outcomes**

#### **Semester/Year: III / II**

##### **Name of the Course: THERMAL ENGINEERING-I**

##### **Outcomes:**

##### **Upon successful completion of the course, students would be able:**

1. To understand property, system & gas laws.
2. Explain Zeroth law of thermodynamics..
3. Apply first law of thermodynamics to real life situations
4. Calculate amount of heat transfer, work transfer & internal energy associated with the process
5. Identify thermodynamic processes in a cycle.
6. Determine boiler performance based on given specific parameters.

##### **Name of the Course: FLUID MECHANICS-I**

##### **Outcomes:**

1. Be able to convert units of any parameter between three systems of units, understand the physical properties and characteristic behaviour of fluids, and the basic principles of fluid mechanics
2. Be able to describe and interpret the behaviour and Fluid Mechanics performance of fluid at rest.
3. Be able to derive the dimensions of different fluid parameters.

##### **Name of the Course: STRENGTH OF MATERIALS-I**

##### **Outcomes:**

1. Evaluate Material Properties Under Longitudinal, Lateral Loads & Thermal variation
2. Compute Moment of Inertia of Symmetric & asymmetric structural sections
3. Draw Shear Force & Bending Moment Diagram for Statically Determinate Beams

##### **Name of the Course: ENGINEERING MATERIALS**

##### **Outcomes:**

1. Identify various ferrous metals and alloys based on composition and properties for prescribed application.
2. Select the non metallic material for given simple machine elements.
3. Draw and Interpret TTT curves and Iron carbon diagram.
4. Select proper electrolysis process for surface coating.

##### **Name of the Course: APPLIED MATHEMATICS**

##### **Outcomes:**

1. Identify the applications of derivatives
2. Understand integral calculus
3. Apply concepts of calculus or suitable mathematical tool to solve given engineering problems.

**Name of the Course: 'C' PROGRAMMING**

**Outcomes:**

1. Understand the basics of programming
2. Application of operators and expressions

**Semester/Year: IV / II**

**Name of the Course: THERMAL ENGINEERING-II**

**Outcomes:**

1. Explain working of steam prime movers.
2. Identify the elements and processes of steam condensers and cooling towers

**Name of the Course: FLUID MECHANICS-II**

**Outcomes:**

1. State the Newton's law of viscosity and explain the mechanics of fluids at rest and in motion by observing the fluid phenomena. Compute force of buoyancy on a partially or fully submerged body and analyze the stability of a floating body.
2. Derive Euler's Equation of motion and Deduce Bernoulli's equation.
3. Examine energy losses in pipe transitions and sketch energy gradient lines.
4. Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation for laminar flow in a pipe

**Name of the Course: STRENGTH OF MATERIALS-II**

**Outcomes:**

1. Students will be able to Evaluate Slope and Deflection of Statically Deflected beams subjected to concentrated load, uniformly distributed load, uniformly varying load and couple and also strain energy in members subjected to Gradual, sudden and impact loads.
2. Students will be able to estimate stresses, strain and deformations in determine shafts of solid and hollow, homogeneous and composite circular cross section subjected to twisting moment also critical load of columns under various end conditions.
3. Students will be able to design the components subjected to various loadings with the help of various theories of failures.
4. Students will be proficient to design a component to meet desired needs within realistic constraints of health and safety.

**Name of the Course: MANUFACTURING PROCESS**

**Outcomes:**

1. Explain the basic manufacturing processes.
2. Suggest appropriate casting method suitable for a given industrial component.
3. Identify the area of applications of a particular joining
4. Practice standard safety norms during any joining process.

**Name of the Course: AUTOMOBILE ENGINEERING**

**Outcomes:**

1. Identify the different parts of the automobile Identify the different parts of the automobile.

2. Explain the working of various parts like engine, transmission, clutch, brakes.
3. Describe how the steering and the suspension systems operate.
4. Understand the environmental implications of automobile emissions.

**Name of the Course: ELECTRICAL & ELECTRONICS ENGINEERING**

**Outcomes:**

Upon completion of this course, the students will be able to

1. Define the terms: Electromotive force, current, voltage, resistance, and conductance.
2. State the specifications of electrical materials and select the components for simple applications.
3. Explain the working of single phase transformer

**Semester/Year: V / III**

**Name of the Course: THEORY OF MACHINES-I**

**Outcomes:**

1. Draw inversions and determine velocity and acceleration of different mechanisms.
2. Construct different types of cam profile for a given data.
3. Knowledge of governors

**Name of the Course: METROLOGY & INSPECTION**

**Outcomes:**

1. Measure the given mechanical elements and assemblies using linear and angular analog /digital measuring instruments.
2. Check geometrical accuracy of given application.
3. Explain surface roughness checking instruments.

**Name of the Course: INTERNAL COMBUSTION ENGINE**

**Outcomes:**

1. Analyze performance of ICEs by operating them and observing changes in thermodynamic properties during each stroke of ICEs (and by using thermodynamic diagrams).
2. List characteristics and properties of alternate fuels used for ICEs

**Name of the Course: RENEWABLE ENERGY METHODS**

**Outcomes:**

1. Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems , their prospects and limitations
2. Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications
3. Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations.
4. Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications

**Name of the Course: REFRIGERATION & AIR CONDITIONING**



**Outcomes:**

1. Learning the fundamental principles and different methods of refrigeration and air conditioning
2. Study of various refrigeration cycles and evaluate performance using Mollier charts and/ or refrigerant property tables.
3. Comparative study of different refrigerants with respect to properties, applications and environmental issues.

**Name of the Course: CNC & AUTOMATION****Outcomes:**

1. Understand the advantages of NC and CNC
2. Constructional details of CNC machines
3. Knowledge of cutting tools for CNC machines

**Semester/Year: VI / III****Name of the Course: THEORY OF MACHINES-II****Outcomes:**

1. Calculate balancing mass and its position.
2. Solve problems on power transmission.
3. Identify different types of vibration, their causes.

**Name of the Course: INDUSTRIAL MANAGEMENT****Outcomes:**

1. Analyze work content and calculate standard time in a given situation.
2. Apply Statistical Quality Control tools in a given situation.
3. Select material handling equipment.
4. Improve productivity using work study and method study techniques.

**Name of the Course: MANUFACTURING SCIENCE-II****Outcomes:**

1. Explain mechanics of cutting..
2. Identify and explain various metal working processes.
3. Knowledge of newer machining processes.
4. Knowledge of plastic moulding processes

**Name of the Course: MACHINE DESIGN****Outcomes:**

1. Able to design welded joints
2. Able to design joints and shafts
3. Design, analysis and sizing of shafts

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Fashion Design

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B. Des in Fashion Design
2. Diploma in Fashion Design
3. MBA in Fashion Management

**B. Des**  
**in**  
**Fashion Design**

# Programme: B. Des in Fashion Design

## Program outcomes:

- Apply comprehensive abilities in creating and presenting product for entry-level positions in the fashion industry.
- Work well together as emerging team players and innovative design thinkers.
- Understand and implement new technologies relative to design development, material choices, and the manufacture and distribution of fashion.
- Adapt their inspired knowledge and abilities to ongoing changes in global fashion and related creative industries.
- Bring their evolving design point – of – view and work aesthetics to various types of imaginative challenges and
- Explore sustainability in their design development.

## Specific Program outcome: (B.Des in Fashion Design)

- Focusing primarily on fashion, fashion history and context, the overall content emphasizes the appreciation of context and meaning in design, whilst providing concepts of fashion evolution and design adaptation.
- The content in the program includes theoretical and practical design aspects; the emphasis is placed on research and critical thinking, introducing students to the body of knowledge that supports achievement within a higher education learning environment.
- Learners are encouraged to record and analyse the key drivers which influence fashion globally, including ecological, environmental, ethical, technological and aesthetic factors.
- Students learn about historical and contemporary artists and designers and prepare presentations illustrating how this work inspires and influences current fashion, lifestyle and culture.
- They are expected to challenge and develop methods of fashion forecasting and directional influences and develop a creative uniqueness by exploring the design process through specific projects.
- Establishing individuality in generating concepts, developing design ideas and creating a personal visual language is fundamental to successfully achieving required outcomes in the program and therefore learners are encouraged to develop initiatives and perception through personal expression and enquiry and utilize their progress to develop creative potential and personal style.

## **COURSE OUTCOMES**

### **I Semester**

Course Nomenclature	<b>Basic of Fashion</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. This course will develop an understanding about factors influencing fashion trends such as socio-cultural environment, economic conditions, technological advancement, and political scenario, religious views as also film and media.</li><li>2. To develop an understanding of global &amp; Indian fashion Industry and role of merchandisers in the fashion industry.</li><li>3. To learn technical skills, term &amp; language for working in virtual fashion world.</li><li>4. To understand the importance of fashion forecasting in fashion and the visual merchandising process.</li><li>5. Be able to develop competencies in fashion theory and marketing of fashion goods. Be able to acquire a thorough background in the business aspects of the fashion industry.</li></ol>
Course Code	BDFD-101

Course Nomenclature	<b>Sustainable Design (Environmental Studies)</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Students will possess the intellectual flexibility necessary to view environmental questions from multiple perspectives, prepared to alter their understanding as they learn new ways of understanding.</li><li>2. Students will solve problems systematically, creatively, and reflexively, ready to assemble knowledge and formulate strategy.</li><li>3. Students will communicate with precision, effective art, in writing, in speech, and in digital media.</li><li>4. Students will have mastered foundational knowledge enabling them to make sound life decisions as well as enter a career in an environmental profession.</li></ol>
Course Code	BDFD-102

Course Nomenclature	<b>Communication Skills</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. Demonstrate critical and innovative thinking.</li> <li>2. Display competence in oral, written, and visual communication.</li> <li>3. Apply communication theories.</li> <li>4. Show an understanding of opportunities in the field of communication.</li> <li>5. Use current technology related to the communication field.</li> <li>6. Respond effectively to cultural communication differences.</li> <li>7. Communicate ethically.</li> <li>8. Demonstrate positive group communication exchanges.</li> </ol>
Course Code	BDFD-103

Course Nomenclature	<b>Basic of Design</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. Through this course students will get familiar with basic elements &amp; principles of design that are the essential components for creating new design.</li> <li>2. To provide a balanced mix of theory and practical knowledge tied up with practical situations based on fashion &amp; apparel design industry and develops the concept of visualization, communication through the medium of flat sketch/drawing based on elements &amp; principles of design.</li> <li>3. Students will able to use different mediums and tools that are required for communicating design idea or blueprint of design that will encourage students to think, explore and create.</li> <li>4. Student will learn how to identify the fashion trend, how fashion moves, how to create harmony in design.</li> <li>5. This course will create a relationship between fashion industry &amp; students through which he/she is able to work in fashion industry &amp; express his view, thought through the sketch.</li> </ol>
Course Code	BDFDP-104

Course Nomenclature	<b>Visualization &amp; Representation-1</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Development of skills with basics of drawing to understand course. Improving of and enhancing ability of drawing by using all tools .</li> <li>2. Developing skill of continues practice of perspectives and involvement on drawing</li> <li>3. Developing Analytical skills and comparative drawing and use of eye hand coordination. Enhancing the techniques and use of pencil shading</li> <li>4. Enhancing the esthetic sense and drawing and study of objects with its details of light, depth and highlighted area. Enhancement of drawings with nature and its esthetics sense.</li> <li>5. Development of calculated ideas and creative patterns with using shapes like circle and ellipse. Improving how space develops from point, to line to area to volume , knowledge about isometric views of manmade objects. also improving drawings of Drawings for Cube, Cuboids, Cylinder, cone, Prism, Pyramid and variations</li> </ol>
Course Code	<b>BDFDP-105</b>

Course Nomenclature	<b>Material Exploration - I</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To focus on selecting materials in the first phase of design and developing the project until the end with the help of scaled models.</li> <li>2. To makes it easier for designers to develop their skills in different areas: drawing, model-building, , and knowledge of materials applied to a design project.</li> <li>3. Students can have good results in a design process through the use of creative tools that help them in their learning process.</li> </ol>
Course Code	<b>BDFDP-106</b>

Course Nomenclature	<b>Computer Application</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. Basic knowledge of computer for knowing the computer like word processing software, preparation, saving and printing of text documents.</li> <li>2. For to be aware about the latest Operating systems (OS) basic concepts of MS- DOS/ Windows (latest) or system management.</li> <li>3. To learn about internet , and get aware about latest explorer installation, configuration and application and search engines Current trends: internal, latest net.</li> <li>4. knowledge of what is the inside on Window Accessories</li> <li>5. To prepare for industry with software knowledge. MSpower point and it tool inside like PowerPoint (Home) PowerPoint Insert, applying Auto Start Transactions &amp; Working with Animation, Design and Professional presentation formation.</li> <li>6. As per industry need students also Understanding Spread Sheet, on power point Excel like Work sheet, Basic database, MS Excel (Home), MS Excel (Insert), MS Excel (Page Layout), MS Excel (Applying Arithmetic Formulas in Table), MS Excel (Applying Logical Formulas in Table), MS Excel (Data), MS Excel (Review), MS Excel (View), Business charts (Pie, Line bar) operation Guidance for Search on Web</li> <li>7. Guidance for Working with Mail as per industry standers and requirements</li> </ol>
Course Code	BDFDP-107



## **II Semester**

Course Nomenclature	<b>Introduction to Textile</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. To learn about raw materials for textiles and where they come from</li><li>2. To understand what it means that a fabric is woven or knitted, dyed or printed</li><li>3. To learn the properties of fabrics, how they can be enhanced and what they can be used for</li><li>4. To develop an understanding of the environmental impact of textile raw materials and their processing</li><li>5. To learn the terminology used in fabric processes and be able to explain what happens in the making of fabrics</li><li>6. To understand how you go about analysing a fabric to find out how it is made and what it is made from.</li></ol>
Course Code	BDFD-201

Course Nomenclature	<b>Western Art Appreciation</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. The student will, verbally and in writing, evaluate and critique works of art as assigned in class.</li><li>2. The student will physically produce artworks demonstrating the principles of design and discuss the use of elements of art with in those art works.</li><li>3. The student will, verbally and in writing, evaluate and critique works of art as assigned in class.</li></ol>
Course Code	BDFD-202

Course Nomenclature	<b>Visualization &amp; Representation-II</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Development of skills with basics of drawing to understand course.</li> <li>2. Improving of and enhancing ability of drawing by using all tools .</li> <li>3. Developing skill of continues practice of perspectives and involvement on drawing</li> <li>4. Developing Analytical skills and comparative drawing and use of eye hand coordination. Enhancing the techniques and use of pencil shading</li> <li>5. Enhancing the esthetic sense and drawing and study of objects with its details of light, depth and highlighted area.</li> <li>6. Enhancement of drawings with nature and its esthetics sense.</li> <li>7. Development of calculated ideas and creative patterns with using shapes like circle and ellipse.</li> <li>8. Improving how space develops from point, to line to area to volume , knowledge about isometric views of manmade objects. also improving drawings of Drawings for Cube, Cuboids, Cylinder, cone, Prism, Pyramid and variations</li> </ol>
Course Code	BDFD-203

Course Nomenclature	<b>Material Exploration II</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<p><b>By the end of the course the students will be able to</b></p> <ul style="list-style-type: none"> <li>• Learn about various sewing equipment that are essential in a sewing room.</li> <li>• Gain an insight of various sewing machines available in the market, their functioning &amp; common problems faced while usage.</li> <li>• Get knowledge of basic stitches that a seamstress can employ in garment construction.</li> <li>• Study about various pre-preparatory processes involved in fabric preparation for garment construction &amp; get familiar with fabric grain &amp; its importance.</li> </ul>
Course Code	BDFD-204

Course Nomenclature	<b>Digital Design I</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To familiarize Corel Draw which give a fundamental knowledge about graphical logics in computer such as designing, editing, vector images, portfolio setting, applied art and advertisement.</li> <li>2. Through this course students are able to enhance the colors, add some contrast, or crop the image. They can design from poster to banners to beautiful websites, eye-catching logos to fashion magazine, edit videos, style retouch etc.</li> </ol>
Course Code	<b>BDFDP-205</b>

Course Nomenclature	<b>Fabric construction</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. This fabric construction course looks at how the construction of different fabrics helps to determine their characteristics, quality and cost.</li> <li>2. Students will gain an understanding of the production processes of weaving and knitting, including dobby and jacquard weaving and weft and warp knitting and the related terminology will be explained.</li> <li>3. To give the knowledge to grow your own creativity and explore the different uses of a wider variety of fabrics.</li> </ol>
Course Code	<b>BDFDP-206</b>

### **III Semester**

Course Nomenclature	<b>History of Western Costume</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Developing theoretical knowledge of costumes in history of Ancient Egyptian civilization mainly Men's garments, Women's garments, Hair Styles, Jewelry &amp; Footwear Accessories of men &amp; women, Garment of Gods &amp; Goddesses</li><li>2. Developing theoretical knowledge of costumes in history of Ancient Roman, costume for men and women garments and understand how the Hair Styles, Jewelry &amp; Footwear Accessories was during that period.</li><li>3. To Understand how was the costumes, Hair Styles, Jewelry &amp; Footwear Accessories during Renaissance Period .</li><li>4. Theoretical knowledge to Understand how was the costumes, Hair Styles, Jewelry &amp; Footwear Accessories during Victorian Period.</li></ol>
Course Code	BDFDP-301

Course Nomenclature	<b>Draping I</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Student can experiment with fabric, and decide where to place darts, tucks, and other design elements. Playing with the way fabric folds and hangs on the body is a fun way to create new designs.</li><li>2. Draping is a key skill which allows apparel designers to understand what creates a great fit and how to achieve it. While draping for apparel design may seem like a daunting and tedious approach to creating patterns, it's actually one of the more creative parts of the fashion design process.</li><li>3. To enable students to create their designs on a three dimensional form using draping method.</li></ol>
Course Code	BDFDP-302

Course Nomenclature	<b>Fashion Illustration I</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To create understanding about fundamental structure of a human body by beginning with figure drawing, emphasizing anatomical details.</li> <li>2. Fashion model drawing develops the concept of visualization, communication through the medium of sketch/drawing based on the lines, shading &amp; block figure techniques.</li> <li>3. This course student is able to develop visual thinking and he/she is able to use knowledge of human anatomy for developing illustrations &amp; develop skills for drawing fashion figures free-hand.</li> <li>4. This course will give an overview, how fashion model drawing play an important role in fashion industry.</li> <li>5. Student will understand how to work as fashion illustrator in fashion industry &amp; express his own views, thought through the sketch.</li> </ol>
Course Code	BDFDP-303

Course Nomenclature	<b>Pattern Making &amp; Construction I</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. In this course the learner understands scientific way to manipulating patterns to achieve the desired style line. Pattern Making is the process to make template from which the parts of a garment are traced onto fabric before being cut out and assembled.</li> <li>2. Through such skill domain students will enable to generate well-fitting patterns and manipulate them to achieve desired style line.</li> <li>3. This Course will enable students to appreciate the critical areas and shapes in human form impacting the fit of the garment and give students to relate to the pattern Making Techniques undertaken to fit a 2D material to a 3D body.</li> <li>4. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of garment construction, enabling them to use various tools and techniques for design developments, integrating design skills with the help of sewing machine applications.</li> <li>5. This course is an important asset for students to be able to design and construct garments for kid's wear as well as to understand how to calculate fabric material required for construction of garments.</li> </ol>

Course Nomenclature	<b>Garment Construction I</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Objective of the course is to imparts knowledge to students on fabric formation, its properties and classification of different seams, gathers, pleats, necklines, facing, sleeves that are used in garment construction.</li> <li>2. Understanding the term garment construction in context of sample designing skills to visualise, create and develop.</li> <li>3. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of garment construction, enabling them to use various tools and techniques for design developments, integrating design skills with the help of sewing machine applications.</li> <li>4. This course is an important asset for students to be able to design and construct garments for kid's wear as well as to understand how to calculate fabric material required for construction of garments.</li> </ol>
Course Code	BDFDP-305
Course Code	BDFDP-304

Course Nomenclature	<b>Basic of Embroideries &amp; Manipulation</b>
Year/Semester	<b>II/III</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Objective of the course is to familiarize students with various techniques of surface decoration and ornamentation.</li> <li>2. Understand the scope for design intervention and innovation in using these techniques for creative and contemporary product development.</li> <li>3. Be able to develop skills to enhance the aesthetic value of any fabric through ornamentation and enhance the creative skills in developing new designs based on the traditional design range.</li> <li>4. Be able to appreciate traditional textiles of India via their material, colours, texture and motifs, Indian traditional crafts/garments and accessories.</li> <li>5. Understand the importance of textile crafts with the historical perspective, the impact of modernization and their contemporary status.</li> </ol>
Course Code	BDFDP-306

## **IV Semester**

Course Nomenclature	<b>Business of Fashion</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<b>On successful completion of their course of study students will be able to:</b> <ol style="list-style-type: none"><li>1. Apply skills of critical analysis to real world situations within a defined range of contexts;</li><li>2. Demonstrate a high degree of professionalism characterized by initiative, creativity, motivation and self management;</li><li>3. Express ideas effectively and communicate information appropriately and accurately using a range of media.</li><li>4. Develop working relationships using teamwork and leadership skills, recognizing and respecting different perspectives;</li><li>5. Manage their professional development reflecting on progress and taking appropriate action;</li></ol>
Course Code	BDFD-401

Course Nomenclature	<b>Draping II</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Student can experiment with fabric, and decide where to place darts, tucks, and other design elements. Playing with the way fabric folds and hangs on the body is a fun way to create new designs.</li><li>2. Draping is a key skill which allows apparel designers to understand what creates a great fit and how to achieve it. While draping for apparel design may seem like a daunting and tedious approach to creating patterns, it's actually one of the more creative parts of the fashion design process.</li><li>3. To enable students to create their designs on a three dimensional form using draping method.</li></ol>
Course Code	BDFDP-402

Course Nomenclature	<b>Design Process I</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<p><b>Students will:</b></p> <ol style="list-style-type: none"> <li>1. Adapt their artistic abilities to support their future design careers.</li> <li>2. Assess, propose, and apply various techniques related to drafting, draping, and constructing of garments.</li> <li>3. Develop a systematic, critical approach to problem solving at all levels of the design process.</li> <li>4. Relate the design process to the appropriate manufacturing process.</li> <li>5. Demonstrate professionalism by managing time to meet deadlines with quality work and effectively collaborating in teams.</li> <li>6. Research and relate fashion design to a broader socio economic, historical, and environmental context.</li> <li>7. Articulate design ideas verbally, visually, and digitally.</li> </ol>
Course Code	BDFDP-403

Course Nomenclature	<b>Fashion Illustration II</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Gain fashion illustration technique</li> <li>2. Gain knowledge of illustration from different artists.</li> <li>3. Gain coloring techniques - markers, pencil drawing, watercolors, paint, computer rendering .</li> <li>4. Development of own individual style.</li> <li>5. The student will learn the basics of fashion illustration: drawing technique of the human figure and different techniques such as using pencil, markers, watercolours, paint, computer programs, etc.</li> <li>6. It is expected that the student realizes the importance of doing an effective research for a project, how to interpret it and the needs of a client while also keeping their style, how to bring to life a trend, a concept or a mood through their artistic vision.</li> </ol>
Course Code	BDFDP-404



Course Nomenclature	<b>Pattern Making II</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Proficiency in pattern making for male and female garments.</li> <li>2. Gain ability to use pattern making for creating new garments designs.</li> <li>3. Understand different types of paper pattern.</li> <li>4. Competent to lay the pattern on the fabric.</li> <li>5. To create design for different styles of Male and Female Garments.</li> </ol>
Course Code	BDFDP-405

Course Nomenclature	<b>Garment Construction II</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Understand the highest possible quality sewing of a garment Production of a garment. Plan logical garment construction outline for each style selected.</li> <li>2. Development or selection of pattern Outline garment construction cover layout options, markings with any bastings and tracing.</li> <li>3. Development of garment .Understand tools required for sewing including sewing machines, hand stitches, seam finishing .</li> <li>4. Work in the Lab section of this course Be able to select stitching guide, needles, threads, stitches per inch Construction of a garment</li> </ol>
Course Code	BDFDP-406

Course Nomenclature	<b>Digital Design II</b>
Year/Semester	<b>II/IV</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Students will acquire a sound knowledge of various design software's like Corel draw and Photoshop, a powerful tool that offers a wide scope to conceptualize, design and create graphics, prints, patterns, textures etc. for various design led projects using computers as a medium.</li> <li>2. Hands on experience with the software and related design assignments, offers a wide scope to the learner to implement creative ideas in various permutations and combinations, bringing creative ideas into a realistic approach and outcome.</li> <li>3. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of vector graphics software, enabling them to use various tools and techniques for design developments, integrating design skills with the technology of computer applications.</li> </ol>
Course Code	BDFDP-407

## V Semester

Course Nomenclature	<b>Indian art and Costume appreciation</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<p>1. To build student's knowledge for Indian Costume of old Indian society in history. INDUS VALLEY CIVILIZATION Its Origin of drapes Knowing of seals, potteries, jewelries, statues. The great bath, valley's infrastructure ext.</p> <p>2. Development of theoretical knowledge of Indian art and costume history of MAURYAN AND SUNGA PERIOD Like costume of Men and women's and what kind of Jewelries and head gears were used and also Hairstyles of men and women.</p> <p>3. How was SATVAHANA (ANDHRA) &amp; KUSHAN PERIOD.</p> <p>4. And also get know how was the Men and women's garments During this period and it Jewelry and footwear</p> <p>5. Theoretical knowledge- GUPTA PERIOD society and Men and women's garments Headgears and hairstyles Jewelry and footwear Military costumes of kings &amp; warriors were used during this period.</p> <p>6. The art and costume of MEDIEVAL / MUGHAL PERIOD And Men and women's garments, use of Headgears and hairstyles and kind of Jewelry and footwear were used during this period also Military costumes of kings &amp; warriors</p>
Course Code	BDFDP-501

Course Nomenclature	<b>RESEARCH METHODS</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"><li>1. Understand the basic fundamentals of research.</li><li>2. Assess the appropriateness of different kinds of research designs and methodology.</li><li>3. Determine the essentials of sampling techniques and data collection methods used in research.</li><li>4. Apply proper referencing, data analysis-and hypothesis testing procedures and interpret research work</li></ol>
Course Code	BDFD-502

Course Nomenclature	<b>Merchandising Production Methods</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Introduce the learners to types of garment manufacturing units and work flow in garment industry.</li> <li>2. Introduce design learners to Merchandising, types of merchandisers and interdependency of designers and merchandisers.</li> <li>3. Educate learners about methods of sourcing and regional sourcing hubs in India.</li> <li>4. Introduce learners to time and action calendar – importance of planning and scheduling in entire supply chain.</li> <li>5. Educate learners about sampling and types of samples.</li> <li>6. Train students for costing of garments – knits and woven. (knowledge concern areas - material costs, estimation vs actual costing).</li> </ol> <p>Introduce designers to stages of documentation and record maintenance in apparel manufacturing.</p>
Course Code	<b>BDFDP-503</b>

Course Nomenclature	<b>Surface Ornamentation I</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To make students aware of Different types Embroideries, dyeing &amp; printing and other surface ornamentation part.</li> <li>2. The students will be able to understand the various processes of fabric manufacturing, Surface Ornamentation, Embroideries, dyeing &amp; printing.</li> <li>3. Understand the scope for design intervention and innovation in using these techniques for creative and contemporary product development.</li> <li>4. Learning surface ornamentation in a fashion design course can help you create exquisite designs. It is one of the best ways to express your love for art. .</li> <li>5. Be able to develop skills to enhance the aesthetic value of any fabric through ornamentation.</li> </ol>
Course Code	<b>BDFDP-504</b>

Course Nomenclature	<b>Fashion Illustration III</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To create understanding about fundamental structure of a human body by beginning with figure drawing, emphasizing anatomical details.</li> <li>2. Fashion model drawing develops the concept of visualization, communication through the medium of sketch/drawing based on the lines, shading &amp; block figure techniques.</li> <li>3. This course student is able to develop visual thinking and he/she is able to use knowledge of human anatomy for developing illustrations &amp; develop skills for drawing fashion figures free-hand.</li> <li>4. This course will give an overview, how fashion model drawing play an important role in fashion industry.</li> <li>5. Student will understand how to work as fashion illustrator in fashion industry &amp; express his own views, thought through the sketch.</li> </ol>
Course Code	BDFDP-505

Course Nomenclature	<b>Pattern Making &amp; Construction II</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. In this course the learner understands scientific way to manipulating patterns to achieve the desired style line. Pattern Making is the process to make template from which the parts of a garment are traced onto fabric before being cut out and assembled.</li> <li>2. Through such skill domain students will enable to generate well-fitting patterns and manipulate them to achieve desired style line.</li> <li>3. This Course will enable students to appreciate the critical areas and shapes in human form impacting the fit of the garment and give students to relate to the pattern Making Techniques undertaken to fit a 2D material to a 3D body.</li> <li>4. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of garment construction, enabling them to use various tools and techniques for design developments, integrating design skills with the help of sewing machine applications.</li> <li>5. This course is an important asset for students to be able to design and construct garments for kid's wear as well as to understand how to calculate fabric material required for construction of garments.</li> </ol>
Course Code	BDFDP-506

Course Nomenclature	<b>Draping III</b>
Year/Semester	<b>III/V</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Student can experiment with fabric, and decide where to place darts, tucks, and other design elements. Playing with the way fabric folds and hangs on the body is a fun way to create new designs.</li> <li>2. Draping is a key skill which allows apparel designers to understand what creates a great fit and how to achieve it. While draping for apparel design may seem like a daunting and tedious approach to creating patterns, it's actually one of the more creative parts of the fashion design process.</li> <li>3. To enable students to create their designs on a three dimensional form using draping method.</li> </ol>
Course Code	<b>BDFDP-507</b>

## VI Semester

Course Nomenclature	<b>Professional Practices</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Work proficiently and effectively in small teams;</li><li>2. Demonstrate a basic understanding of practical aspects of fluid mechanics, reinforcing the theoretical concepts;</li><li>3. Understand the need for lifelong learning for continuous professional development;</li><li>4. Critically evaluate and interpret information relevant to their own research;</li><li>5. Write and speak in a style appropriate to academic and professional contexts;</li><li>6. Write an appropriate report of their laboratory experiment;</li></ol>
Course Code	BDFD-601

Course Nomenclature	<b>Fashion Forecasting</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. The course aims to understand the forecasting techniques to determine market demands; enabling students to make use of the forecast to design collections by acquire the skills in research process in forecasting.</li><li>2. Student will incorporate strategic decision making in recognizing the patterns, cycles and dissemination of information, investigation will determine a framework to specifically apply creative and analytical skills in the trend forecasting process.</li><li>3. This course offers vast learning opportunities covering all the aspects of fashion right from predicting future trends, to product development and placing the right product on the shelves.</li><li>4. Students will come out to be an expert in analysing trends for fashion Industry.</li></ol>
Course Code	BDFD-602

Course Nomenclature	<b>Surface Ornamentation II</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Identify and use embroidery tools with safety precautions. 8. Prepare sample basic hand stitches (Temporary &amp; permanent stitch).</li> <li>2. Describe &amp; use different types of tracing method carbon paper, tissue paper, tracing paper, water soluble pen, tracing box (light box), hot pressing and wooden block method.</li> <li>3. Demonstrate the basic embroidery stitches flat, loop, crossed, knotted and prepare article.</li> <li>4. Draw, create &amp; place free hand designs with Scribble, Geometrical, Cut Paper or Signature method. State &amp; identify the color wheel, describe various types of color, color schemes &amp; use these color schemes in different jobs.</li> <li>5. Demonstrate the Enlarged &amp; Reduced forms of design.</li> <li>6. Decorate a garment part with a suitable Embroidery design.</li> </ol>
Course Code	BDFDP-603

Course Nomenclature	<b>Fashion Illustration IV</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To learn the different aspect of fashion illustration, To develop the skills of rendering different textures and colours to illustrate various fabric, To develop the skills of drawing garments and garment details.</li> <li>2. Through this course student will know how to create clothing designs by hand. Drawings are usually the first things that Fashion Stylists and Fashion Buyers will look at in order to make decisions for their clients.</li> <li>3. To do fashion illustration job well, student must stay on top of current trends in the fashion world, staying current on style and knowledgeable on fabrics will be essential for a good fashion illustration.</li> <li>4. Be able to develop the skills of illustration, be able to render colours and textures to illustrate various fabrics.</li> </ol>
Course Code	BDFDP-604

Course Nomenclature	<b>Pattern making &amp; Garment Construction-IV</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. In this course the learner understands scientific way to manipulating patterns to achieve the desired style line.</li> <li>2. Through such skill domain students will enable to generate well-fitting patterns and manipulate them to achieve desired style line.</li> <li>3. This Course will enable students to appreciate the critical areas and shapes in human form impacting the fit of the garment and give students to relate to the pattern Making Techniques undertaken to fit a 2D material to a 3D body.</li> <li>4. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of garment construction, enabling them to use various tools and techniques for design developments, integrating design skills with the help of sewing machine applications.</li> <li>5. This course is an important asset for students to be able to design and construct garments for kid's wear as well as to understand how to calculate fabric material required for construction of garments.</li> </ol>
Course Code	BDFDP-605

Course Nomenclature	<b>Design Process –II</b>
Year/Semester	<b>III/VI</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Students will learn to create theme board, colour palette, story board etc. from a design inspiration and how to develop product using the design process. It also focuses on understanding the importance of the documentation and presentation of a design project.</li> <li>2. Students will be able to research, analyse and use collected data for ideation and concept development. To interpret and use mood boards, theme boards, colour palettes or story boards to create designs based on a particular theme.</li> <li>3. Students will understand importance of presentation and display required for any particular product.</li> </ol>
Course Code	BDFDP-606



## VII Semester

Course Nomenclature	<b>Visual Merchandising</b>
Year/Semester	<b>IV/VII</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Inform the learners about importance and significance of visual aesthetics in business.</li><li>2. Introduce design learners to Visual Merchandising – its evolution and its impact on Fashion business.</li><li>3. Introduce elements of VM and principles of VM – students learn through practical examples how wall and window displays lead to increase in footfall and conversions.</li><li>4. Introduce learners to tools, textures, materials and surface treatments.</li><li>5. Educate learners about store layouts and relevance to VM planning.</li><li>6. Introduce designers to concept of Plannogram – its usage and effectiveness</li><li>7. Implementation of theoretical learning to creating attractive window display as per given theme</li></ol>
Course Code	BDFDP-701

Course Nomenclature	<b>Elective- I (Couture Design)</b>
Year/Semester	<b>IV/VII</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Understand and recognise the History of Fashion and Luxury in a contemporary context.</li><li>2. Explain the historic facts of Couture Houses and what they are today.</li><li>3. Develop digital communication strategies for Haute Couture in the digital age.</li><li>4. Explain the business model of Couture through a personal marketing project.</li><li>5. Identify specific historic places for Haute Couture in World.</li></ol>
Course Code	BDFDP-702

Course Nomenclature	<b>Portfolio Development I</b>
Year/Semester	<b>IV/VII</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. The course helps students to understand the stepwise process to be followed while developing a design collection and enabled they get sensitized to the use of design process to create designs at various levels of product development.</li> <li>2. Students will learn to create theme board, colour palette, story board etc. from a design inspiration and how to develop product using the design process.</li> <li>3. Students will be able to research, analyse and use collected data for ideation and concept development. To interpret and use mood boards, theme boards, colour palettes or story boards to create designs based on a particular theme.</li> <li>4. Students will understand importance of presentation and display required for any particular product</li> </ol>
Course Code	BDFDP-703

Course Nomenclature	<b>Fashion Accessories</b>
Year/Semester	<b>IV/VII</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Sketching techniques for design and technical drawing</li> <li>2. Material knowledge.</li> <li>3. To gain knowledge in the world of accessories in a unique creative concrete method</li> <li>4. This course will prepare the student for the professional reality of the fashion world. Not only developing the individual creativity, but also to acquire the necessities of the Fashion Industry.</li> <li>5. This course is particularly structured as real work experience, not only theoretical study.</li> </ol>
Course Code	BDFDP-704

## VIII Semester

Course Nomenclature	<b>Elective –II</b> <b>Fashion Photography</b>
Year/Semester	<b>IV/VIII</b>
Course Outcomes	<p>Upon successful completion of the course, participants will be able to:</p> <ol style="list-style-type: none"> <li>1. To encapsulate the entire medium of Visual Image from a technical as well as from an art point of view.</li> <li>2. The student will Imagine, communicate, integrate and act.</li> <li>3. The students will be able to understand the importance of visualization and observation in Fashion Photography.</li> <li>4. The photography course gives a clear-cut knowledge of handling the technical aspects of a camera.</li> <li>5. Upon completion of the course, they are ready to take challenges in the visual image Industry from a professional point of view.</li> </ol>
Course Code	BDFDP-801

Course Nomenclature	<b>Elective –II</b> <b>Fashion Styling</b>
Year/Semester	<b>IV/VIII</b>
Course Outcomes	<p>Upon successful completion of the course, participants will be able to:</p> <ol style="list-style-type: none"> <li>1. Analyze the fashion styling process and develop key creative, intellectual and technical skills used in the fashion media industry.</li> <li>2. Develop creative ideas and apply different approaches to problem solving;</li> <li>3. Identify, evaluate and use information from a variety of sources in order to understand key cultural, social and environmental influences in fashion</li> <li>4. Develop visual research techniques to collate, generate and communicate new ideas and information in a reflective and professional manner.</li> <li>5. Use skills to plan, organize, produce and edit photo shootings.</li> </ol>
Course Code	BDFDP-801
Course Nomenclature	<b>Final Design Collection/ Dissertation/ Graduation Project</b>
Year/Semester	<b>IV/VIII</b>
Course	1. Understanding the design development process.

<b>Outcomes</b>	<ol style="list-style-type: none"><li>2. Creating a prototype of design collection.</li><li>3. Creating digital portfolio of their works</li><li>4. Understanding of basics learnt in the last 5 semesters and the ability to incorporate the same effectively.</li><li>5. Capacity to create a complete design collection from concept to end product following guidelines with the help of a mentor</li><li>6. Ability to establish self as a designer and showcase the product in a fashion show.</li></ol>
<b>Course Code</b>	BDFDP-802

**Diploma**  
**in**  
**Fashion Design**

# Programme: Diploma in Fashion Design

## Program outcomes:

- This program focuses on providing opportunity to many who have elementary knowledge and understanding to gain experience and develop further expertise
- Diploma in Fashion Design course is an elementary course to introduce Design and technical aspects of Fashion.
- The course is delivered over a period of 1 year .
- Students demonstrate knowledge in the history of fashion, patterns, and the basic theories of fashion design (color, line, shape, texture, scale, and proportion), pattern making, illustration, and construction of garments).
- Students demonstrate proficiency in examining trends, drawing designs based on their ideas, choosing colors and fabrics, and supervising the production of their designs.
- The learner is enabled to undertake Fashion & Textiles processes, Fashion Business coordination, interpret Visual Communication initially and later with experience will be able to start a Design studio or a boutique catering to indigenous customers.

## **COURSE OUTCOMES**

### **Semester I**

Course Nomenclature	<b>Basic of Fashion</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. This course will develop an understanding about factors influencing fashion trends such as socio-cultural environment, economic conditions, technological advancement, and political scenario, religious views as also film and media.</li><li>2. To develop an understanding of global &amp; Indian fashion Industry and role of merchandisers in the fashion industry.</li><li>3. To learn technical skills, term &amp; language for working in virtual fashion world.</li><li>4. To understand the importance of fashion forecasting in fashion and the visual merchandising process.</li><li>5. Be able to develop competencies in fashion theory and marketing of fashion goods. Be able to acquire a thorough background in the business aspects of the fashion industry.</li></ol>
Course Code	DFD-101

Course Nomenclature	<b>Communication Skills</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"><li>1. Demonstrate critical and innovative thinking.</li><li>2. Display competence in oral, written, and visual communication.</li><li>3. Apply communication theories.</li><li>4. Show an understanding of opportunities in the field of communication.</li><li>5. Use current technology related to the communication field.</li><li>6. Respond effectively to cultural communication differences.</li><li>7. Communicate ethically.</li><li>8. Demonstrate positive group communication exchanges.</li></ol>
Course Code	DFD-102

Course Nomenclature	<b>Computer Application</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. Basic knowledge of computer for knowing the computer like word processing software, preparation, saving and printing of text documents.</li> <li>2. For to be aware about the latest Operating systems (OS) basic concepts of MS- DOS/ Windows (latest) or system management.</li> <li>3. To learn about internet, and get aware about latest explorer installation, configuration and application and search engines Current trends: internal, latest net.</li> <li>4. knowledge of what is the inside on Window Accessories</li> <li>5. To prepare for industry with software knowledge. MSpower point and it tool inside like PowerPoint (Home) PowerPoint Insert, applying Auto Start Transactions &amp; Working with Animation, Design and Professional presentation formation.</li> <li>6. As per industry need students also Understanding Spread Sheet, on power point Excel like Work sheet, Basic database, MS Excel (Home), MS Excel (Insert), MS Excel (Page Layout), MS Excel (Applying Arithmetic Formulas in Table), MS Excel (Applying Logical Formulas in Table), MS Excel (Data), MS Excel (Review), MS Excel (View), Business charts (Pie, Line bar) operation Guidance for Search on Web</li> <li>7. Guidance for Working with Mail as per industry standers and requirements</li> </ol>
Course Code	BDFDP-103

Course Nomenclature	<b>Fashion Illustration</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. To learn the different aspect of fashion illustration, To develop the skills of rendering different textures and colours to illustrate various fabric, To develop the skills of drawing garments and garment details.</li> <li>2. Through this course student will know how to create clothing designs by hand. Drawings are usually the first things that Fashion Stylists and Fashion Buyers will look at in order to make decisions for their clients.</li> <li>3. To do fashion illustration job well, student must stay on top of current trends in the fashion world, staying current on style and knowledgeable on fabrics will be essential for a good fashion illustration.</li> <li>4. Be able to develop the skills of illustration, be able to render colours and textures to illustrate various fabrics. Be able to illustrate various garments and garment details in fashion illustration like frills, neck lines, collars, pocket, cuffs etc.</li> </ol>
Course Code	DFDP-104



<b>Course Nomenclature</b>	<b>Pattern Making &amp; Construction I</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<ol style="list-style-type: none"> <li>1. In this course the learner understands scientific way to manipulating patterns to achieve the desired style line. Pattern Making is the process to make template from which the parts of a garment are traced onto fabric before being cut out and assembled.</li> <li>2. Through such skill domain students will enable to generate well-fitting patterns and manipulate them to achieve desired style line.</li> <li>3. This Course will enable students to appreciate the critical areas and shapes in human form impacting the fit of the garment and give students to relate to the pattern Making Techniques undertaken to fit a 2D material to a 3D body.</li> <li>4. After a successful completion of the course, students will be able to acquire basic understanding &amp; skills of garment construction, enabling them to use various tools and techniques for design developments, integrating design skills with the help of sewing machine applications.</li> <li>5. This course is an important asset for students to be able to design and construct garments for kid's wear as well as to understand how to calculate fabric material required for construction of garments.</li> </ol>
<b>Course Code</b>	<b>DFDP-105</b>

Course Nomenclature	<b>Basic of Design</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. Through this course students will get familiar with basic elements &amp; principles of design that are the essential components for creating new design.</li> <li>2. To provide a balanced mix of theory and practical knowledge tied up with practical situations based on fashion &amp; apparel design industry and develops the concept of visualization, communication through the medium of flat sketch/drawing based on elements &amp; principles of design.</li> <li>3. Students will able to use different mediums and tools that are required for communicating design idea or blueprint of design that will encourage students to think, explore and create.</li> <li>4. Student will learn how to identify the fashion trend, how fashion moves, how to create harmony in design.</li> <li>5. This course will create a relationship between fashion industry &amp; students through which he/she is able to work in fashion industry &amp; express his view, thought through the sketch.</li> </ol>
Course Code	DFDP-106
Course Nomenclature	<b>Surface Ornamentation</b>
Year/Semester	I/I
Course Outcomes	<ol style="list-style-type: none"> <li>1. To make students aware of Different types Embroideries, dyeing &amp; printing and other surface ornamentation part.</li> <li>2. The students will be able to understand the various processes of fabric manufacturing, Surface Ornamentation, Embroideries, dyeing &amp; printing.</li> <li>3. Understand the scope for design intervention and innovation in using these techniques for creative and contemporary product development.</li> <li>4. Learning surface ornamentation in a fashion design course can help you create exquisite designs. It is one of the best ways to express your love for art. .</li> <li>5. Be able to develop skills to enhance the aesthetic value of any fabric through ornamentation.</li> </ol>
Course Code	DFDP-107

## II SEMESTER

Course Nomenclature	<b>Merchandising Production Methods</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Introduce the learners to types of garment manufacturing units and work flow in garment industry.</li> <li>2. Introduce design learners to Merchandising, types of merchandisers and interdependency of designers and merchandisers.</li> <li>3. Educate learners about methods of sourcing and regional sourcing hubs in India.</li> <li>4. Introduce learners to time and action calendar – importance of planning and scheduling in entire supply chain.</li> <li>5. Educate learners about sampling and types of samples.</li> <li>6. Train students for costing of garments – knits and woven. (knowledge concern areas - material costs, estimation vs actual costing). Introduce designers to stages of documentation and record maintenance in apparel manufacturing.</li> </ol>
Course Code	DFD-201

Course Nomenclature	<b>Theory of Textile</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Understand key techniques in the textile history and apply these to the identification of textiles.</li> <li>2. Understand the beginnings of the textile industry.</li> <li>3. Recognize and appreciate the design effects in textile masterpieces of the world.</li> <li>4. Analyze the social, cultural milieu and technological advancements as communicated by textiles.</li> <li>5. Gain awareness of art movements</li> </ol>
Course Code	DFD-202

Course Nomenclature	<b>Draping</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Student can experiment with fabric, and decide where to place darts, tucks, and other design elements. Playing with the way fabric folds and hangs on the body is a fun way to create new designs.</li> <li>2. Draping is a key skill which allows apparel designers to understand what creates a great fit and how to achieve it. While draping for apparel design may seem like a daunting and tedious approach to creating patterns, it's actually one of the more creative parts of the fashion design process.</li> <li>3. To enable students to create their designs on a three dimensional form using draping method.</li> </ol>
Course Code	DFDP-203

Course Nomenclature	<b>Fashion Illustration II</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Gain fashion illustration technique</li> <li>2. Gain knowledge of illustration from different artists.</li> <li>3. Gain coloring techniques - markers, pencil drawing, watercolors, paint, computer rendering .</li> <li>4. Development of own individual style.</li> <li>5. The student will learn the basics of fashion illustration: drawing technique of the human figure and different techniques such as using pencil, markers, water colours, paint, computer programs, etc.</li> <li>6. It is expected that the student realizes the importance of doing an effective research for a project, how to interpret it and the needs of a client while also keeping their style, how to bring to life a trend, a concept or a mood through their artistic vision.</li> </ol>
Course Code	DFDP-204

Course Nomenclature	<b>Digital Design I</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To familiarize Corel Draw which give a fundamental knowledge about graphical logics in computer such as designing, editing, vector images, portfolio setting, applied art and advertisement.</li> <li>2. Through this course students are able to enhance the colors, add some contrast, or crop the image. They can design from poster to banners to beautiful websites, eye-catching logos to fashion magazine, edit videos, style retouch etc.</li> </ol>
Course Code	DFDP-205

Course Nomenclature	<b>Pattern Making &amp; Construction II</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Proficiency in pattern making for male and female garments.</li> <li>2. Gain ability to use pattern making for creating new garments designs.</li> <li>3. Understand different types of paper pattern.</li> <li>4. Competent to lay the pattern on the fabric.</li> <li>5. To create design for different styles of Male and Female Garments.</li> </ol>
Course Code	DFDP-206

Course Nomenclature	<b>Material Exploration</b>
Year/Semester	<b>I/II</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. To focus on selecting materials in the first phase of design and developing the project until the end with the help of scaled models.</li> <li>2. To makes it easier for designers to develop their skills in different areas: drawing, model-building, , and knowledge of materials applied to a design project.</li> <li>3. Students can have good results in a design process through the use of creative tools that help them in their learning process.</li> </ol>
Course Code	DFDP-207

**MBA**  
**in**  
**Fashion Management**

# **Programme: MBA in Fashion Management**

## **Program outcomes:**

- The objective of the two year Master of Fashion Management (MFM) is to develop leadership and managerial talents in the fields of management, marketing, merchandising and retailing, honed specifically for the requirements of the garment export, fashion and lifestyle and retail sectors.
- Students undergo in depth education in management, marketing, buying, merchandising (retail and export), retail operations, forecasting, international marketing, international trade practices and project formulation.
- They are exposed to creative merchandising/marketing, innovative fashion management practices, Information technology developments, directions of fashion trends and business practices through field visits and industry internships.
- Research, data analysis and decision-making skills are inculcated as part of curriculum.
- Entrepreneurship is inculcated both as part of curriculum and through various projects.
- The students are also associated with craft clusters because of which they become better marketers of both handloom and handicraft products, and understand the entrepreneurial challenges of the MSME sector, and the business solutions that are needed.

## **COURSE OUTCOMES**

### **Semester I**

<b>Course Nomenclature</b>	<b>BUSINESS COMMUNICATION</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"><li>1. Understand basic principles of Business Communication.</li><li>2. Explain various communication models and barriers to effective communication.</li><li>3. Identify and summarize the essentials of effective presentation</li><li>4. Develop the mechanics of writing Business letters and Correspondence.</li></ol>
<b>Course Code</b>	<b>MBAFM-101</b>

<b>Course Nomenclature</b>	<b>BUSINESS ENVIRONMENT</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<ol style="list-style-type: none"><li>1. To understand the elements of Business Environment and identify tools for scanning the Environment.</li><li>2. To identify the role of Political Environment, Economic Environment and Government Policies on business.</li><li>3. To identify the complexities of the legal system, its processes which must be abide by business.</li><li>4. To acquaint with the latest amendments made in Companies Act, 2013.</li><li>5. To understand fundamental concepts of contract and contract language to do the business fairly &amp; legally.</li></ol>
<b>Course Code</b>	<b>MBA FM-102</b>



<b>Course Nomenclature</b>	<b>PRINCIPLES AND PRACTICES OF MANAGEMENT</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic nature, levels and functions of management.</li> <li>2. Develop the knowledge regarding Planning and Organizing and conceptualize various techniques used for Staffing and Direction.</li> <li>3. Acquire knowledge about various theories and concepts pertaining to Leadership and Motivation.</li> <li>4. Understand the control procedures and techniques used by managers, along with the latest trends in management.</li> </ol>
<b>Course code</b>	<b>MBAFM - 103</b>

<b>Course Nomenclature</b>	<b>ORGANIZATIONAL BEHAVIOUR</b>
<b>Year/Semester</b>	I/I
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Develop a general understanding of the concept and basic nature of Organizational Behavior.</li> <li>2. Acquire knowledge regarding the concepts of Personality, Learning, Attitude and Perception.</li> <li>3. Conceptualize various aspects related to various aspects related to Group Behavior and team management.</li> <li>4. Understand the concept of Organizational Design and mechanism of Managing Change and conflict within an organization.</li> </ol>
<b>Course Code</b>	<b>MBAFM-104</b>

<b>Course Nomenclature</b>	<b>INTRODUCTION TO GLOBAL FASHION</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<ol style="list-style-type: none"> <li>1. Inform the learners about importance and significance of fashion – its evolution and its impact on human civilization over a period of time.</li> <li>2. Educate learners about Fashion industry – cover all aspects of fashion business – exports and retail.</li> <li>3. Introduce the future fashion marketers and managers to various fashion types and characteristics.</li> <li>4. Introduce learners to business statistics – production, consumption and revenue facts and figures for apparel and lifestyle product.</li> <li>5. Educate Learners about pioneers of fashion business – The fashion design houses, the top international and national brands, Provide information and encourage research.</li> <li>6. Develop critical thinking and independent research tendencies in students.</li> </ol>
<b>Course Code</b>	<b>MBAFM-105</b>

<b>Course Nomenclature</b>	<b>Fabric Knowledge</b>
<b>Year/Semester</b>	<b>I/I</b>
<b>Course Outcomes</b>	<ol style="list-style-type: none"> <li>1. To obtain basic knowledge on Textile Industry.</li> <li>2. To be familiar with the terminology used in textiles.</li> <li>3. To understand the performance characteristics of fiber, yarn and fabrics.</li> <li>4. To understand the process flow of Textiles from Yarn to Fabric</li> <li>5. To obtain knowledge on various fabric formation processes</li> </ol>
<b>Course Code</b>	<b>MBAFM- 106</b>

Course Nomenclature	<b>Computer application in Fashion Management</b>
Year/Semester	<b>I/I</b>
Course Outcomes	<ol style="list-style-type: none"> <li>1. Basic knowledge of computer for knowing the computer like word processing software, preparation, saving and printing of text documents.</li> <li>2. For to be aware about the latest Operating systems (OS) basic concepts of MS- DOS/ Windows (latest) or system management.</li> <li>3. To learn about internet , and get aware about latest explorer installation, configuration and application and search engines Current trends: internal, latest net.</li> <li>4. knowledge of what is the inside on Window Accessories</li> <li>5. To prepare for industry with software knowledge. MSpower point and it tool inside like PowerPoint (Home) PowerPoint Insert, applying Auto Start Transactions &amp; Working with Animation, Design and Professional presentation formation.</li> <li>6. As per industry need students also Understanding Spread Sheet, on power point Excel like Work sheet, Basic database, MS Excel (Home), MS Excel (Insert), MS Excel (Page Layout), MS Excel (Applying Arithmetic Formulas in Table), MS Excel (Applying Logical Formulas in Table), MS Excel (Data), MS Excel (Review), MS Excel (View), Business charts (Pie, Line bar) operation</li> <li>7. Guidance for Search on Web</li> <li>8. Guidance for Working with Mail as per industry standers and requirements.</li> </ol>
Course Code	MBAFM- 107

## Semester II

<b>Course Nomenclature</b>	<b>RESEARCH METHODOLOGY</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"><li>5. Understand the basic fundamentals of research.</li><li>6. Assess the appropriateness of different kinds of research designs and methodology.</li><li>7. Determine the essentials of sampling techniques and data collection methods used in research.</li><li>8. Apply proper referencing, data analysis-and hypothesis testing procedures and interpret research work</li></ol>
<b>Course Code</b>	<b>MBAFM-201</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT ACCOUNTING-I</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"><li>1. Understand the financial environment in which a company operates and get knowledge of the procurement and utilization of funds in order to maintain an adequate cash flow in the business.</li><li>2. Identify the concept of dividend and critically assess the various factors which affect the dividend decision.</li><li>3. Analyze the requirement of working capital for the business operations and manage the debtors, stock and cash accordingly.</li><li>4. Develop a relationship between risk and return of the securities and the combination of debt and equity in the capital structure of the company to make effective financial decisions.</li></ol>
<b>Course Code</b>	<b>MBAFM-202</b>

<b>Course Nomenclature</b>	<b>MARKETING MANAGEMENT</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Interpret complex marketing issues and problems using relevant theories, concepts and methods with regard to ethical conduct.</li> <li>2. Apply contemporary marketing theories to the demands of business and management practice.</li> <li>3. Find and generate information/data needed to inform problem solving in marketing using appropriate methodology.</li> <li>4. Analyse information/data critically and synthesise new knowledge and communicate that knowledge via engaging written and oral formats.</li> <li>5. Organise information and data to reveal patterns and themes, and manage teams and evidence gathering and problem solving processes.</li> <li>6. Conduct the process of inquiry, and respond to feedback, accounting for ethical, social and cultural (ESC) issues</li> </ol>
<b>Course Code</b>	<b>MBAFM-203</b>

<b>Course Nomenclature</b>	<b>Operation and Production Management</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	<p>By the end of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify the elements of operations management and various transformation processes to enhance productivity and competitiveness.</li> <li>2. Analyze and evaluate various facility alternatives and their capacity decisions, develop a balanced line of production &amp; scheduling and sequencing techniques in operation environments.</li> <li>3. Develop aggregate capacity plans and MPS in operation environments.</li> <li>4. Plan and implement suitable materials handling principles and practices in the operations.</li> <li>5. Plan and implement suitable quality control measures in Quality Circles to TQM.</li> </ol>
<b>Course Code</b>	<b>MBAFM-204</b>

<b>Course Nomenclature</b>	<b>Human Resource Management</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. To develop the understanding of the concept of human resource management and to understand its relevance in organizations.</li> <li>2. To develop necessary skill set for application of various HR issues.</li> <li>3. To analyze the strategic issues and strategies required to select and develop manpower resources.</li> <li>4. To integrate the knowledge of HR concepts to take correct business decisions.</li> </ul>
<b>Course Code</b>	<b>MBAFM-205</b>

<b>Course Nomenclature</b>	<b>Design Process and Design Thinking</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. Examine Design Thinking concepts and principles</li> <li>2. Practice the methods, processes, and tools of Design Thinking</li> <li>3. Apply the Design Thinking approach and model to real world situations.</li> <li>4. Analyze the role of primary and secondary research in the discovery stage of Design Thinking.</li> </ul>
<b>Course Code</b>	<b>MBAFMP-206</b>

<b>Course Nomenclature</b>	<b>Study of Garment Manufacturing Process</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ul style="list-style-type: none"> <li>1. Understanding the Industrial Manufacturing process of apparels</li> <li>2. Understanding the status of the Indian mass garment production unit</li> <li>3. Capacity to relate to what was learnt in the class room to the industry when doing internship.</li> </ul>
<b>Course Code</b>	<b>MBAFM-207</b>

### Semester III

<b>Course Nomenclature</b>	<b>STRATEGIC MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to : <ol style="list-style-type: none"><li>1. Understand the conceptual framework of strategic management.</li><li>2. Apply SWOT Analysis and select the feasible strategic alternative.</li><li>3. Develop and implement strategies that position the firm most favorably in relation to competition.</li><li>4. Evaluate strategic plans in terms of its feasibility and suitability.</li></ol>
<b>Course Code</b>	<b>MBAFM-301</b>

<b>Course Nomenclature</b>	<b>MANAGEMENT ACCOUNTING-II</b>
<b>Year/Semester</b>	<b>I/II</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: <ol style="list-style-type: none"><li>1. Understand the financial environment in which a company operates and get knowledge of the procurement and utilization of funds in order to maintain an adequate cash flow in the business.</li><li>2. Identify the concept of dividend and critically assess the various factors which affect the dividend decision.</li><li>3. Analyze the requirement of working capital for the business operations and manage the debtors, stock and cash accordingly.</li><li>4. Develop a relationship between risk and return of the securities and the combination of debt and equity in the capital structure of the company to make effective financial decisions.</li></ol>
<b>Course Code</b>	<b>MBAFM-302</b>

<b>Course Nomenclature</b>	<b>CUSTOMER RELATIONSHIP MANAGEMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	The students would be able to: 1.Realize the benefits of CRM in present competitive scenario. 2.Learn programs and strategies that can be applied for enhancing customer relationship management in an organization. 3.Understand the role of Information Technology in CRM. 4.Understand the application of CRM strategies in different sectors.
<b>Course Code</b>	<b>MBAFM-303</b>

<b>Course Nomenclature</b>	<b>Fashion Forecasting</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	5. The course aims to understand the forecasting techniques to determine market demands; enabling students to make use of the forecast to design collections by acquire the skills in research process in forecasting. 6. Student will incorporate strategic decision making in recognizing the patterns, cycles and dissemination of information, investigation will determine a framework to specifically apply creative and analytical skills in the trend forecasting process. 7. This course offers vast learning opportunities covering all the aspects of fashion right from predicting future trends, to product development and placing the right product on the shelves. 8. Students will come out to be an expert in analysing trends for fashion Industry.
<b>Course Code</b>	<b>MBAFM-304</b>

<b>Course Nomenclature</b>	<b>PRODUCT DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	By the end of this course students will be able to: 1. Understand the basic fundamentals of product development. 2. Assess the appropriateness of different kinds of market research which are helpful for product and service design. 3. Determine the essentials of commercialization strategies for a product. 4. Apply and evaluate success factors for new products.
<b>Course Code</b>	<b>MBAFM-305</b>



<b>Course Nomenclature</b>	<b>PRODUCT DEVELOPMENT</b>
<b>Year/Semester</b>	<b>II/III</b>
<b>Course Outcomes</b>	<ol style="list-style-type: none"> <li>1. Introduce the learners to types of garment manufacturing units and work flow in garment industry.</li> <li>2. Introduce design learners to Merchandising, types of merchandisers and interdependency of designers and merchandisers.</li> <li>3. Educate learners about methods of sourcing and regional sourcing hubs in India.</li> <li>4. Introduce learners to time and action calendar – importance of planning and scheduling in entire supply chain.</li> <li>5. Educate learners about sampling and types of samples.</li> <li>6. Train students for costing of garments – knits and woven. (knowledge concern areas - material costs, estimation vs actual costing).</li> <li>7. Introduce designers to stages of documentation and record maintenance in apparel</li> </ol>
<b>Course Code</b>	<b>MBAFM-305</b>

## Semester IV

<b>Course Nomenclature</b>	<b>Entrepreneurship and Development</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to:  <ol style="list-style-type: none"><li>1. Have the ability to discern distinct entrepreneurial traits</li><li>2. Know the parameters to assess opportunities and constraints for new business ideas</li><li>3. Understand the systematic process to select and screen a business idea</li><li>4. design strategies for successful implementation of ideas</li><li>5. write a business plan</li></ol>
<b>Course Code</b>	<b>MBAFM-401</b>

<b>Course Nomenclature</b>	<b>Visual Merchandising</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	By the end of this course students will be able to:  <ol style="list-style-type: none"><li>1. Inform the learners about importance and significance of visual aesthetics in business.</li><li>2. Introduce design learners to Visual Merchandising – its evolution and its impact on Fashion business.</li><li>3. Introduce elements of VM and principles of VM – students learn through practical examples how wall and window displays lead to Increase in footfall and conversions.</li><li>4. Introduce learners to tools, textures, materials and surface Treatments.</li><li>5. Educate learners about store layouts and relevance to VM planning.</li><li>6. Introduce designers to concept of Plannogram – its usage and effectiveness</li><li>7. Implementation of theoretical learning to creating attractive window display as per given theme</li></ol>
<b>Course Code</b>	<b>MBAFM-402</b>

<b>Course Nomenclature</b>	<b>Project Management</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>On completion of this course, the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand project characteristics and various stages of a project</li> <li>2. Understand the conceptual clarity about project organization and feasibility analyses – Market, Technical, Financial and Economic.</li> <li>3. Analyze the learning and understand techniques for Project planning, scheduling and Execution Control.</li> <li>4. Apply the risk management plan and analyze the role of stakeholders.</li> <li>5. Understand the contract management, Project Procurement, Service level Agreements and productivity.</li> <li>6. Understand the How Subcontract Administration and Control are practiced in the Industry</li> </ol>
<b>Course Code</b>	<b>MBAFM-403</b>

<b>Course Nomenclature</b>	<b>Retail Management</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	<p>To develop an understanding of:</p> <ol style="list-style-type: none"> <li>1. the contribution of retailers to the product value chain</li> <li>2. consumer motivations, shopping behaviors, and decision processes for evaluating retail</li> <li>3. offering and purchasing merchandise and services; corporate objectives, competitor analysis, and competitive strategy</li> <li>4. the traditional bases for segmentation and how segmentation can inform retail strategy;</li> <li>5. how retailer's differentiate their offering as an element in their corporate strategy</li> <li>6. factors affecting strategic decisions involving investments in locations, supply chain and information systems, and customer retention programs;</li> <li>7. how retailer's communicate with their customers; and</li> <li>8. tactics (pricing, merchandise assortment, store management, visual merchandising, customer service) for extracting profit from a retail offering</li> </ol>
<b>Course Code</b>	<b>MBAFM-404</b>

<b>Course Nomenclature</b>	<b>Advertising and Branding</b>
<b>Year/Semester</b>	<b>II/IV</b>
<b>Course Outcomes</b>	On completion of this unit students will be able to: <ol style="list-style-type: none"><li>1. examine advertising and its functions in relation to brand success;</li><li>2. critically evaluate how creative concepts and executions will contribute to brand success;</li><li>3. analyse advertising and branding techniques and apply them to a variety of different issues;</li><li>4. work effectively in teams to analyse and prepare presentations on advertising and brand management issues.</li></ol>
<b>Course Code</b>	<b>MBAFM-405</b>

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Hotel Management

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. Bachelor of Science in Hospitality & Hotel Administration
2. Bachelor of Hotel Management & Catering Technology

**Bachelor of Science**  
**in**  
**Hospitality & Hotel Administration**

## **Programme: Bachelor of Science in Hospitality & Hotel Administration**

### **Program Outcome (PO's)**

A graduate of Hospitality and Hotel Management Program will demonstrate:

PO1: Performs work activities effectively and efficiently to the standards expected in the operation required in the tourism industry/hospitality sectors.

PO2: Undertakes task, functions, duties and activities in the operation of the hotels, restaurants, travel, government and non-government agencies in accordance with the competency standards.

PO3: Analyses situation, identifies problems, formulates solutions and implements corrective and/or mitigating measures and action management into foodservice and lodging operations.

PO4. Demonstrate the ability to develop, examine, question, and explore perspectives or alternatives to problems in hospitality operations.

PO5: Demonstrate the ability to use professional written and oral communication skills and technology to successfully communicate.

PO6: Demonstrate awareness, understanding and skills necessary to live and work in a diverse world.

PO7: Practice professional ethics, provide leadership, demonstrate personal and global responsibility, and work effectively as a team member.

## Course Outcomes

**Semester / Year: I Sem. / I Year**

### **BHHA1 Food Production Foundation I**

Course Outcome (CO): At the end of this course students will have to know about:

CO1: History of cooking, its modern developments.

CO2: Kitchen and personal hygiene.

CO3: Kitchen organization.

CO4: Methods of cooking, knowledge of raw materials and Basic Bakery

### **BHHA1P Food Production Foundation I (Practical)**

Course Outcome- After the completion of the course, students will:

CO1. Understand the basic operations of a professional kitchen with regard to safety procedures and hygiene and claim an insight into the basic hierarchy in the kitchen and their placement in the brigade with regard to their skills and experiences.

CO2. Identify different types of equipment and their safety operating procedures and also to know the various kinds of modern cooking equipment's and their uses in the kitchen.

CO3. Familiarize with various cooking methods with regard to taste and texture and to know the utensils and equipment used in various cooking methods.

CO4. Identify types of vegetables, their selection, storage criteria, pigments and their effects on heat and also to list the cuts of vegetables and their uses in cookery.

CO5. Comprehend various types of stocks, and sauces; to know their preparation, storage criteria and their uses in the kitchen.

### **BHHA2 Food & Beverage Service Foundation I**

Course outcome: - At the end of course the student should know about: -

CO1. Understand the role of F & B department its functions and staffing

CO2. Identify and use the different types of restaurant equipment.

CO3. Understand the Professional attributes of F& B staff.

CO4. Understand the role of Ancillary department in F&B.

### **BHHA2P Food & Beverage Service Foundation I (Practical)**

Learning Outcome---After completing the course, the students will be able to know how to;

CO1. Identify the different equipment used in food and beverage service

CO2. Create napkin folds

CO3. Set a table cover for a la carte and table d'hote

CO4. Identify the various room service management techniques that can be adapted in a hotel

CO5. Take food and beverage orders.

CO6. Serve water according to the order from guests



### **BHHA3 Front Office Foundation I**

Course outcome: - By the end of this course student would be able to:

- CO1. Understand the evolution, meaning and classifications of Hotel.
- CO2. Understand the various layouts of Front office in the Hotel.
- CO3. He would become aware of attributes and hierarchy of front office staff.
- CO4. Understand and able to classify Hotels

### **BHHA3P Front Office Foundation I (Practical)**

Course Outcome: Upon successful completion of the course, the Student will be able to

- CO1. Explain the function and operation of the various systems, forms, equipment, and computer applications found in the front office.
- CO2. Construct an efficient reservation system that records crucial information while avoiding problems in processing various types of reservations.
- CO3. Construct a registration system that helps ensure a hotel's profitability while meeting the needs of guests by using effective guestroom sales techniques and efficient credit establishment procedures.
- CO4. Develop an efficient communication system to operate within the front office and between the front office and departments such as housekeeping and maintenance.

### **BHHA4 Housekeeping Foundation I**

Course outcome: -By end of this semester students able to know about:

- CO1. Understand the structure function, Importance and different section of housekeeping department.
- CO2. Co-ordination with another department of hotel.
- CO3. Perform different types of cleaning.
- CO4. Handling of cleaning equipment & cleaning agents

### **BHHA4P Housekeeping Foundation I (Practical)**

Course Objective: -The Student will get knowledge about:

- CO1. Classification and categorization of Hotels and its Evolution.
- CO2. Duties & responsibilities of the staff in the different sections.
- CO3. Types of rooms, food plan, Tariff and room rent.
- CO4. Importance, Modes, Tools of reservation.
- CO5. Basic Terminologies of front office

### **BHHA5 Application of Computers**

Course Outcome-

- CO1. Analyze and understand basics of computer hardware, software & demonstrate problem-solving skills.
- CO2. Develop logical skills to programming in a variety of languages.
- CO3. Utilize web technologies.
- CO4. Present conclusions effectively, orally, and in writing.
- CO5. Demonstrate basic understanding of network principles.

**BHHA5P      Application of Computers (Practical)**

Course Outcome---

CO1. Analyze, Identify, and synthesize scholarly literature relating to one or more fields of computer science, information science, or information technology.

CO2. Apply knowledge of computing and information technologies to produce effective designs and solutions for specific computer-based problems.

CO3. Develop the sense of using software development tools, software systems, and modern computing platforms.

CO4. Describe the impact upon society of computers, and the technical and human aspects of this impact.

CO5. Students will demonstrate the ability to solve problems in the discipline.

**BHHA6      Basic Hygiene and HACCP**

Course Outcome- After completion of this course student able to –

CO1. Identify the risks and hazards in food preparation

CO2. Define food poisoning; understand how it occurs and the main causes of food contamination

CO3. Explain the importance of correct storage, preparation, handling and cooking of food

CO4. Explain the purpose of HACCP

## **Semester /Year : II Sem. / I Year**

### **BHHA7 Food Production Foundation II**

Course outcome: -At the end of course the student should know about: -

- CO1. Various commodities.
- CO2. Menu planning and standard recipe.
- CO3. Culinary skills.
- CO4. Bakery science.

### **BHHA7P Food Production Foundation II (Practical)**

Course Outcome: After the completion of the course, students will able to

- CO1. To make simple Indian and European dishes
- CO2. Acquire knowledge in various European and Indian dishes
- CO3. Equipped in their basic presentation skills

### **BHHA8 Food & Beverage Service Foundation II**

Course outcome: - At the end of course the student should know about

- CO1. Understand the difference among various services e.g. American Service, Russian Service, English Service, French Service.
- CO2. Understand the various types of standard Menus used in star hotels
- CO3. Understand the Food & Beverages Outlets Operation Control System.
- CO4. Understand about the non- Alcoholic beverage.

### **BHHA8P Food & Beverage Service Foundation II (Practical)**

Course Outcome- After completing the course, the students will be able to know how to;

- CO1. Identify the different equipment used in food and beverage service
- CO2. Set a table cover for a la carte and table d'hôte
- CO3. Identify the various room service management techniques that can be adapted in a hotel
- CO4. Take beverage orders

### **BHHA9 Front Office Foundation II**

Learning outcome: -By the end of this course student would be able to

- CO1. Understand and handle FIT & GIT guest arrival.
- CO2. Understand the procedure of reports prepared
- CO3. Understand various types of Tariff found in Hotels.
- CO4. Understand Room Keys Handling

### **BHHA9P Front Office Foundation II (Practical)**

Course Outcomes-After completion of the course students will be expected to be able to:

- CO1• Describe the basic functions common to property management systems
- CO2• Identify, describe and differentiate between both front house and back house property management system modules.
- CO3• Identify stand-alone technology systems that may interface with PMS
- CO4• Describe the basic functions of a point of sale system (POS)

**BHHA10 Housekeeping Foundation II**

Course outcome: -By end of this semester students able to know about: -

- CO1. The different area of hotel and their cleaning process.
- CO2. Wall and floor finishes and their use in hotel.
- CO3. Experience of all housekeeping routines system.
- CO4. The uses and composition metal, leather glass, wood etc.

**BHHA10P Housekeeping Foundation II (Practical)**

Course Outcomes-After completion of this course student are able to

- CO1. Address the techniques which include establishing par levels for different types of inventories
- CO2. Taking physical inventory, and implementing effective inventory control procedures.
- CO3. Generate different type of reports.
- CO4. Make checklist for linen, mini-bar and room.
- CO5. To maintain the log book and other registers.
- CO6. To maintain the log book and other registers

**BHHA11 Food Science and Nutrition**

Course outcome: -By the end of this course student would be able to

- CO1. Understand the importance of nutrition and good health in his day to day life.
- CO2. Know the composition, functions sources of nutrients.
- CO3. Understand the effects of excess & deficiency of nutrients.
- CO4. Modify attitudes and practices of use existing nutrition

**BHHA11P Food Science and Nutrition (Practical)**

Course outcome: -By the end of this course student would be able to

- CO1. Understand the importance of nutrition and good health in his day to day life.
- CO2. Know the composition, functions sources of nutrients.
- CO3. Understand the effects of excess & deficiency of nutrients.
- CO4. Modify attitudes and practices of use existing nutrition

**BHHA12 Business Communication**

Course outcome- After completion of this course the student will able to—

- CO1. Communicate effectively
- CO2. Write in professional manner
- CO3. Handle situation effectively

**BHHA12P Business Communication (Practical)**

Course outcome- After completion of this course the student will able to—

- CO1. Communicate effectively
- CO2. Write in professional manner
- CO3.handle situation effectively

## **Semester /Year: III Sem. / II Year**

### **BHHA13 Food Production Operation I**

Course Outcome:

- CO1. Get an insight of quite a vast description on the culture, eating habits, preparation of popular dishes from the cuisines around the world
- CO2. Understand the meaning of appetizers and garnishes
- CO3. Able to use wine in cookery.

### **BHHA13P Food Production Operation I (Practical)**

Course Outcome:

- CO1. Get an insight of quite a vast preparation of popular dishes from the cuisines around the world
- CO2. Able to make appetizers and garnishes
- CO3. Able to make international Breads.

### **BHHA14 Food & Beverage Service Operation I**

Course Outcome:

- CO1. Know old world wines and important countries
- CO2. Types of Wines and service
- CO3. Professional Wine Service, preparation of wine list and proper handling of wine.
- CO4 Suggestive selling of wine and Food and wine harmony.

### **BHHA14P Food& Beverage Service Operation I (Practical)**

Course Outcome: At the end of the sessions the participants will be able to:-

- CO1. Display responsible service and legal responsibilities of an F&B Service professional.
- CO2. Identify the various licenses and approvals required to run a beverage establishment.
- CO3. Create a bar operations plan and bar check list.
- CO4. Demonstrate skills to handle various issues and situations associated with running an establishment serving alcoholic beverages.
- CO5. Apply the skills and knowledge of mixology.

### **BHHA15 Front Office Operation I**

Course Outcome--- After successfully completing this course, students will be able to:

- CO1. Enhance managerial decision-making skills
- CO2. To learn to handle conflicting situations that may arise during guest Interactions
- CO3. Impart the knowledge of revenue calculations and other techniques to improve the overall profitability of the hotel.
- CO4. Evaluate hotel performance and analyse strategies for revenue generations.

**BHHA15P Front Office Operation I (Practical)**

Course Outcome--- After successfully completing this course, students will be able to:

- CO1. Enhance managerial decision-making skills
- CO2. Handle to handle conflicting situations that may arise during guest Interactions
- CO3. Evaluate knowledge of revenue calculations and other techniques to improve the overall profitability of the hotel.
- CO4. Evaluate hotel performance and analyse strategies for revenue generations.

**BHHA16 House Keeping Operation I**

Course Outcome- The student will able to

- CO1. Understand laundry operations
- CO2. Know about sewing and linen room operations.
- CO3. Explain procedure followed in Housekeeping Department

**BHHA16P House Keeping Operation I (Practical)**

Course Outcome---The student will able to-

- CO1. Identify the technical equipment and materials of laundry room.
- CO2. Choose the best amongst the equipment and materials of laundry room.
- CO3. Makes Floral Arrangement.
- CO4. Select and design the different type of required uniform.

**BHHA17 Basic Accounting**

Course Outcome- At the completion of the course students will be able to

- CO1. Identify different costing methods and its role in product costing.
- CO2. Analyse and apply costing techniques in practical situations.
- CO3. Explain the costing methods used in hospitality industry.
- CO4. Apply the material pricing methods in practical context.
- CO5. Prepare and analyse the cost sheet.

**BHHA18 Principles of Management**

Course Outcomes

- CO1. To implement the knowledge of management functions in real world situations
- CO2. To understand the major four functions of management: planning, organizing, leading and controlling
- CO3. To create and plan organizational strategy
- CO4. To learn to lead and control a team

**Semester /Year: IV Sem. / II Year**

**BHHAIT Industrial Training**

Course Outcomes

CO1. To master the practical skills specifically related to their position,

CO2. To describe it in its entirety, and know how it connects and interacts with other departments within the institution

CO3. To identify the central tasks, execute them and work autonomously.

**Semester /Year: V Sem. / III Year**

**BHHA19 Food Production Operation II**

**COURSE OUTCOME**

- CO1. To enable students about the managerial aspects
- CO2. To teach students about quality and Portion control.
- CO3. To master the students in particular area of culinary skill
- CO4. Cold Kitchen
- CO5. To train the students in terms of menu planning

**BHHA19P Food Production Operations II (Practical)**

Course Outcome—After doing this course the student will able to:

- CO1. Three course menu of international cuisine.
- CO2. Making of different sandwiches.
- CO3. Making of cakes and gateaux.
- CO4. Different; icings and meringues.

**BHHA20 Food & Beverage Operations II**

Course Outcome—After doing this course the student will able to:

- CO1. Prepare Banquet Equipment and Setups
- CO2. Take Orders and Serve Drinks in banquets and bar.
- CO3. Identification of upcoming events and conferences.
- CO4. Handle the smooth banquet operations.

**BHHA20P Food & Beverage Operations II (Practical)**

Course Outcome—After doing this course the student will able to:

- CO1. Supervise the F&B outlets.
- CO2. Take Orders of Food and Spirits
- CO3. Serve alcoholic beverages
- CO4. Do flaring

**BHHA21 Front Office Operations II**

Course Outcome---After completion of this course student will be able to--

- CO1• To explore the tools and technique of management accounting for analysis to understand different business strategies.
- CO2• To be able to analyze the affairs of the business through ratios.
- CO3• To prepare cash flow statements
- CO4• To make budgets both fixed and flexible

**BHHA21P Front Office Operations II (Practical)**

COURSE OUTCOME- The student will able to

- CO1. Handling cash transactions.



- CO2. Credit transactions.
- CO3. Handling foreign currency.

### **BHHA22 House Keeping Operations II**

Course Outcome---After completion of this course the student will able to:

- CO1. Plan their work schedule and staff job allocation.
- CO2. Forecast and prepare departmental budget.
- CO3. Track the purchasing and buying methods used in hotels.
- CO4. Analyse the different type of contract services.
- CO5. Implement the strain removal procedures.

### **BHHA22P House Keeping Operations II (Practical)**

Course Outcome---After completion of this course the student will able to:

- CO1. Plan the laundry linen handling
- CO2. Forecast and make budget for laundry chemicals
- CO3. Implement the strain removal procedures with proper chemical

### **BHHA23 Hotel Accounting**

Course Outcome---At the completion of the course students will be able to

- CO1. Identify different Accounting and costing methods and its role in Hotel Industry.
- CO2. Analyses and apply financial and operating information in planning, control, evaluation and decision making in hotels.
- CO3. Explain the Audit concept and its process and procedure used in hospitality industry.
- CO4. Apply the variance analysis and Marginal Costing technique in practical context.
- CO5. Prepare and analyse the Departmental Income Statements.

### **BHHA24 Hotel Laws and Risk Management**

Course Outcome---After completion of this course student will be able to—

- CO1. To analyse the legal requirements of establishing a hotel.
- CO2. To understand the rights and duties of an innkeeper
- CO3. To understand the various aspects of employee relations and welfare in hospitality industry

### **BHMCT 25 Facility Design & Management I**

Course Outcomes-

- CO1. To develop concept of design & layout
- CO2. To develop efficient planning system in effective way
- CO3. To understand the requirement of HRACC
- CO4. To create plans & layouts of the commercial kitchen

**Semester /Year : VI Sem. / III Year**

**BHHA26 Advance Food Production**

Course Outcomes-

- CO1. To demonstrate charcutier items
- CO2. To use preservatives like brine
- CO3. To describe cold cuts, chocolate work and various types of cake and dessert carving
- CO4. To create carving used in hotels

**BHHA26P Advance Food Production (Practical)**

Course Outcomes-

- CO1. To understand Cost Dynamics & Inventory Controls.
- CO2. Plan & compose Types of budget, zero base budgeting, fixed and flexible budget.
- CO3. To create Break even chart, contribution, P / V ratio, Marginal cost, graphs.

**BHHA27 Advance Food & Beverage Operation**

Course Outcomes-

- CO1. To demonstrate charcutier items
- CO2. To use preservatives like brine
- CO3. To use cold cuts, chocolate work and various types of cake and dessert carving
- CO4. To create carving used in hotels

**BHHA27P Advance Food & Beverage Operation (Practical)**

Course Outcomes-

- CO1. Students will understand Production control, standard yield & forecasting procedure of a outlet.
- CO2. Able to create Cashiers bill summary sheet, procedure of cash control.
- CO3. Able to evaluate Stock records, bin cards, Comparison of physical & perpetual inventory.
- CO4. To apply Standard portion and costing & Factors to be considered while fixing selling price of menu items.

**BHHA28 Human Resource Management**

COURSE OUTCOME- The student will able to

- CO1. To elaborate on the importance of human resource in organizations
- CO2. To create various functions and concepts for human resource management
- CO3. To understand various concepts of human resource management

**BHHA29 Food & Beverage Management**

Course Outcomes-

- CO1. Student understand Production control, standard yield & forecasting procedure of a outlet.
- CO2. able to create Cashiers bill summary sheet, procedure of cash control.

CO3. Able to evaluate Stock records, bin cards, Comparison of physical & perpetual inventory.

CO4. To apply Standard portion and costing & Factors to be considered while fixing selling price of menu items.

### **BHHA30 Sales & Marketing**

Course Outcomes-

CO1. To develop a better understanding of Hotel industry and market segment.

CO2. To develop marketing strategy

CO3. To understand the market trends and develop strategy for the same

### **BHHA31 Financial Management**

Course Outcome---At the completion of the course students will be able to

CO1. Provide knowledge of a basic financial vocabulary, financial Statement Analysing Tools and Techniques and its role in Hotel Industry.

CO2. Identify financial Statement Analysing Tools and Techniques and analytical reviews of financial results, proposals, and plans.

CO3. Analyse and apply basic financial concepts and practices and includes analysis of company resources, types and sources of financing, forecasting and planning methods, and the roles of the money.

CO4. Explain Capital Budgeting concept and its process and procedure while taking Investment Decision in hospitality industry.

CO5. Prepare and analyse the budgets for different periods.

### **BHHA32 Facility & Design Management II**

Course Outcome---At the completion of the course students will be able to

CO1. To design and layout of Kitchen Stewarding

CO2. To develop systems for optimum use of energy and resources and their conservation

CO3. To plan a goods store in a systematic way

CO4. To understand the concept of Project Management in planning various layouts

### **BHHA33P Management Information System**

Course outcomes of MIS: -

CO1. Analyse the leadership role of Management Information Systems.

CO2. Understand business competitive advantage through informed decision making.

CO3. Develop and synthesize business information and systems to facilitate evaluation of strategic alternatives.

CO4. Acquire the effective communicative strategic alternatives to facilitate decision making.

**Bachelor of  
Hotel Management & Catering  
Technology**

## **Programme: Bachelor of Science in Hospitality & Hotel Administration**

### **Program Outcome (PO's)**

A graduate of Hospitality and Hotel Management Program will demonstrate:

PO1: Performs work activities effectively and efficiently to the standards expected in the operation required in the tourism industry/hospitality sectors.

PO2: Undertakes task, functions, duties and activities in the operation of the hotels, restaurants, travel, government and non-government agencies in accordance with the competency standards.

PO3: Analyses situation, identifies problems, formulates solutions and implements corrective and/or mitigating measures and action management into foodservice and lodging operations.

PO4. Demonstrate the ability to develop, examine, question, and explore perspectives or alternatives to problems in hospitality operations.

PO5: Demonstrate the ability to use professional written and oral communication skills and technology to successfully communicate.

PO6: Demonstrate awareness, understanding and skills necessary to live and work in a diverse world.

PO7: Practice professional ethics, provide leadership, demonstrate personal and global responsibility, and work effectively as a team member. Semester /

## **Course Outcome (CO's)**

**Semester / Year : I Sem. / I Year**

### **BHMCT 101 Food Production Foundation I**

Course Outcome (CO): At the end of this course students will have to know about:

CO1: History of cooking, its modern developments.

CO2: Kitchen and personal hygiene.

CO3: Kitchen organization.

CO4: 4. Methods of cooking, knowledge of raw materials and Basic Bakery

### **BHMCT 102 Food & Beverage Service Foundation I**

Course outcome: - At the end of course the student should know about:-

CO1. Understand the role of F & B department its functions and staffing

CO2. Identify and use the different types of restaurant equipment.

CO3. Understand the Professional attributes of F& B staff.

CO4. Understand the role of Ancillary department in F&B.

### **BHMCT 103 Front Office Foundation I**

Course outcome: - By the end of this course student would be able to:

CO1. Understand the evolution, meaning and classifications of Hotel.

CO2. Understand the various layouts of Front office in the Hotel.

CO3. He would become aware of attributes and hierarchy of front office staff.

CO4. Understand and able to classify Hotels

### **BHMCT 104 Housekeeping Foundation I**

Course outcome: -By end of this semester students able to know about:

CO1. Understand the structure function, Importance and different section of housekeeping department.

CO2. Co-ordination with another department of hotel.

CO3. Perform different types of cleaning.

CO4. Handling of cleaning equipment & cleaning agents

### **BHMCT 105 Application of Computers**

Course Outcome-

CO1. Identify and Describe system input, output, external storage and hardware components.

CO2. Distinguish global distribution systems from internet distribution systems and distinguish affiliated from non-affiliated reservation systems.

CO3. Identify and describe the functions and features performed by a central reservation system and the reservation system of a property management system.

**BHMCT 106            Basic Hygiene and HACCP**

Course Outcome- After completion of this course student able to –

CO1. Identify the risks and hazards in food preparation

CO2. Define food poisoning; understand how it occurs and the main causes of food contamination

CO3. Explain the importance of correct storage, preparation, handling and cooking of food

CO4. Explain the purpose of HACCP

**BHMCT 151            Food Production Foundation I (Practical)**

Course Outcome- After the completion of the course, students will:

CO1. Understand the basic operations of a professional kitchen with regard to safety procedures and hygiene and claim an insight into the basic hierarchy in the kitchen and their placement in the brigade with regard to their skills and experiences.

CO2. Identify different types of equipment and their safety operating procedures and also to know the various kinds of modern cooking equipment's and their uses in the kitchen.

CO3. Familiarize with various cooking methods with regard to taste and texture and to know the utensils and equipment used in various cooking methods.CO4    Identify types of vegetables, their selection, storage criteria, pigments and their effects on heat and also to list the cuts of vegetables and their uses in cookery.

CO5. Comprehend various types of stocks, and sauces; to know their preparation, storage criteria and their uses in the kitchen.

**BHMCT 152            Food & Beverage Service Foundation I (Practical)**

Learning Outcome--- After completing the course, the students will be able to know how to:

CO1. Identify the different equipment used in food and beverage service

CO2. Create napkin folds

CO3. Set a table cover for a la carte and table d'hote

CO4. Identify the various room service management techniques that can be adapted in a hotel

CO5. Take food and beverage orders.

CO6. Serve water according to the order from guests

**BHMCT 153            Front Office Foundation I (Practical)**

Course Outcome: Upon successful completion of the course, the Student will be able to

CO1. Explain the function and operation of the various systems, forms, equipment, and computer applications found in the front office.

CO2. Construct an efficient reservation system that records crucial information while avoiding problems in processing various types of reservations.

CO3. Construct a registration system that helps ensure a hotel's profitability while meeting the needs of guests by using effective guestroom sales techniques and efficient credit establishment procedures.

CO4. Develop an efficient communication system to operate within the front office and between the front office and departments such as housekeeping and maintenance.

**BHMCT 154            Housekeeping Foundation I (Practical)**

Course Objective: -

The Student will get knowledge about:

- CO1. Classification and categorization of Hotels and its Evolution.
- CO2. Duties & responsibilities of the staff in the different sections.
- CO3. Types of rooms, food plan, Tariff and room rent.
- CO4. Importance, Modes, Tools of reservation.
- CO5. Basic Terminologies of front office

**BHMCT 155            Application of Computers (Practical)**

Course Outcome---

- CO1• Students will demonstrate the ability to solve problems in the discipline.
- CO2• Students will demonstrate interpretive skills, including the ability to: a) analyze data statistically, b) interpret results of experiments, c) draw reasonable conclusions based on experimental results.
- CO3• Students will learn and demonstrate standards of professional behaviour, including rules of ethics and etiquette.
- CO4• Students will develop and demonstrate the ability to work effectively in a group on a common problem.
- CO5• Students will demonstrate the ability to search the relevant literature of the discipline to find information that addresses a specific problem.
- CO5• Students will demonstrate the ability to produce a technical document.



**Semester / Year : II Sem. / I Year**

**BHMCT 201 Food Production Foundation II**

Course outcome:-At the end of course the student should know about:-

- CO1. Various commodities.
- CO2. Menu planning and standard recipe.
- CO3. Culinary skills.
- CO 4. Bakery science.

**BHMCT 202 Food & Beverage Service Foundation II**

Course outcome: -At the end of course the student should know about

- CO1. Understand the difference among various services e.g. American Service, Russian Service, English Service, French Service.
- CO2. Understand the various types of standard Menus used in star hotels
- CO3. Understand the Food & Beverages Outlets Operation Control System.
- CO4. Understand about the non- Alcoholic beverage.

**BHMCT 203 Front Office Foundation II**

Learning outcome: -By the end of this course student would be able to

- CO1. Understand and handle FIT & GIT guest arrival.
- CO 2. Understand the procedure of reports prepared
- CO3. Understand various types of Tariff found in Hotels.
- CO4. Understand Room Keys Handling

**BHMCT 204 Housekeeping Foundation II**

Course outcome: -By end of this semester students able to know about:-

- CO1. The different area of hotel and their cleaning process.
- CO2. Wall and floor finishes and their use in hotel.
- CO3. Experience of all housekeeping routines system.
- CO4. The uses and composition metal, leather glass, wood etc.

**BHMCT 205 Food Science and Nutrition**

Course outcome: -By the end of this course student would be able to

- CO1. Understand the importance of nutrition and good health in his day to day life.
- CO2. Know the composition, functions sources of nutrients.
- CO3. Understand the effects of excess & deficiency of nutrients.
- CO4. Modify attitudes and practices of use existing nutrition

**BHMCT 206 Business Communication**

Course outcome- After completion of this course the student will able to—

- CO1. Communicate effectively
- CO2. Write in professional manner
- CO3.handle situation effectively

**BHMCT 251            Food Production Foundation II (Practical)**

Course Outcome: After the completion of the course, students will be able to

- CO1. To make simple Indian and European dishes
- CO2. Acquire knowledge in various European and Indian dishes
- CO3. Equipped in their basic presentation skills

**BHMCT 252            Food & Beverage Service Foundation II (Practical)**

Course Outcome- After completing the course, the students will be able to know how to;

- CO1. Identify the different equipment used in food and beverage service
- CO2 Set a table cover for a la carte and table d'hote
- CO3 Identify the various room service management techniques that can be adapted in a hotel
- CO4 Take beverage orders

**BHMCT 253            Front Office Foundation II (Practical)**

Course Outcomes-. After completion of the course students will be expected to be able to:

- CO1• Describe the basic functions common to property management systems
- CO2• Identify, describe and differentiate between both front house and backhouse property management system modules.
- CO3• Identify stand-alone technology systems that may interface with PMS
- CO4• Describe the basic functions of a point of sale system (POS)

**BHMCT 254            Housekeeping Foundation II (Practical)**

Course Outcomes-After completion of this course student are able to

- CO1. Address the techniques which include establishing par levels for different types of inventories
- CO2. Taking physical inventory, and implementing effective inventory control procedures.
- CO3. Generate different type of reports.
- CO4. Make checklist for linen, minibar and room.
- CO5. To maintain the log book and other registers.
- CO6. To maintain the log book and other registers

**BHMCT 255            Food Science and Nutrition (Practical)**

Course outcome: -By the end of this course student would be able to

- CO1. Understand the importance of nutrition and good health in his day to day life.
- CO2. Know the composition, functions sources of nutrients.
- CO3. Understand the effects of excess & deficiency of nutrients.
- CO4. Modify attitudes and practices of use existing nutrition

**BHMCT 256            Business Communication (Practical)**

Course outcome- After completion of this course the student will be able to—

- CO1. Communicate effectively
- CO2. Write in professional manner
- CO3.handle situation effectively

**Semester / Year : III Sem. / II Year**

**BHMCT 301 Food Production Operation I**

Course Outcome

- CO1. Get an insight of quite a vast description on the culture, eating habits, preparation of popular dishes from the cuisines around the world
- CO2. Understand the meaning of appetizers and garnishes
- CO3. Able to use wine in cookery.

**BHMCT 302 Food & Beverage Service Operation I**

Course Outcome---

- CO1. Know old world wines and important countries
- CO2. Types of Wines and service
- CO3. Professional Wine Service, preparation of wine list and proper handling of wine
- CO4. Suggestive selling of wine and Food and wine harmony.

**BHMCT 303 Front Office Operations I**

Course Outcome--- After successfully completing this course, students will be able to:

- CO1. Enhance managerial decision-making skills
- CO2. To learn to handle conflicting situations that may arise during guest Interactions
- CO3. To do revenue calculations and other techniques to improve the overall profitability of the hotel.
- CO4. Evaluate hotel performance and analyse strategies for revenue generations.

**BHMCT 304 House Keeping Operations I**

Course Outcome- The student will able to

- CO1. Understand laundry operations
- CO2. Know about sewing and linen room operations.
- CO3. Explain procedure followed in Housekeeping Department

**BHMCT 305 Basic Accounting**

Course Outcome---At the completion of the course students will be able to

- CO1. Identify different costing methods and its role in product costing.
- CO2. Analyse and apply costing techniques in practical situations.
- CO3. Explain the costing methods used in hospitality industry.
- CO4. Apply the material pricing methods in practical context.
- CO5. Prepare and analyse the cost sheet.

**BHMCT 306 Principles of Management**

Course Outcomes

- CO1. To implement the knowledge of management functions in real world situations
- CO2. To understand the major four functions of management: planning, organizing, leading and controlling

CO3. To create and plan organizational strategy

CO4. To learn to lead and control a team

**BHMCT 351            Food Production Operation I (Practical)**

Course Outcome

CO1. Get an insight of quite a vast preparation of popular dishes from the cuisines around the world

CO2. Able to make appetizers and garnishes

CO3. Able to make international Breads.

**BHMCT 352            Food& Beverage Service Operation I (Practical)**

Course Outcome

At the end of the sessions the participants will be able to:-

CO1. Display service and legal responsibilities of an F&B Service professional.

CO2. Identify the various licenses and approvals required to run a beverage establishment.

CO3. Create a bar operations plan and bar check list.

CO4. Demonstrate skills to handle various issues and situations associated with running an establishment serving alcoholic beverages.

CO5. Apply the skills and knowledge of mixology.

**BHMCT 353            Front Office Operation I (Practical)**

Course Outcome---students will be able to:

CO1. Enhance managerial decision making skills

CO2. Handle to handle conflicting situations that may arise during guest Interactions

CO3. Evaluate knowledge of revenue calculations and other techniques to improve the overall profitability of the hotel.

CO4. Evaluate hotel performance and analyse strategies for revenue generations.

**BHMCT 354            House Keeping Operations I (Practical)**

Course Outcome---The student will able to-

CO1. Identifies the technical equipment and materials of laundry room.

CO2. Choose the best amongst the equipment and materials of laundry room.

CO3. Makes Floral Arrangement.

CO4. Select and design the different type of required uniform.

**Semester /Year : IV Sem. / II Year**

**BHMCT 401 Food Production Operation II**

Course Outcome

- CO1. To enable students about the managerial aspects
- CO2. To teach students about quality and Portion control.
- CO3. To master the students in particular area of culinary skill
- CO4. Cold Kitchen
- CO5. To train the students in terms of menu planning

**BHMCT 402 Food & Beverage Service Operation – II**

Course Outcome—After doing this course the student will able to:

- CO1. Prepare Banquet Equipment and Setups
- CO2. Take Orders and Serve Drinks in banquets and bar.
- CO3. Identify of upcoming events and conferences.
- CO4. Handle the smooth banquet operations.

**BHMCT 403 Front Office Operation II**

Course Outcome---After completion of this course student will be able to--

- CO1. To explore the tools and technique of management accounting for analysis to understand different business strategies.
- CO2. To be able to analyze the affairs of the business through ratios.
- CO3. To prepare cash flow statements
- CO4. To make budgets both fixed and flexible

**BHMCT 404 House Keeping Operation II**

Course Outcome---After completion of this course the student will able to:

- CO1. Plan their work schedule and staff job allocation.
- CO2. Forecast and prepare departmental budget.
- CO3. Track the purchasing and buying methods used in hotels.
- CO4. Analyse the different type of contract services.
- CO5. Implement the strain removal procedures.

**BHMCT 405 Hotel Accounting**

Course Outcome---At the completion of the course students will be able to

- CO1. Identify different Accounting and costing methods and its role in Hotel Industry.
- CO2. Analyses and apply financial and operating information in planning, control, evaluation and decision making in hotels.
- CO3. Explain the Audit concept and its process and procedure used in hospitality industry.
- CO4. Apply the variance analysis and Marginal Costing technique in practical context.
- CO5. Prepare and analyse the Departmental Income Statements.

**BHMCT 406            Human Resource Management**

COURSE OUTCOME- The student will able to

- CO1• To elaborate on the importance of human resource in organizations
- CO2• To create various functions and concepts for human resource management
- CO3• To understand various concepts of human resource management
- CO4• To develop human resource policies

**BHMCT 451            Food Production Operation II (Practical)**

Course Outcome—After doing this course the student will able to:

- CO1. Three course menu of international cuisine.
- CO2. Making of different sandwiches.
- CO3. Making of cakes and gateaux.
- CO4. Different; icings and meringues.

**BHMCT 452            Food & Beverage Service Operation II (Practical)**

Course Outcome—After doing this course the student will able to:

- CO1. Supervise the F&B outlets.
- CO2.Take Orders of Food and Spirits
- CO3. Serve alcoholic beverages
- CO4. Do flaring

**BHMCT 453            Front Office Operation II (Practical)**

COURSE OUTCOME- The student will able to

- CO1. Handling cash transactions.
- CO2. Credit transactions.
- CO3. Handling foreign currency.

**BHMCT 454            House Keeping Operation II (Practical)**

Course Outcome---After completion of this course the student will able to:

- CO1. Plan the laundry linen handling
- CO2. Forecast and make budget for laundry chemicals
- CO3. Implement the strain removal procedures with proper chemical

**Semester /Year : V / III Year**

**BHMCT IT Industrial Training**

Course Outcomes

CO1. To master the practical skills specifically related to their position

CO2. To describe it in its entirety, and know how it connects and interacts with other departments within the institution

CO3. To identify the central tasks, execute them and work autonomously

**Semester /Year : VI Sem. / III Year**

**BHMCT 601 Food Production operation III**

Course Outcome

- CO1. Get an insight of quite a vast description on the culture, eating habits, preparation of popular dishes from the cuisines of India.
- CO2. Understand the meaning of volume catering and the nuances of it.
- CO3. Design and visit to a large scale food production kitchen

**BHMCT 602 Food & Beverage Service Operation III**

Course Outcomes-

- CO1. To understand the different type of banquets.
- CO2. To develop the SOP of the hospitality industry.
- CO3. Able to differentiate between Banquet and buffet setups.
- CO4. To build a strong team by motivate the staff after complete the operation.

**BHMCT 603 Front Office Management**

Course Outcome---After completion of this course student will be able to--

- CO1. To explore the tools and technique of management accounting for analysis to understand different business strategies.
- CO2. To be able to analyze the affairs of the business through ratios.
- CO3. To prepare cash flow statements
- CO4. To make budgets both fixed and flexible

**BHMCT 604 House Keeping Management**

Course Outcome---After completion of this course the student will able to:

- CO1. Plan their work schedule and staff job allocation.
- CO2. Forecast and prepare departmental budget.
- CO3. Track the purchasing and buying methods used in hotels.
- CO4. Analyse the different type of contract services.
- CO5. Implement the energy and water conservation procedures.

**BHMCT 605 Hotel Laws and Risk Management**

Course Outcome---After completion of this course student will be able to—

- CO1. To analyze the legal requirements of establishing a hotel.
- CO2. To understand the rights and duties of an innkeeper
- CO3. To understand the various aspects of employee relations and welfare in hospitality industry

**BHMCT 606 Strategic Management**

Course Outcome: After completion of this course student will be able to—

- CO1. Understand the concepts of strategy, strategic planning and its role in the organization
- CO2. Compare various strategies being adopted by the firm and its competitors



CO3. Plan and develop a proper mix of strategic alternatives and use of available strategic alternatives

CO4. Prioritize the use of organizational resource for various functional areas to improve organizational performance

**BHMCT 651            Food Production operations III (Practical)**

Course Outcome

CO1· Learn from this course will be on fine tuning the cooking methods applied in the basic category.

CO2· Understand flavours, textures and Course about the practical use of certain ingredients will be the main focus of this course.

CO3· Help in understanding the pre preparation and experimenting of Indian Cuisine with various spices.

**BHMCT 652            Food & Beverage Service Operation III (Practical)**

Course Outcomes-

CO1.To understand lunch service and functional catering.

CO2.To justify the different type of flambé trolley used in hospitality industry and learn their uses.

CO3.To apply the SOPS for doing the planning of food and beverage operations.

CO4. Able to defend opinions by making judgments about the information of food and beverage operations.

**BHMCT 653            Front Office Management (Practical)**

Course Outcome---After completion of this course student will be able to--

CO1. To calculate various yield management ratios

CO2. To handle situation on various aspects

CO3. To prepare sales letter, brochures, promotional letter

CO4. To design internet advertising, promotion & sale of accommodation product.

CO5. To create travel agent voucher

CO6. To develop itinerary

CO7. To operate - PMS – Rooms Management

**BHMCT 654            Housekeeping Management (Practical)**

Course Outcome---After completion of this course student will be able to--

CO1. To use and implement the knowledge of interior decoration

CO2. To create flower arrangements as per various themes

CO3. To create various formats used in housekeeping formats

**BHMCT 655            Management Information System (Practical)**

Course outcomes of MIS:-

CO1. Analyze the leadership role of Management Information Systems.

CO2. Understand business competitive advantage through informed decision making.

CO3. Develop and synthesize business information and systems to facilitate evaluation of strategic alternatives.

CO4. Acquire the effective communicative strategic alternatives to facilitate decision making.

**Semester /Year : VII Sem. / IV Year**

**BHMCT 701 Advance Food Production I**

Course Outcomes-

CO1. To understand Cost Dynamics & Inventory Controls.

CO2. Plan & compose Types of budget, zero base budgeting, fixed and flexible budget.

CO3. To create Break even chart, contribution, P / V ratio, Marginal cost, graphs.

**BHMCT 702 Food & Beverage Management I**

Course Outcomes-

CO1. Student understand Production control, standard yield & forecasting procedure of a outlet.

CO2. able to create Cashiers bill summary sheet, procedure of cash control.

CO3. Able to evaluate Stock records, bin cards, Comparison of physical & perpetual inventory.

CO4. To apply Standard portion and costing & Factors to be considered while fixing selling price of menu items.

**BHMCT 703 Facility Design & Management I**

Course Outcomes-

CO1. To develop concept of design & layout

CO2. To develop efficient planning system in effective way

CO3. To understand the requirement of HRACC

CO4. To create plans & layouts of the commercial kitchen

**BHMCT 704 Sales & Marketing I**

Course Outcomes-

CO1. To develop a better understanding of Hotel industry and market segment.

CO2. To develop marketing strategy

CO3. To understand the market trends and develop strategy for the same

**BHMCT 705 Financial Management -I**

Course Outcome---At the completion of the course students will be able to

CO1. Provide knowledge of a basic financial vocabulary, financial Statement Analysing Tools and Techniques and its role in Hotel Industry.

CO2. Identify financial Statement Analysing Tools and Techniques and analytical reviews of financial results, proposals, and plans.

CO3. Analyse and apply basic financial concepts and practices and includes analysis of company resources, types and sources of financing, forecasting and planning methods, and the roles of the money.

CO4. Explain Capital Budgeting concept and its process and procedure while taking Investment Decision in hospitality industry.

CO5. Prepare and analyse the budgets for different periods.

**BHMCT 751 Advance Food Production I (Practical)**

Course Outcomes-

- CO1. To demonstrate charcutiere items
- CO2. To use preservatives like brine
- CO3. To use cold cuts, chocolate work and various types of cake and dessert carving
- CO4. To create carving used in hotels

**BHMCT 706 Professional Elective / Specialization Area I (Room Division)**

Course Outcomes:

- CO1. To develop and understand the skill for the GM and Head of department level of unit operations.
- CO2. To handle operations of entire front office department with the aids
- CO3. To understand the business aspects of front office department
- CO4. To handle guest and difficult situation

**BHMCT 706 Professional Elective / Specialization Area I (Food & Beverage Service)**

Course Outcomes:

- CO1. To specialize in food and beverage service domain
- CO2. To develop their managerial and administrative skills in food and beverage service industry
- CO3. To develop managerial skills, business knowledge
- CO4. To understand the new trends in F&B industry

**BHMCT 706 Professional Elective / Specialization Area I (Food Production)**

Course Outcomes:

- CO1• To understand national and international patterns of kitchens
- CO2• To create various preparations of national and international cuisine
- CO3• To make regional cuisine
- CO4• To analyze new research and developments in the domain

**Semester /Year : VIII Sem. / IV Year**

**BHMCT 801 Food Production Management**

Course Outcome---At the completion of the course students will be able to

- CO1. To understand the art of ethnic cookery
- CO2. To cook global cuisine
- CO3. To conduct live cooking sessions
- CO4. To develop kitchen management systems

**BHMCT 851 Advance Food Production - II**

Course Outcome---At the completion of the course students will be able to

- CO1. To demonstration and making of ethnic cookery- Tandoori, Dum cooking and Indian sweets.
- CO2. To cook using Wood cooking
- CO3. To cook using Barbecue cooking
- CO4. To understand various famous specialty dishes from various cuisines around the world

**BHMCT 802 Food & Beverage Management II**

Course Outcome---At the completion of the course students will be able to

- CO1. To control the food and beverage costs
- CO2. To develop cost control strategies
- CO3. To operate the POS systems
- CO4. To create cost reports, budgets etc
- CO5. To create daily, monthly cost reports
- CO6. To control stock and optimize their consumption

**BHMCT 803 Facility Design & Management II**

Course Outcome---At the completion of the course students will be able to

- CO1. To design and layout of Kitchen Stewarding
- CO2. To develop systems for optimum use of energy and resources and their conservation
- CO3. To plan a goods store in a systematic way
- CO4. To understand the concept of Project Management in planning various layouts

**BHMCT 804 Sales and Marketing II**

Course Outcome---At the completion of the course students will be able to

- CO1. To develop sales scales
- CO2. To analyze the market and develop sales and marketing strategy
- CO3. To create various functions of sales to enhance the outcomes of the sales and marketing

**BHMCT 805 Financial Management II**

Course Outcome---At the completion of the course students will be able to

- CO1. To understand and develop financial statements
- CO2. To create capital structures

CO3. To evaluate various types of operating budgets

**BHMCT 806 Professional Elective / Specialization Area II (Room Division)**

Course Outcomes:

CO1. To develop and understand the skill for the GM and Head of department level of unit operations.

CO2. To handle operations of entire front office department with the aids

CO3. To understand the business aspects of front office department

CO4. To handle guest and difficult situation

**BHMCT 806 Professional Elective / Specialization Area II (Food & Beverage Service)**

Course Outcomes:

CO1. To specialize further in food and beverage service domain with emphasis of improving their technical knowledge

CO2. To develop their managerial and administrative skills in food and beverage service industry

CO3. To develop managerial skills, business knowledge

CO4. Entrepreneurship for food and beverage service industry

**BHMCT 806 Professional Elective / Specialization Area II (Food Production)**

Course Outcomes:

CO1. To design national and international level of kitchens

CO2. To create various preparations of national and international cuisine

CO3. To make regional cuisine

CO4. To analyze new research and developments in the domain

**BHMCT 852 Research Project (Practical)**

Course Outcome---At the completion of the course students will be able to

CO1. Understand the steps of research, design, data collection and presentation techniques.

CO2. Determine various tools and techniques of research to deal with hospitality related projects.

CO3. Analyze various issues faced during the preparation of research reports.

CO4. Develop a research attitude for analyzing the various issues of hospitality industry.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Language, Literature & Society

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.A. (Hons.) English
2. M.A. English
3. M.Phil. (English)
4. Ph.D (English)

# **B.A. (Hons.) English**



# **Name of the Program: Bachelors of Arts (Hons.) English**

BA (Hons.) English is a three year program that aims at providing a holistic introduction to the students in literature and language. The course is structured into 6 semesters; each semester requires students to study 4 Core English Papers. The first two semesters i.e. semester I and II lay the foundations of critical and analytical thinking that will be developed and polished in the next two years. During the course, the students will also be required to clear subsidiary papers in each semester- French and Psychology (Semester I and II), French and Sociology (Semester III and IV) and Environmental Studies (Semester V and VI).

## **1. Programme Outcomes**

### **Key features of the English Literature (Honours) course at Jaipur National University**

- To learn how to analyse a wide range of texts including fiction, poetry and drama.
- To explore the history of the English language and how it has become a global language.
- To have the opportunity to develop a project based on independent study.
- To learn the skills of critical commentary and complex argument that are highly valued in the workplace.

### **Learning outcomes, teaching and assessment**

This qualification develops your learning in four main areas:

- Knowledge and understanding: It is impossible to think critically about a text until you know it very well. However, I think it is now time to also consider how this knowledge might be connected and organised. In other words, what kinds of mental representations – or schema –should our students be building? What shape should these take for individual texts? What shape should these take for the subject as a whole? And how do we ensure the smooth transfer of this knowledge to the extended essay format which is favoured by summative examinations?
- Each text is represented by a number of interwoven knowledge frameworks. These include:
  - The knowledge of plot, events, character, setting – and associated inferences;
  - The knowledge of the text’s thematic breadth and its ‘big ideas’;
  - The knowledge of the writer’s methods and devices;
  - The knowledge of contextual factors.

These frameworks also sit nicely with the English literature assessment objectives.

One of our most important jobs is to help students to connect this knowledge in useful and creative ways. If they do not, then their essays become unbalanced. Too much isolated historical context, for example, leads to what my colleague Tod Brennan calls ‘context dumping’ – lots of historical events and facts, but no understanding of how all this has influenced the writer’s viewpoint. Similarly, too much emphasis on the ‘big ideas’ leads to vague, poorly evidenced essays, and too much focus on quotations and textual evidence can stand in the way of a genuine understanding of the writer’s overall purpose. Balance is everything.

It is often more helpful to think of ‘analysis’ as ‘connection’. The more fine-grained our textual knowledge, the more subtle the connections we can make. The more we practise making connections, the more original and interesting our analysis becomes. (We do not just make connections within a text of course – we also make implicit links with the wealth of general knowledge we already have.)

Put simply, whenever analysis is written on the page, some kind of connection must have happened in the mind.

If we were to simplify most sequences of lessons, they would probably look like this:

5. **Knowledge acquisition** – reading the text, knowing the plot, learning quotations, understanding the context and ‘big ideas’ etc.
6. **Knowledge strengthening** – exploring the whole text and connecting the main ideas.
7. **Knowledge application** – writing an essay or completing a mock exam.

Often, too little time is spent on 2 and, as a result, students struggle to organise their knowledge appropriately. Consequently, they do not develop the kind of broad and conceptual knowledge that helps them to understand that a text is a construction

The level and depth of your learning gradually increases as you work through the qualification. Students will be supported throughout by the unique style of teaching and assessment – which includes a personal tutor to guide and comment on your work; top quality course texts; e-learning resources like podcasts, interactive media and online materials; tutorial groups and community forums.

### **Skills for career development**

Studying English language and literature will equip the students with an adaptable set of skills that can give entry to a vast range of occupations, leading in a number of career directions. Students will learn to evaluate and assimilate information in constructing an argument; and acquire skills of creative and critical thinking, analysis, and communication that are much in demand in the workplace. Students will also sharpen up essential writing and IT skills. These are key skills that are crucial to many different kinds of complex organisations, and are greatly sought after in the world beyond study – whether they are already working, volunteering, or changing career.

### **Career relevance**

The breadth of study and the range of analysis, combined with training in clear thinking and communication, make this degree course relevant to a wide variety of careers, including:

- Public administration, local government, the civil service, art institutions, and social services
- Advertising, journalism, publishing, creative industries and public relations
- Education
- Legal work
- Business, banking and retail
- Human resources
- Charities and Campaigning.

## **2. Course Outcomes**

### **Semester: I**

**Paper Title: Modern English Usages and Language I**

**Paper Code: B.A. (H)E-101**

**Objective:** To make students familiar with the Functional Grammar (Grammatical concepts) and also make them learn effective speaking and writing skills.

**Learning Outcome:** This course ensures proficiency in English Language for future prospects.

**Paper title: History of English Literature**

**Paper Code: B.A. (H) E-102**

**Objective:** The paper discusses the entire history of English Literature from Anglo Saxons to the Twentieth Century. It helps to lay a foundation for the students in the study of Literature over all.

**Learning Outcome:** The students by the end of the course are able to draw a trajectory of various developments in Literature hence creating a strong basis for their knowledge.

**Paper title: Introduction to English Literature I**

**Paper Code: B.A. (H) E-103**

**Objective:** This paper aims at providing knowledge of the genres of fiction, poetry, and drama by writers of various cultures and historical eras. The students are taught to identify and describe distinct characteristics of literary texts.

**Learning Outcome:** At the end of the course the students should be able to analyze literary works for their structure and meaning. Effectively communicating ideas related to the literary works during class and group activities to enhance further depth of knowledge

**Paper title: Introduction to English Literature II**

**Paper Code: BA (H) E-104**

**Objective:** The primary objective of this paper is to acquaint the first semester students with some of the major canonical authors of prose, poetry and non-fiction. The texts included here are not just restricted to British Literature but also encompasses authors from American, Indian and Global literary tradition.

**Learning Outcome:** It will allow the students to have a context of varied styles of writing before they delve into a more comprehensive study and analysis in the later semesters

## **Semester II**

**Paper Title: English Usage, Literary Forms and Devices**

**Paper Code: B.A. (H) E-207**

**Objectives:** This paper aims to familiarize the students with the grammatical structures and their applications in written and spoken communication and to help them develop the ability to comprehend and analyze a literary text.

**Learning Outcomes:** This will help the students to become aware of proper formats of e-mail and report and also makes them proficient in essential elements required to interpret a literary text.

**Paper Title: Elizabethan Age and Metaphysicals**

**Paper Code: B.A. (H) E-208**

**Objective:** The primary purpose of the paper to acquaint the students with the Elizabethan era and the literature produced during this phase. Elizabethan era is known for giving 'drama' as a writing form to the world of literature thereby becoming one of the most important time epochs in the history of English Literature. The objective of the paper is to make the students understand the

importance of this era through the study of writers such as Shakespeare, Spenser, and Donne.

**Learning Outcome:** On the conclusion of the paper, the students will be equipped with the knowledge of stalwarts of Elizabethan era such as Shakespeare. They will now understand how the drama as a genre took shape and further developed as well as the metaphysical poetry which gives an insight into the extent to which imagination and creativity can reach thereby encouraging students to push their own creative boundaries.

**Paper Title: 17th and 18th Century Literature**

**Paper Code: B.A.(H)E-209**

**Objective:** The main objective of the course is to outline a comparative study of the evolving trends of the two centuries. The course aims at acquainting the learner with the masterpieces of both the centuries as well as provides an overview of the analysis of poetry.

**Learning Outcomes:** The student will be able to critically approach the poems and analyze the political nuances associated with the various texts as the eighteenth century literature focuses on constructively commenting on the social order as well as be able to appreciate the canonical texts of seventeenth century.

**Paper Title: Pre-Romantic and Romantic Literature**

**Paper Code: B.A. (H) E-210**

**Objectives:** To familiarize the students with the representative authors and their individual traits, the respective literary ages & their salient features; various literary movements & trends Poetic devices, strategies and applications.

**Learning Outcome:** On completion of this course, students should be familiar with the changing trends in British poetry and at the turn of the 18th century and how they were influenced by Political factors and emergence of other Philosophical thoughts in Europe.

### **Semester III**

**Paper Title: Phonetics and Phonology**

**Paper Code: B.A. (H)E-313**

**Objective:** Acquaint the students with the rules of pronunciation, stress and international patterns in order to help them pick English which is internationally applicable.

**Learning Outcome:** On completion of the course the students should be able to speak English with correct pronunciation and by using correct international fonts

**Paper Title: Nineteenth Century Poetry & Drama**

**Paper Code: B.A. (H) E- 314**

**Objective:** The primary objective of this paper is to trace the development of poetry and drama post the Romantic Age during the Nineteenth Century. The reflection of the then Victorian society is studied to better understand the context of the texts prescribed. Drama, which is European (Ibsen) helps the students understand not just British Nineteenth Century but provides students a more Continental understanding of literature during this century.

**Learning Outcome:** On completion of the course, the students should be able to critically discuss the era and poetry and drama that flourished during the era.

**Paper Title: Nineteenth Century Prose & Fiction**

**Paper Code: B.A. (H) E-315**

**Objective:** Nineteenth-century included two of the most influential era of British Literature; “The Romantic Age and the Victorian Age”. Since this paper is titled prose and fiction, it includes some of the significant and representative novels of the time. The novels are important as they allow the students to understand the development of Novel as a genre and to be able to appreciate different forms of it. These texts also play a significant role in familiarizing the reader with the vibrant socio-political dynamics of the Victorian Age. The essay by J.S. Mill included in the paper serves the same purpose.

**Learning Outcome:** On completion of the course, the students should be able to critically discuss the era and prose and fiction that flourished during the era.

**Paper Title: Twentieth Century Poetry and Drama**

**Paper Code: B.A. (H) E-316**

**Objective:** Students will read and analyse a survey of texts written by 20th Century contemporary writers. At the end of the course, students will demonstrate thorough knowledge of the major literary movements of the period, the texts discussed and class and the socio-cultural conditions of the society in which they were produced.

**Learning Outcome:** Students should be able to locate texts within the cultural and historical framework of their time by the end of the course.

## Semester IV

### **Paper Title: Twentieth Century Prose and Fiction**

#### **Paper Code: BA (H)E-419**

**Objectives:** To familiarize the students with the representative authors and their individual traits, the respective literary ages & their salient features; various literary movements & trends Poetic devices, strategies and applications.

**Learning Outcome:** The students shall be familiarized with the emerging Modernist trends in early 20th century. They should be able to not only critique the form and structure of the prose works but to also contextualize them in the midst of the world wars and fascism.

### **Paper Title: Modern English Usages & Language II**

#### **Paper Code: B.A. (H)E-420**

**Objective:** To familiarize the students with the grammatical structures and their applications and to develop the ability to comprehend and analyze a literary text.

**Learning Outcome:** On the completion, the students shall have better understanding of effective writing skills and role of notions, critical appreciation and knowledge of different patterns of sentence making.

### **Paper Title: Indian Writing in English I**

#### **Paper Code: B.A. (H) E-421**

**Objective:** To approach Indian writing in English from a fresh perspective that is called for due to a unique process of art construction as the spatial location shifts to India. The poems included in the course mentions a range of subjects like Bengal Renaissance, National Struggle, and Mysticism etc.

**Learning Outcomes:** The student will understand the importance of socio-historical concerns which either differ or merge from one culture to another. Additionally, the student will come to appreciate the unique poetics of Indian English poetry that developed chronologically, when Indian writers abandoned western standards and created an Indian space for their works.

### **Paper Title: Indian Writing in English II**

#### **Paper Code: B.A. (H) E-422**

**Objective:** To approach Indian writing in English from a fresh perspective that is called for due to a unique process of art construction as the spatial location shifts to India. Literatures in India during and post-independence shall be analysed to study the milieu.

**Learning Outcomes:** The student will understand the importance of socio-historical concerns which either differ or merge from one culture to another.

Additionally, the student will come to appreciate the unique poetics of Indian English poetry that developed chronologically, when Indian writers abandoned western standards and created an Indian space for their works.

## **Semester V**

### **Paper Title: American Literature**

#### **Paper Code: B.A. (H) E-525**

**Objective:** To make them acquainted with the important elements of poetry and prose that is culturally and historically rooted in America.

**Learning Outcome:** By the end of the course the student should have a developed and understanding of the texts and their context.

### **Paper Title: Media Studies and Film Appreciation**

#### **Paper Code: BA (H) E-526**

**Objective:** This paper aims at broadening the horizon of students towards critical and analytical understanding of media. It also provides students with awareness towards policies and regulations in media and broadcasting. The film texts such as Guide, Pinjar etc make students more adept in critiquing adaptations of literary texts.

**Learning Outcome:** The purpose of this paper would be met if the students become more conscious consumers of news as well as entertainment in the digital age.

### **Paper Title: Major Philosophical Trends**

#### **Paper Code: B.A. (H) E-527**

**Objective:** This paper helps to improve critical thinking skills. It also provides students with knowledge of logic that can greatly help improve critical thinking. It introduces students to the life of the mind, with all the categorical as well as intellectual changes that are required.

**Learning Outcome:** On completion of the course the students should have developed a more philosophical and analytical approach towards the life and literature.

### **Paper Title: World Classics in Translation.**

#### **Paper Code: BA (H) E-528**

**Objective:** The scope of this paper is to ensure that the students are not restricted to a limiting study of the British and American literary canon and other contemporary texts. The texts included in the paper range from Classical Greek Theatre, Classical Sanskrit Theatre to Twentieth Century Absurdist Drama in Europe. The discussion will revolve around the literary context in which each text can be located along with their engagements with history, gender and class conflicts. Texts from Unit 1 and Unit 2 are central to



understanding the literary and performance aesthetics of the Classical Age (Greek and Sanskrit Tradition).

**Learning Outcome** On completion of the course the students should have a detailed knowledge of Western and Indian Aesthetics with special reference to the texts that are considered classical.

## Semester VI

### **Paper Title: Indian and Western Poetics**

#### **Paper Code: B.A. (H) E-630**

**Objectives:** The objective of this course would be to familiarize the students with the critical writings in the domain of Indian literary criticism. An Indian student of literature, owing to the general unavailability of the older critical texts, is not overtly oriented to accessing India's critical tradition.

**Learning Outcome:** This paper will help the students engage with critical concepts, tools and perspectives about basic aesthetic premises that have emanated from the intellectual ethos of the Indian and Western tradition. Theoretical sections that are available in English translations will be culled out from the seminal texts written in Sanskrit or Greek language.

### **Paper Title: Regional Literatures in Translation**

#### **Paper Code: BA (H) E-631**

**Objective:** Translations are a wave in the contemporary literature. The paper aims to introduce the importance of Translation as a wing of literature. Regional literatures have a huge contribution in shaping Indian literature therefore study of literature without their knowledge is incomplete. This paper attempts to fill that gap.

**Learning Outcome:** At the end of the course, the students will be able to locate regional literatures in the map of Indian literature and able to understand its relevance. They will be able to understand how translation works as a bridge between languages and literatures across the nation thereby understanding its social relevance as well.

### **Paper Title: Critical Theories**

#### **Paper Code: B.A. (H) E-632**

**Objectives:** This paper aims to familiarize students with the representative critical theories. It also helps empower the students with critical tools to appreciate literary texts in a professional way and enhances one's understanding of literature and thereby joy of reading literature.

**Learning Outcome:** This paper will acquaint students with twentieth century literary theory, with its various schools of thought, such as Marxism, Structuralism, Formalism, Deconstruction, Feminism, Psychoanalysis, Postmodernism and Post-Structuralism.

**Paper Title: Introduction to Language and Linguistics**

**Paper Code: B.A.(H)E-633**

**Objective:** This paper aims at cementing the student's knowledge in the field of linguistics and language and shall be beneficial in understanding the systematics of the English Language semantically and psychoanalytically.

**Learning Outcome:** The students shall be acquainted with Linguistics and its Scope, Branches of Linguistics, Some Basic Concepts in Linguistics, Language and Communication, Language Variation and Language Change.

## **Subsidiary Subjects and their Value Addition**

### **1. French**

**Objective:** Learning a Foreign Language adds value to the skill set of the students. It encourages students to showcase language learning ability. Develops proficiency in speaking, reading and writing a foreign language is a skill set that advances the chances of students standing out in a crowd.

**Learning Outcome:** On completion of the course the students shall be able to hold grammatically correct conversations in a language other than Hindi or English or their mother tongue.

### **2. Introduction to Sociology**

**Objective:** Develop effective communication, written and oral, about the field of sociology within the classroom and through a variety of arenas including service learning, international experiences, student research, and internships. Obtain sociological knowledge of core areas and substantive topics and the ability to think critically about them. Understand the role of theory in the application of conceptual frameworks in the research process. Understand the role of evidence in the social sciences and the application of systematic empirical inquiry. Develop professional skills for post-graduation plans within and outside of sociology. Provide opportunities that are linked with the University's Mission Pillars to stress multiculturalism, community engagement, international experience, and interdisciplinary studies.

**Learning Outcome:** Be able to effectively engage with and apply their "sociological imagination" to think critically about the social world and what separates sociology from other social science disciplines.

### **3. Environmental Studies**

**Objective:** The Environmental Studies major prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective. Students:

- Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
- Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
- Demonstrate proficiency in quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high-level work as interdisciplinary scholars and/or practitioners.

**Learning Outcomes:** On the successful completion of the Environmental Studies, students have better understanding of complex environmental issues from a problem-oriented, interdisciplinary perspective. Students also have:

- Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

**M.A. (English)**

## **Name of the Program: Master of Arts (English)**

### **PROGRAMME OBJECTIVE**

MA English is a two year program that aims at solidifying the students into the literary world. The course is structured into 4 semesters; each semester requires students to study 4 Core English Papers. Students learn to analyze literature and to write on literary topics at an advanced level. Students complete a rigorous program of courses that introduce them to cutting-edge research while training them to understand a range of theoretical and literary-historical frameworks for understanding literature. They also may choose to write a thesis. The program also offers students pathways to prepare for doctoral work.

### **MA in English Program Learning Outcomes**

Students will demonstrate an appropriate level of expertise in literary history, literary theory, and rhetoric. Students will demonstrate critical and analytical skills in the interpretation and evaluation of literary texts. Students will demonstrate a command of written academic English, including the abilities to a) organize and present material in a cogent fashion, b) formulate and defend original arguments, c) employ effectively the language of their discipline and d) write under time constraints. Students will demonstrate a reading knowledge of at least one foreign language.

Upon completion of the MA, students will be able to:

1) **Demonstrate mastery** of the discipline by detailing the development and current practices of literary studies, rhetoric, or film.

(a) In the literature and film concentrations, the student's knowledge of the medium will be sufficient to allow that student to contextualize and judge contemporary literature or film in a long continuum (as would be expected, for instance, of an editor, producer, or publishing professional); to describe literature or film in terms of major periods, practices, and/or genres (as would be expected, for instance, of a community college instructor); and to evaluate the significance of individual works in their cultural and intellectual contexts (as would be expected, for instance, of an archivist, curator, or bibliographer).

(b) In the rhetoric and writing concentration, the student's knowledge of the history, theory, and practice of the medium will be sufficient to allow that student to explain, evaluate, and practice divergent pedagogical methods (as would be expected, for instance, of a writing teacher); to describe rhetoric contextually and comparatively (as would be expected, for instance, of a rhetorical ethnographer); and/or to historicize and theorize emerging forms of composition and expression (as would be expected, for instance, of a professional in the ever-expanding world of digital communication).

3) **Conduct research** that leads to a substantial original thesis, written over the course of the second year, in a subfield of the student's choice. The thesis will be directed by a major professor in the subfield and additionally advised by two minor professors in related subfields.

4) **Conduct research** that engages and responds to diverse audiences of scholars, students, and community members. This will be demonstrated through the thesis defense; through presentations at professional conferences; through internships and independent studies; through the use of research on pedagogical approaches to writing/literature/film in university teaching assignments; and/or through intellectual events within the School (including the annual graduate student conference, seminar presentations, and scholarly talks).

5) **Perform all activities in an ethical manner.** This will be demonstrated at the disciplinary level by the student's ability, in coursework and in written essays, to recognize and to appropriately document the prior scholarly conversation informing any given line of research or argument; by the student's engagement, in coursework, with historically under-represented perspectives and a diverse canon of primary and secondary works in literature/writing/film; and by the use of unbiased language in written and oral scholarly conversation.

## 2. Course outcomes

### SEMESTER- I

#### Modern English Usage and Grammar

(Code- MEG 101)

**Objective:** To inculcate critical thinking and analytical skills in the students. The objective is also to study how to beautify a literary text either poetry or prose.

**Learning Outcome:** This curriculum shall have successfully helped the students to understand importance of emotions and proper framing process of sentences.

#### *Chaucer to Elizabethans*

(Code MEG 102)

**Objective:** For the first semester MA students, this paper serves as an introduction as well as a revision of the stalwarts of literature such as Geoffrey Chaucer, Edmund Spenser, and William Shakespeare.

**Learning Outcome:** The students who are new to literature are able to acquaint themselves with the essentials of literature. For the students who have a literature background are able to get a deeper understanding of the texts

#### Metaphysicals to Milton

(Code MEG 103)

**Objective:** Discussing a very rich period of poetry in Literature, the paper acquaints the students with the poets who laid the foundation for the present

day poets. It is essential for them to study this in order to understand and analyse the various ramifications a poem has and can take.

**Learning Outcome:** The students are introduced to the extent of imagination and creativity through this paper which in turn encourages and motivates them to push the limits of their own imagination.

### *Augustans and Neo-Classical Writers*

#### *Code – (MEG-104)*

**Objectives:** The main objective of the course is to expose the learner to a specialized study of the canonical texts of Augustan Literature and the Neo-Classical Age. The course is also helpful in honing extensive knowledge about the major texts of the eighteenth century and the syllabus is in alignment with the syllabi of various eligibility examinations. The course is designed with the object of helping the students interpret, analyze and evaluate texts from a historical, political and a theoretical perspective

**Learning Outcome:** The students will be able to understand the negotiation with recent historical past during the eighteenth century, through a close examination of the satirical texts. The characteristic focus on glorifying the classical age and curtailing the recent history in politics as well as literature would become apparent. Man was portrayed as a flawed being and the Neo-classical literature aimed at exposing those flaws in order to bring about change

## **Semester II**

### *Pre-romantics and Romantics*

#### *(Code-MEG 205)*

**Objectives:** To familiarize students with the representative authors, the respective literary ages & their salient features – various literary movements & trends and poetic devices, strategies and applications.

**Learning Outcome:** The students on completion of the course should have a detailed critical knowledge of the texts as well as the context they are set in.

### *Phonetics and Spoken English*

#### *(Code MEG 206)*

**Objectives:** To enable the students to achieve a scientific sense through linguistics in order to complement the aesthetic sense from their study of literature,

**Learning Outcome:** On completion of the course the students shall have the ability to comprehend and analyze a literary text and to familiarize the students with writing skills and Research Methodology while writing Dissertation.

### *Literary criticism – I*

***(Code-MEG 207)***

**Objective:** This paper aims to familiarize the students with the representative critical theories from Aristotle to IA Richards which in turn empowers the student with critical tools to appreciate literary text in a professional way.

**Learning Outcome:** This course shall have enhanced one's understanding of literature and thereby joy of reading English literature.

***Victorian Literature***

***(Code MEG 208)***

**Objective:** To familiarize students with the representative authors, the respective literary ages & their salient features – various literary movements & trends and poetic devices, strategies and applications.

**Learning Outcome:** On completion of the course the students should be able to Analyse, discuss and write critically about the use of supernatural and gothic tropes and their significance in a range of Victorian texts. Understand a range of Victorian literature in relation to a range of contexts including Victorian anxieties about modernity, madness, sexual transgression and disease.

### **III Semester**

***Linguistics and Applied Linguistics***

***Paper Code: MEG-309***

**Objective:** With a motto to make aware of origin of words and language to the students, this paper aims to help students gain a better, and more in-depth understanding of language in different literary and non-literary texts.

**Learning Outcome:** On the completion of the course, the students shall have a better understanding of how languages spoken in different regions by different people are influenced by the culture and how do they vary from one another.

***American Literature***

***Paper Code: MEG 310***

**Objective:** Identify key ideas, representative authors and works, significant historical or cultural events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions. Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods.



**Learning Outcomes:** On completion of the course the students shall demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods in American literature.

### ***World Literatures***

#### ***Paper Code: MEG 311***

**Objective:** The second half of the Twentieth century is marked by literary voices that have emerged from outside of the Continent. African, Indian Diaspora, Australian Aboriginal and Central American literary writings open up newer perspectives in the field of study. The objective of this paper is to study the shift of literary narrative from Eurocentric to global.

**Learning Outcome:** By the end of the course the students shall have an understanding of the centuries of colonial histories, stories of marginalisation and alienation and exile is achieved as the students deliberate on the new narratives.

### ***Modern British Literature***

#### ***Paper Code: MEG 312***

**Objectives:** The course aims at establishing an understanding of the various modernist perspectives in British literature and acquainting the learner with the different fictional techniques that emerged during the modernist experiment. A rigorous program of advanced level has been sketched for developing an appropriate level of expertise as well as critical and analytical skills for the interpretation and evaluation of major modern literary texts. The course also aims at building an inquisitive understanding for the innovative modern poetry so that the genre of becomes more accessible and engaging.

**Learning Outcomes:** The student will be able to identify the experimental nature of modern story telling by looking at the discontentment portrayed in the prescribed novels and poems which functioned as an attempt to address the various unexplored aspects of human life. They will further learn to appreciate the redefinition of the established norms that went on in modern literature. Students will have learnt about the spatial significance of fictional evolution in British literature and learn to relate to such literary expression on a personal level.

## **SEMESTER IV**

### ***Stylistic, Discourse Analysis and Pragmatics***

#### ***(Code MEG 413)***

**Objectives:** To familiarize students with the basics of Stylistics, Discourse Analysis and Pragmatics and Speech Act theories.

**Learning outcomes:** It will help students to learn major techniques of writing for a literary text and also makes them understand various concepts and related theories which are prominent in English Literature at present time

### ***Indian English Literature***

***(MEG 414)***

**Objectives:** To develop students' understanding of the history and cultural progress of India through literature conveying the perception and experiences of Indian authors, poets, dramatics and novelist in English Writing. It also aims to familiarize students with the prominent theme of Indian English Literature.

**Learning Outcome:** The broadly chronological arrangement of course texts will allow students to evaluate course material with specific reference to cultural and political developments in India's colonial and post-colonial history. By the end of the course, students will be able to evaluate course texts both in terms of their place within the cultural and political history of the Indian subcontinent, and also within a wider global context

### ***Modern British literature II***

***(MEG 415)***

**Objective:** British literature forms the core of English literature studies. The final year MA students need to be well acquainted with the contemporary British literature in order to understand the current waves of English literature. This paper aims towards this objective

**Learning Outcome:** At the end of the paper, the students will have an in-depth knowledge of the contemporary British literature and the trends being observed in the same. They will be able to analyse their own interests and explore the various research branches for further studies in the field.

### ***Critical Theory-II***

***(MEG 416)***

**Objectives:** This paper aims to familiarize students with the representative critical theories. It also helps empower the students with critical tools to appreciate literary texts in a professional way and enhances one's understanding of literature and thereby joy of reading literature.

**Learning Outcome:** On completion of this course the students shall have the critical and analytical ability to theorize the texts that they study during the programme. It shall also be a useful tool in their dissertation work that they undertake during the programme.

**M. Phil. (English)**

# **Name of the Program: M. Phil. (English)**

## **1. PROGRAMME OBJECTIVES:**

1. To assist the scholar in mastering the latest Research Methodology.
2. To enable the scholar to have a conceptual understanding of the literary /critical theory.
3. To provide the scholar with the critical faculties necessary to analyze a work of art or any literary piece.
4. To edify the scholar, the utility of the English language through the study of literature.
5. To prepare scholars for undertaking higher responsibilities in teaching areas as Literary Theory, Research Methodology, and Theory of literature.

## **2. PROGRAMME OUTCOMES:**

Upon completion of the M. Phil. English, the Research Scholar, will:

1. Apply knowledge and skills learnt through this programme.
2. Identify topics and formulate questions for critical inquiry.
3. Identify appropriate methods to evaluate critically.
4. Identify appropriate sources for research.
5. Use their chosen sources effectively in their own writing, citing all sources appropriately.

## **3. Course outcomes**

### **PAPER 1: Research Methodology (M. Phil Eng-101)**

#### **Objective**

1. To equip the students with the tools and materials of research.
2. To acquaint them with the research process
3. To train them in preparing their research.

#### **Course Outcomes:**

Upon successful completion of this course, the researcher will be

1. Able to identify the research gaps
2. An informed scholar
3. A competent researcher
4. Able to acquire the language of research
5. Knowledgeable in applying critical tools

### **Paper 2: Critical Approaches to Language and Literature (M. Phil Eng-102)**

## **Objectives**

1. To acquaint the students with the latest approaches to language and literature
2. To enable them to apply these approaches to literary pieces and /or language. (Natural, Literary, Media)
3. To inculcate the habit of making background reading with the help of various conventional and technological sources.

## **Course Outcomes**

Upon successful completion of this course, the researcher will be

1. Able to apply theory on literary texts.
2. Able to distinguish between theory and application.
3. Competent to evolve a methodological framework.
4. Proficient in theoretical terminology.

## **Paper 3: Application of Literary Theory (M. Phil Eng-103)**

### **Objectives**

1. To help the student to crystallize topic of Research
2. To provide the student with relevant and timely guidance for conducting research
3. To ensure the quality of the dissertation in the form of contact sessions. The students will be grouped according to their area of interest. Each group will consist of 4-6 students

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Life and Basic Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. B.Sc. (Hons.) Biotechnology
2. B.Sc. (Hons.) Biochemistry
3. B.Sc. (Hons.) Bioinformatics
4. B.Sc. (Hons.) Microbiology
5. B.Sc. (Hons.) Physics
6. B.Sc. (Hons.) Mathematics
7. B.Sc. (Hons.) Chemistry
8. B.Sc. pass course (PCM)
9. B.Sc. pass course (CBZ)
10. M.Sc. (Chemistry)
11. M.Sc. Mathematics
12. M.Sc. Physics
13. M.Sc. Biotechnology
14. M.Sc. Microbiology
15. M.Sc. Bioinformatics
16. M.Sc. Botany
17. Ph.D (Chemistry)
18. Ph.D (Life Sciences)

# **B.Sc. (Hons.) Biotechnology**

<b>School of life and basic sciences</b>		
<b>1.</b>	<b>Name of the programme</b>	<b>B.Sc .</b>
<b>2.</b>	<b>Programme Code</b>	<b>BTH</b>
3.	Programme Outcome	<p>Students will be able to</p> <ul style="list-style-type: none"> <li>• Understand and remember the basics in the field of life sciences and insight on research in the field of Biological sciences.</li> <li>• Explore the scientific literature effectively and communicate ideas principles effectively.</li> <li>• Paraphrase advanced knowledge and apply the concepts for future application</li> <li>• interpret experimental data and critique the same for alternative strategies</li> <li>• Speak, read, write and listen clearly in person in English and make meaning of the world by connecting people, ideas, books, media and technology</li> </ul>
4.	Name of the specific programme	B.Sc in Biotechnology (Hons.)
5.	Programme Specific Outcome	<p>After successful completion of Bachelors of Science in Biotechnology, the student should be able to</p> <ul style="list-style-type: none"> <li>• Demonstrate basic knowledge in the field of biotechnology</li> <li>• Acquire basic knowledge of biotechnology and skills to design and conduct experiments, analyse data and interpret the results</li> <li>• Develop understanding of modern engineering techniques used in biotechnology</li> <li>• Communicate effectively and demonstrate professional and ethical responsibilities</li> <li>• Gain first-hand experience of working on project at individual level and exposure to industrial and research environment</li> </ul>
	<b>Semester/Year</b>	<b>I Semester /I Year</b>
Course Nomenclature	Biostatistics and Introduction to Computers	course code (BTH101)



	Course Outcome	<p>Student will learn:</p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of statistical issues arising in medical research.</li> <li>• Apply bio statistical knowledge to real-life problems in medical research.</li> <li>• Demonstrate skills in the design and analysis of clinical trials.</li> <li>• Demonstrate skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
Course Nomenclature	Cell Biology and Genetics	course code-BTH-102

	Course Outcome	<ul style="list-style-type: none"> <li>• Students will understand the structures and functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles</li> <li>• Students will understand how these cellular components are used to generate and utilize energy in cells</li> <li>• Students will understand the Stages of mitosis and meiosis, highlighting similarities and differences. Describe stages of the cell cycle; focus on behavior of chromosomes and Origins of genetic variation, including independent assortment and crossing over, which happen during meiosis, combined with random fertilization</li> <li>• Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation</li> <li>• Students will learn the basic terminology, principles of inheritance at the molecular, cellular and organismal levels, cytoplasmic inheritance, inter and intragenic inheritance and epigenetic.</li> </ul>
Course Nomenclature	Microbiology	course code-BTH-103
	Course Outcome	<ul style="list-style-type: none"> <li>• Students will appreciate the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes</li> <li>• Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea, virus, algae, fungi and protozoa</li> <li>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization. Know General bacteriology and microbial techniques for isolation of</li> </ul>

		<p>pure cultures of bacteria, fungi and algae</p> <ul style="list-style-type: none"> <li>• Students will be able to describe unique microbial genetic systems (i.e., prokaryotic and viral genomes, lateral gene transfer, plasmid etc.)</li> <li>• Understand the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy. Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.</li> </ul>
Course Nomenclature	Chemistry - I	course code-BTH-104
	Course Outcome	<p>Students will be able to</p> <ul style="list-style-type: none"> <li>• Understand about atom and correlate the atomic structure of an element to its physical and chemical properties</li> <li>• Learn role of ions in human body through bio-inorganic chemistry</li> <li>• Describe the classification of solids, laws of crystallography, Classification of solids, laws of crystallography</li> <li>• Understand about the chemistry of d-block elements and their properties student must aware with the S, P, block elements and role of Periodic table and their groups in the field of inorganic chemistry</li> <li>• Illustrate reasons and relationship between the elements situated into similar groups and similar periods. Students also learn characteristic feature of different families of the elements like, oxygen, nitrogen and boron families etc</li> </ul>
	<b>Semester/Year</b>	<b>II Semester /I Year</b>
Course Nomenclature	Introductory Mathematics	BTH 201

	Course Outcome	<p>Learners completing this course will be able to:</p> <ul style="list-style-type: none"> <li>• perform basic arithmetic operations on positive and negative whole numbers, fractions and decimals;</li> <li>• perform basic arithmetic operations on algebraic expressions and fractional algebraic expressions;</li> <li>• interpret and perform basic operations on algebraic expressions containing exponents;</li> <li>• solve systems of linear equations in up to three unknowns and explain how to solve systems in more than three unknowns;</li> <li>• set up a linear equation in one unknown from a descriptive problem, plot the graph of the equation and solve the equation;</li> <li>• determine consistency or inconsistency, dependence or independence of a system of linear equations from their graphs;</li> <li>• Solve quadratic equations and equations having fractional algebraic expressions;</li> <li>• define and perform basic operations on logarithmic expressions;</li> <li>• define a set and use set notation for solutions of inequalities;</li> <li>• develop and solve absolute-value equations and absolute-value inequalities</li> </ul>
Course Nomenclature	Programming Language Fundamentals and Applications	BTH 202
	Course Outcome	<p>Student should be able to</p> <ul style="list-style-type: none"> <li>• Understand the concepts of procedural programming language using C language</li> <li>• Learn the structure of programming language using C language</li> <li>• Design flow chart and algorithms before writing program code</li> <li>• Describe program using C features such as basic programs, functions, pointers, etc</li> <li>• Simulate the problem in the subjects like Real World problems</li> </ul>
Course Nomenclature	Biochemistry - I	BTH203

	Course Outcome	<p>Student should be able to</p> <ul style="list-style-type: none"> <li>• Understand origin of life with biomolecular evolution and biomolecular diversity</li> <li>• Explore biomolecular diversity, their respective structure and functional relevance</li> <li>• Learn basics of pH and buffers, prepare them in the laboratory and understand their biological role</li> <li>• Understand enzyme structure, function and their distinctive kinetic characteristics</li> <li>• Execute technical skills regarding estimation of biomolecules in biological samples</li> <li>• Identify and analyse enzymatic presence in a sample</li> </ul>
Course Nomenclature	Chemistry - II	BTH 204
	Course Outcome	<p>Student should be able to</p> <ul style="list-style-type: none"> <li>• Describe colligative properties of solution like elevation of boiling point, depression of freezing point with relatively lowering the vapour pressure</li> <li>• Understand oxidation and reduction properties of compounds</li> <li>• Derive basics of thermodynamic derivations</li> <li>• Understand the one and two components phase system on the basis of gibb's phase rule</li> <li>• Describe electrolyte and their behaviour in different solvents</li> <li>• Learn about pH, buffer, acidity and basicity of the solution</li> </ul>
	<b>Semester/Year</b>	<b>III Semester /II Year</b>
Course Nomenclature	Molecular Biology	BTH 301

	Course Outcome	<p>The students should be able to</p> <ul style="list-style-type: none"> <li>• Understand the structure of nucleic acids, gene mechanisms of gene regulation</li> <li>• Extend understanding of the molecular mechanisms via which genetic information is stored and expressed regulated and transmitted among generation</li> <li>• Comprehend various mechanism of DNA damage and repair, mutations and its applications</li> <li>• Describe various molecular techniques for identification and characterization of nucleic acids</li> <li>• understand and describe the concept of RNA mediated gene silencing</li> </ul>
Course Nomenclature	Biochemistry-II	BTH 302
	Course Outcome	<p>Students should be able to</p> <ul style="list-style-type: none"> <li>• Learn the basic principles and types of metabolism</li> <li>• Understand and remember various metabolic pathways, their physiological significance, structures of intermediates involved, associated enzymes &amp; their regulation</li> <li>• Describe energetics of the different metabolic pathways, site of action and networking between the carbohydrate metabolism and lipid metabolism</li> <li>• Understand the nitrogen metabolism distributed into protein and nucleic acid metabolic pathways, their clinical significance, structures of intermediates involved, associated enzymes &amp; their regulation, site of action and molecular networking between the nucleotide metabolism and amino acid metabolism</li> <li>• Demonstrate the techniques for identification of intermediates involved in various metabolic pathways</li> </ul>
Course Nomenclature	Chemistry-III	BTH 303

	Course Outcome	<p>Student should be able to</p> <ul style="list-style-type: none"> <li>• Understand the classification of different organic compound, nomenclature rule on the different cyclic and non-cyclic hydrocarbons</li> <li>• Understand about epoxides and its reactions. Carboxylic groups and derivatives will be additional information for the students.</li> <li>• Understand direct or indirect factors involved in interaction of one molecule to another</li> <li>• Interrelate the study of light to the nature of the atom</li> <li>• Correlate the atomic structure of an element to its physical and chemical properties.</li> </ul>
Course Nomenclature	Professional Communication Skills	BTH 304
	Course Outcome	<ul style="list-style-type: none"> <li>• Students will be able to learn English language with propriety and effectiveness to develop an argument in a positive manner.</li> <li>• Students will write clearly, grammatically and syntactically correct sentences.</li> <li>• Students will be able to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation.</li> <li>• Students will have an appreciation of the differences between primary and secondary documents, and will advance their reading comprehension.</li> <li>• Students will be able to read texts closely and explicate texts written in a wide variety of forms, styles, structures, and modes.</li> <li>• The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.</li> </ul>

	<b>Semester/Year</b>	<b>IV Semester /II Year</b>
Course Nomenclature	Fundamentals of Bioinformatics and Nanotechnology	BTH 401
	Course Outcome	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand which type of data is available from the most common protein sequence and structure databases (UniProt, GenBank, Protein Data Bank, CATH).</li> <li>• To apply the most appropriate bioinformatics sequence or structure database to retrieve or search data given a specific question in molecular biology.</li> <li>• To apply the knowledge and skills in bioinformatics so as to decide whether a given molecular biology problem could benefit from a bioinformatics approach, and what methods to use.</li> <li>• To interpret the fundamental principles of nanotechnology and their applications to biomedical engineering.</li> </ul>
Course Nomenclature	Biophysics and Instrumentation	BTH 402
	Course Outcome	<p>Students will have an understanding of:</p> <ul style="list-style-type: none"> <li>• basic atomic models and associated theories;</li> <li>• principle, components, optical path and application of different types of spectroscopic, microscopic, radioactivity measuring instruments;</li> <li>• principle, components and application of centrifugation, electrophoresis, conductometry, potentiometry and chromatographic techniques.</li> </ul>
Course Nomenclature	Plant Tissue Culture and Plant Biotechnology	BTH 403



	Course Outcome	<p>Students should be able to</p> <ul style="list-style-type: none"> <li>• Describe basic principles and technical advances behind the in vitro culture of plant cells</li> <li>• Demonstrate the basics of media composition, preparation, sterilization techniques and perform various methods related to tissue culture techniques like micro propagation, haploid production, somatic embryogenesis, somaclonal variation</li> <li>• Explain various rDNA techniques and plant transformation for improving the productivity and performance of plants under biotic and abiotic stresses</li> <li>• Describe the application of plant biotechnology in crop improvement in terms of nutrition.</li> <li>• Paraphrase different separation techniques based on electrophoresis</li> </ul>
Course Nomenclature	Developmental Biology	BTH 404
	Course Outcome	<p>Students should be able to</p> <ul style="list-style-type: none"> <li>• Understand plant development; reproduction, leaf, stems and root development and Alternation of generation.</li> <li>• Explain the phenomenon of plant cell communication, Hormonal control of plant development, Plant responses to light and Programmed cell death, ageing and senescence</li> <li>• Learn development of the complex organism from the fertilised egg, leading from the control of gene expression, to cell interaction, to the formation of tissues and organs</li> <li>• Gain an understanding of animal and plant embryos and also post-embryonic process (control of growth, tissue maintenance, flowering, etc)</li> <li>• Demonstrate the knowledge of pattern formation (cell lineage, cell interaction); control of gene expression; genetic analysis of the nematode and in Drosophila (the oocyte, the embryo and imaginal discs); mammalian development</li> </ul>

	<b>Semester/Year</b>	<b>V Semester /III Year</b>
Course Nomenclature	Environmental Biotechnology	BTH 501
	Course Outcome	<p>Students should be able to</p> <ul style="list-style-type: none"> <li>• Understand the application of biotechnology in monitoring or removing the pollutant</li> <li>• Learn hierarchy of ecosystem and interaction between humans and environment</li> <li>• Describe various methods of waste water treatment and its applications</li> <li>• Aware of the concepts of bioremediation, biosensors for the environmental monitoring</li> <li>• Acquainted with the environmental protection laws and policies</li> </ul>
Course Nomenclature	Animal Biotechnology	BTH 502
	Course Outcome	<p>Students will learn to</p> <ul style="list-style-type: none"> <li>• Demonstrate foundational knowledge of Cell culture techniques and competence in laboratory technique</li> <li>• Describe basic tissue culture techniques; chemically defined and serum free media; animal cell cultures, their maintenance and preservation; various types of cultures- suspension cultures, continuous flow cultures, immobilized cultures; somatic cell fusion; cell cultures as a source of valuable products; organ cultures.</li> <li>• Perform supportive or episodic tasks relevant to cell culture, including preparation and evaluation of media, cryopreservation and recovery, and assessment of cell growth and health.</li> <li>• Explain the technique of the production of various eukaryotic protein</li> <li>• Describe various haematological principles</li> </ul>
Course Nomenclature	Bioprocess Engineering	BTH 503

	Course Outcome	<p>The students should be able to</p> <ul style="list-style-type: none"> <li>• Understand problems associated biomolecules or biological cells from those associated with environmental conditions.</li> <li>• Predict important yield coefficients using the principles of stoichiometry and energetics of microbial growth.</li> <li>• Apply engineering principles to address issues in bioprocesses.</li> <li>• Analyze and identify limiting factors in a bioprocess and Propose solutions to address biological and engineering problems.</li> <li>• Analyze and formulate mechanisms for enzymatic reactions.</li> <li>• Evaluate the use of unit scale-up strategies, equipment sizing and specification, and process in the design of a biological process</li> </ul>
Course Nomenclature	Immunology	BTH 504
	Course Outcome	<p>The student should be able to</p> <ul style="list-style-type: none"> <li>• Recognise different cells and organs of the immune system their role in immune protection</li> <li>• Understand the basics of immunology and various effector mechanisms</li> <li>• Demonstrate the use of different antigen-antibody interactions for immunological detection</li> <li>• Paraphrase the role of different effector mechanism in elimination of infectious diseases</li> <li>• Describe the role of immune system in pathogenesis of cancer, autoimmune disease, graft rejection and immunodeficiency disorders</li> </ul>
	<b>Semester/Year</b>	<b>VI Semester /III Year</b>
Course Nomenclature	Introduction to Genomes	BTH 601

	Course Outcome	<p>The student should be able to</p> <ul style="list-style-type: none"> <li>• Understand the concept of genomics and its relevance to biotechnology.</li> <li>• Describe about various components of genome and to compare genomes of organisms of different phylogenetic lineages</li> <li>• Understand the detailed concept of gene, its types, repetitive elements in genome and their application</li> <li>• Learn various techniques to detect variation at genetic level and its application in biotechnology</li> <li>• Illustrate different methods of genetic mapping in prokaryotes as well as eukaryotes</li> </ul>
Course Nomenclature	Recombinant DNA Technology	BTH 602
	Course Outcome	<ul style="list-style-type: none"> <li>• To gain knowledge about the organellar inheritance</li> <li>• For understanding in the basics of Molecular Biology and rDNA technology.</li> <li>• To provide knowledge on methods of cloning, construction of DNA libraries and applications of rDNA technology, Concept and principle and application of genetic engineering.</li> <li>• Principles, material and methodology of techniques involved in rDNA technology, include Gel electrophoresis, blotting techniques, sequencing methods, PCR. RFLP, RAPD, DNA fingerprinting</li> </ul>
Course Nomenclature	Biodiversity and Environment	BTH 603

	Course Outcome	<p>Students will have the knowledge and skills to realize and combine the complexity of the relations and interactions between the ecosystem structures and functions and the human impacts from the one side with the sustainable management aiming at the conservation of species and habitats.</p> <ul style="list-style-type: none"> <li>• In-depth knowledge and critical understanding of the theory and principles of biodiversity and the interrelationships of its levels with the basic effects from infrastructure development in nature conservation areas.</li> <li>• Idea of the environmental pollution, Disaster management, sustainable development and environmental ethics.</li> <li>• Able to describe human population and the environment, population growth variation among nations, population explosion, family welfare programme and role of information technology in the environment and human health, with case studies.</li> <li>• Understanding of Indian Patent law, Intellectual/Industrial property and its legal protection in research, design and development</li> </ul>
Course Nomenclature	Industry Relations and Entrepreneurship	BTH-604
	Course Outcome	<p>Students will be able to describe the basic principles and concepts of management.</p> <ul style="list-style-type: none"> <li>• Distinguish different plans and list steps in planning.</li> <li>• Discuss the concepts of organizing and staffing.</li> <li>• Interpret the concepts of directing and controlling.</li> <li>• Demonstrate the meaning, functions, types and roles of an entrepreneur and describe various institutional support.</li> <li>• Explain in detail about the small scale industries and prepare the project report.</li> </ul>

# **B.Sc. (Hons.) Biochemistry**

<b>School of life and basic sciences</b>	
<b>Name of Program</b>	<b>B.Sc.(Hons) -Biochemistry</b>
<b>Programme outcome</b>	
<p>A student completing a graduation in Life Science shall be able to apply:</p> <p>POs1. Nurturing novel ideas and meaningful insights through scientific thinking.</p> <p>POs2. Enabling critical analysis of problems and situations to reach solutions.</p> <p>POs3Development of communication skills to present scientific data in oral and written formats.</p> <p>POs4. Providing a platform for individual and collective work.</p> <p>POs5.Understanding the significance of sustainable scientific processes to support the environment.</p>	
<p>Programme specific outcome:</p> <p>1) Students would develop the basic terminology, language and concepts of biochemistry.</p> <p>2) Students will have understanding of Molecular, sub-cellular, cellular, clinical and physiological dimensions of biochemistry of plant and animal systems.</p> <p>3) Students would be skilled with the technical understanding of biomolecular diversity and their role in cell.      4) Students would be able to analyse the integral networking of metabolic pathways.</p> <p>5) Students would be able to analyse and design the ways to regulate and direct the metabolic flux of a system.</p> <p>6) Students will be skilled in enzymology and molecular biology approaches to correlate to physiology.</p> <p>7) Students would be technically skilled in clinical and biochemical methods, instrumentation and related techniques.</p> <p>8) Students would be able to design, execute them skillfully and analyse experiments in biochemistry.</p> <p>9) Students would be ready to execute their biochemical knowledge and skills to face biochemical challenges in industry, medicine and academics.</p>	
<b>Semester/Year</b>	<b>I Semester /I Year</b>
Name of Course -	Biostatistics and Introduction to Computers
Outcomes of paper	<p>Student will learn:</p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of statistical issues arising in medical research.</li> <li>• Apply bio statistical knowledge to real-life problems in medical research.</li> <li>• Demonstrate skills in the design and analysis of clinical trials.</li> <li>• Demonstrate skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
Name of Course -	Cell Biology and Genetics

Outcomes of paper	<p>Student will learn:</p> <ul style="list-style-type: none"> <li>• Students will understand the structures and functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles</li> <li>• Students will understand how these cellular components are used to generate and utilize energy in cells</li> <li>• Students will understand the Stages of mitosis and meiosis, highlighting similarities and differences. Describe stages of the cell cycle; focus on behavior of chromosomes and Origins of genetic variation, including independent assortment and crossing over, which happen during meiosis, combined with random fertilization</li> <li>• Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation</li> <li>• Students will learn the basic terminology, principles of inheritance at the molecular, cellular and organismal levels, cytoplasmic inheritance, inter and intragenic inheritance and epigenetic</li> </ul>
Name of Course -	Microbiology
Outcomes of paper	<p>Student will learn:</p> <ul style="list-style-type: none"> <li>• Students will appreciate the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes</li> <li>• Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea, virus, algae, fungi and protozoa</li> <li>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization. Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae</li> <li>• Students will be able to describe unique microbial genetic systems (i.e., prokaryotic and viral genomes, lateral gene transfer, plasmid etc.)</li> <li>• Understand the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy. Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.</li> </ul>
Name of Course -	Chemistry-I
Outcomes of paper	<ol style="list-style-type: none"> <li>1. To understand the basic structure of the atom &amp; Correlate the atomic structure of an element to its physical and chemical properties.</li> <li>2. To remember the role of ions in human body through bio-inorganic chemistry.</li> <li>3. To compare various types of solids &amp; laws of crystallography.</li> <li>4. To illustrate the chemistry of d-block elements and their properties student must aware with the S, P, block elements and role of Periodic table and their groups in the field of inorganic chemistry.</li> <li>5. To develop relationship between the elements situated into similar groups and similar periods. Students also learn characteristic feature of different families of the elements like, oxygen, nitrogen and boron families etc.</li> </ol>



Semester/Year	II Semester /I Year
Name of Course -	Introductory Mathematics
Outcomes of paper	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand basic arithmetic operations on positive and negative whole numbers, fractions and decimals;</li> <li>• To understand basic arithmetic operations on algebraic expressions and fractional algebraic expressions;</li> <li>• interpret and perform basic operations on algebraic expressions containing exponents;</li> <li>• Build systems of linear equations in up to three unknowns and explain how to solve systems in more than three unknowns;</li> <li>• Develop a linear equation in one unknown from a descriptive problem, plot the graph of the equation and solve the equation;</li> <li>• Determine consistency or inconsistency, dependence or independence of a system of linear equations from their graphs;</li> <li>• solve quadratic equations and equations having fractional algebraic expressions;.</li> <li>• define and perform basic operations on logarithmic expressions;</li> <li>• define a set and use set notation for solutions of inequalities;</li> <li>• develop and solve absolute-value equations and absolute-value inequalities;</li> </ul>
Name of Course -	Programming Language Fundamentals and Applications
Outcomes of paper	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand the concepts of procedural programming language using C language. <ul style="list-style-type: none"> <li>• Learn the structure of programming language using C language .</li> <li>• Learn the ability to draw flow chart and algorithms before writing program code.</li> </ul> </li> <li>• Be able to program using C features such as basic programs, functions, pointers, etc.</li> <li>• At the end of the course students will able to simulate the problem in the subjects like Real World problems.</li> </ul>
Name of Course -	Biochemistry – I
Outcomes of paper	<ol style="list-style-type: none"> <li>1) To understand origin of life with biomolecular evolution and biomolecular diversity,</li> <li>2) To understand biomolecular diversity , their respective structure and functional relevance ;</li> <li>3) To understand basics of pH and buffers, prepare them in the laboratory and understand their biological role.</li> <li>4) To understand enzyme structure, function and their distinctive kinetic characteristics.</li> <li>5) To adopt and execute technical skills regarding estimation of biomolecules in biological samples.</li> <li>6) To be able to detect and analyse enzymatic presence in a sample.</li> </ol>
Name of Course -	Chemistry-II

Outcomes of paper	<ol style="list-style-type: none"> <li>1. To differentiate colligative properties of solution like elevation of boiling point, depression of freezing point with relatively lowering the vapor pressure. oxidation and reduction properties of compounds</li> <li>2. To understand thermodynamic derivation &amp; various thermodynamic laws.</li> <li>3. To analyze one and two components phase system with the help of phase diagram on the basis of Gibb's phase rule</li> <li>4. To understand about electrolyte and their behavior in different solvents.</li> <li>5. To examine acidity /basicity of the solution by pH and buffer solutions.</li> </ol>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
Name of Course -	Membrane Biochemistry
Outcomes of paper	<p>Student will learn:</p> <p>Upon successful completion of the course, students</p> <ol style="list-style-type: none"> <li>1) should have an understanding of the structure and compositional diversity of the membranes.</li> <li>2) will be able to analyse and correlate distinctive asymmetry of biological membranes with their localization and distinctive function in different tissues.</li> <li>3) To interpret dynamics and fluidity of biological membranes as a function of its constituting lipids and proteins.</li> <li>4) To analyse the details, technicalities and determinants of transport utility of biological membranes.</li> <li>5) To execute the technical skills of experimental membrane biochemistry.</li> </ol>
Name of Course -	Metabolism I
Outcomes of paper	<ol style="list-style-type: none"> <li>1) To understand basic reactions of metabolism, their thermodynamic parameters and energetics.</li> <li>2) To analyze the carbohydrate metabolic pathways with respect to their intermediates and regulation of their flux.</li> <li>3) To analyze the lipid metabolic pathways with respect to their intermediates and regulation of their flux.</li> <li>4) To estimate and analyse the diverse end products emerging through intermediates of carbohydrate and lipid metabolic pathways</li> <li>5) To be able to analyze the biological significance of integrity and internetworking of carbohydrate and lipid metabolic pathways .</li> <li>6) To be able to detect and analyze the discriminative shift in metabolic flux at selective situations (starvation, obesity, etc).</li> </ol>
Name of Course -	Chemistry-III

Outcomes of paper	<ol style="list-style-type: none"> <li>1. To remember about organic compounds, their classification, how to apply nomenclature rule on the different cyclic and non-cyclic hydrocarbons.</li> <li>2. To recall the stable state of organic compound either boat or cyclic form and so on.</li> <li>3. To distinguish between the various oxygen containing alcohol, ester and carboxylic groups and their reactions in alkyl and aryl form.</li> <li>4. To understand about epoxides and its reactions. Carboxylic groups and derivatives will be additional information for the students.</li> <li>5. To compare factor direct/ indirect involves in interaction of one molecule to another.</li> <li>6. To correlate the atomic structure of an element to its physical and chemical properties.</li> </ol>
Name of Course -	Professional Communication Skills
Outcomes of paper	<p>Upon successful completion of the course, students would be able:</p> <p>A need to impart communication skills is felt everywhere in academics . It provides the students / learners a profound knowledge about professional communication by making them familiar with its meaning ,understanding and interpretation. Students are given the way how to cultivate their knowlege in their personal and professional life.</p> <ul style="list-style-type: none"> <li>• 1. To understand the important role of English language with propriety and effectiveness to develop an argument in a positive manner.</li> <li>• Students will be able to identify grammatically errors and will be able to write correct English and syntactically correct sentences.</li> <li>• Create an environment to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation.</li> <li>• Appreciation of the differences between primary and secondary documents, and will advance and enhance their reading comprehension.</li> <li>• To understand the importance of all communication skills, Reading texts closely and explicate texts written in a wide variety of forms, styles, structures, speaking and other modes of communication.</li> <li>• The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.</li> </ul>
Semester/Year	<b>IV Semester /II Year</b>
Name of Course -	Fundamentals of Bioinformatics and Nanotechnology

Outcomes of paper	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand which type of data is available from the most common protein sequence and structure databases (UniProt, GenBank, Protein Data Bank, CATH).</li> <li>• To apply the most appropriate bioinformatics sequence or structure database to retrieve or search data given a specific question in molecular biology.</li> <li>• To apply the knowledge and skills in bioinformatics so as to decide whether a given molecular biology problem could benefit from a bioinformatics approach, and what methods to use.</li> <li>• To interpret the fundamental principles of nanotechnology and their applications to biomedical engineering.</li> </ul>
Name of Course -	Biophysics and instrumentation
Outcomes of paper	<ol style="list-style-type: none"> <li>1) To understand the basic atomic models, associated theories.</li> <li>2) To visualise and appreciate the basic design and development of spectroscopy through atomic discovery.</li> <li>3) To detect and analyse the functioning of components, optical path and application of different types of spectroscopic instruments.</li> <li>4) To detect and analyse the functioning of components, optical path and application of microscopic instruments.</li> <li>5) To conceptualize the functioning of radioactivity counters.</li> <li>6) To understand the concepts and detect the components, their contribution in centrifugation, electrophoresis, conductometry, potentiometry and chromatographic techniques.</li> <li>7) To design the experiments and execute them skillfully to investigate a biological problem through biochemical approaches.</li> </ol>
Name of Course -	Metabolism II
Outcomes of paper	<ol style="list-style-type: none"> <li>1) To have a view about the basics of metabolic reactions, their thermodynamic parameters and energetics.</li> <li>2) To analyze the amino acid metabolic pathways with respect to their intermediates and regulation of their flux.</li> <li>3) To analyze the nucleotide metabolic pathways with respect to their intermediates and regulation of their flux.</li> <li>4) To be able to design experiments to approach metabolic questions through pathway exploration.</li> <li>5) To be able to analyze the biological significance of integrity and internetworking of protein, nucleotide, lipid and carbohydrate metabolic pathways.</li> <li>6) To be able to detect and analyze the discriminative shift in metabolic flux at selective clinical situations (genetic disorders).</li> <li>7) To be able to apply the metabolic internetworking to address clinical, biochemical and physiological complications of plants and animals.</li> </ol>
Name of Course -	Immunology

Outcomes of paper	<p>The student should be able to</p> <ul style="list-style-type: none"> <li>• Recognise different cells and organs of the immune system their role in immune protection</li> <li>• Understand the basics of immunology and various effector mechanisms</li> <li>• Demonstrate the use of different antigen-antibody interactions for immunological detection</li> <li>• Paraphrase the role of different effector mechanism in elimination of infectious diseases</li> <li>• Describe the role of immune system in pathogenesis of cancer, autoimmune disease, graft rejection and immunodeficiency disorders</li> </ul>
<b>Semester/Year</b>	<b>V Semester /III Year</b>
Name of Course -	Endocrinology
Outcomes of paper	<p>After successful completion of the course, students</p> <ol style="list-style-type: none"> <li>1) would have familiarised themselves with hormonal diversity in the system and the role they play in maintaining homeostasis.</li> <li>2) will be able to detect hormone and its class with its given structure and function.</li> <li>3) would be able to interpret the signalling of hormones of different classes.</li> <li>4) would be able to understand regulation of their biosynthesis, release, transport, site of action.</li> <li>5) would be able to interpret and analyse clinical and pharmaceutical relevance of hormones through the inter-hormonal networking in maintaining physiological homeostasis.</li> </ol>
Name of Course -	Clinical Biochemistry
Outcomes of paper	<p>After successful completion of the course, students</p> <ol style="list-style-type: none"> <li>1) should be familiar with collection and preservation of biological fluids as clinical samples,</li> <li>2) will be knowing all the blood and urine constituents and variants.</li> <li>3) will be able to experimentally estimate constituents of blood and urine.</li> <li>4) interpret and analyze various clinical complications associated to liver, kidney, and gastric functions.</li> <li>5) will be able to correlate the experimental clinical estimations with pathophysiology and symptoms related to disease or disorder.</li> </ol>
Name of Course -	Molecular Biochemistry
Outcomes of paper	<p>The students should be able to</p> <ul style="list-style-type: none"> <li>• Understand the structure of nucleic acids, gene mechanisms of gene regulation</li> <li>• Extend understanding of the molecular mechanisms via which genetic information is stored and expressed regulated and transmitted among generation</li> <li>• Comprehend various mechanism of DNA damage and repair, mutations and its applications</li> <li>• Describe various molecular techniques for identification and characterization of nucleic acids</li> <li>• understand and describe the concept of RNA mediated gene silencing</li> </ul>
Name of Course -	Genomics

Outcomes of paper	<p>To understand basic principles of Mendelian inheritance and gene interaction.</p> <ul style="list-style-type: none"> <li>• To study cell division &amp; chromosome segregation</li> <li>• To explore the multifactorial inheritance.</li> <li>• To learn about the chromosome structure, chromatin organization and variation.</li> <li>• To learn the concepts of Linkage concept of sex determination and sex linked inheritance.</li> <li>• To gain knowledge about the organellar inheritance</li> <li>• For understanding in the basics of Molecular Biology and rDNA technology.</li> <li>• To provide knowledge on methods of cloning, construction of DNA libraries and applications of rDNA technology, Concept and principle and application of genetic engineering.</li> <li>• Principles, material and methodology of techniques involved in rDNA technology, include Gel electrophoresis, blotting techniques, sequencing methods, PCR. RFLP, RAPD, DNA fingerprinting</li> </ul>
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
Name of Course -	Plant Biochemistry
Outcomes of paper	<p>After successful completion of the course, students</p> <ol style="list-style-type: none"> <li>1) should be familiar with characteristics and functions of different plant cell organelles and correlate to specific tissue function</li> <li>2) would be able to analyse the role and regulation of key metabolic pathways,</li> <li>3) would be familiar with the efficiency of nitrogen fixation machinery in plant and bacterial systems.</li> <li>4) would be able to understand biochemistry related to secondary metabolites and their physiological significance,</li> <li>5) would be able to analyse the role and internetworking of physiologically relevant key hormones and their mechanism of action.</li> <li>6) will be skilled to execute, analyse and interpret the plant physiology related experiments.</li> </ol>
Name of Course -	Enzymology
Outcomes of paper	<p>After successful completion of the course, students</p> <ol style="list-style-type: none"> <li>1) will be familiar with enzymological diversity and its significance in maintaining homeostasis in a system.</li> <li>2) will have knowledge of enzyme structure, function and their distinctive kinetics characteristics.</li> <li>3) will be able to analyse structural and functional role of cofactors and coenzymes involved,</li> <li>4) will be skilled in isolation and purification of enzymes and estimation of enzyme activity from biological sources,</li> <li>5) will understand the mechanism of enzyme's catalytic action,</li> <li>6) will be able to design, execute, analyse and interpret clinical and industrial applications of enzymes.</li> </ol>
Name of Course -	Biodiversity and Environment

Outcomes of paper	<p>Students will have the knowledge and skills to realize and combine the complexity of the relations and interactions between the ecosystem structures and functions and the human impacts from the one side with the sustainable management aiming at the conservation of species and habitats.</p> <ul style="list-style-type: none"> <li>• In-depth knowledge and critical understanding of the theory and principles of biodiversity and the interrelationships of its levels with the basic effects from infrastructure development in nature conservation areas.</li> <li>• Idea of the environmental pollution, Disaster management, sustainable development and environmental ethics.</li> <li>• Able to describe human population and the environment, population growth variation among nations, population explosion, family welfare programme and role of information technology in the environment and human health, with case studies.</li> <li>• Understanding of Indian Patent law, Intellectual/Industrial property and its legal protection in research, design and development</li> </ul>
Name of Course -	Molecular Physiology
Outcomes of paper	<p>The students after completion of the course</p> <ol style="list-style-type: none"> <li>1) will have knowledge of intricacies and diversity of systems contributing into homeostasis.</li> <li>2) would be familiar with structure, architecture and their biochemical and clinical relevance of cardiovascular system, osmo-regulatory system, respiratory system, gastro-intestinal and hepatic system, skeleto-muscular system and neural system.</li> <li>3) would be able to analyse and interpret the integrative characters of different systems coordinating as one.</li> <li>4) would be able to execute the estimation of physiological parameters (ex: blood pressure, BMR, blood and urinary levels of different metabolites).</li> <li>5) would be able to interpret the physiological parametric estimations to the functional alterations in distinct physiological systems.</li> </ol>

# **B.Sc. (Hons.) Bioinformatics**



<b>School of life and basic sciences</b>	
<b>Name of Program</b>	<b>B.Sc.(Hons) -Bioinformatics</b>
<b>Programme Outcome</b>	<p><b>A student completing a graduation in Life Science shall be able to apply:</b></p> <p><b>POs1.</b> Nurturing novel ideas and meaningful insights through scientific thinking.</p> <p><b>POs2.</b> Enabling critical analysis of problems and situations to reach solutions.</p> <p><b>POs3</b>Development of communication skills to present scientific data in oral and written formats.</p> <p><b>POs4.</b> Providing a platform for individual and collective work.</p> <p><b>POs5.</b>Understanding the significance of sustainable scientific processes to support the environment.</p>
<b>Programme Specific Outcome</b>	<p><b>A student completing a graduation in Bioinformatics shall be able to apply:</b></p> <p><b>PSO1.</b>The programme aims to utilize and understand biological databases</p> <p><b>PSO 2.</b>Gathering, storage, analysis and integration of biological data for generating new knowledge.</p> <p><b>PSO3.</b> Developing and implementing computational algorithms and software for the better understanding of dynamic biological processes</p> <p><b>PSO4.</b>Understanding the biological processes at molecular level.</p> <p><b>PSO5.</b>To know the ethical practices in bioinformatics and related fields.</p> <p><b>PSO6.</b>Demonstrate an ability to appear for National level examination to pursue higher studies.</p> <p><b>PSO7.</b> Demonstrate practical and theoretical knowledge essential for pursuing higher studies.</p> <p><b>PSO8.</b> Bioinformatics industry oriented preparedness: Demonstrate an ability to identify careers in Bioinformatics domain like Pharmaceutical, Software development, Statistical Analysis, Molecular Biology and Pharmacogenomics etc, and skills required to work in a Bioinformatics Research &amp; Development areas.</p>
<b>Course Outcomes</b>	
<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Name of Course -</b>	<b>Biostatistics and Introduction to Computers</b>

<b>Course Outcomes</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• Understand the statistical issues arising in medical research.</li> <li>• Apply bio statistical knowledge to real-life problems in medical research.</li> <li>• Build skills in the design and analysis of clinical trials.</li> <li>• Apply skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• apply skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
<b>Name of Course -</b>	<b>Cell Biology and Genetics</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• Understand the structures and functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles</li> <li>• Understand how these cellular components are used to generate and utilize energy in cells</li> <li>• Understand the Stages of mitosis and meiosis, highlighting similarities and differences. Describe stages of the cell cycle; focus on behavior of chromosomes and Origins of genetic variation, including independent assortment and crossing over, which happen during meiosis, combined with random fertilization</li> <li>• To apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation.</li> <li>• To learn the basic terminology, principles of inheritance at the molecular, cellular and organismal levels, cytoplasmic inheritance, inter and intragenic inheritance and epigenetic</li> </ul>
<b>Name of Course -</b>	<b>Microbiology</b>
<b>Course Outcomes</b>	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• Students will appreciate the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes</li> <li>• Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea, virus, algae, fungi and protozoa</li> <li>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization. Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae</li> <li>• Students will be able to describe unique microbial genetic systems (i.e., prokaryotic and viral genomes, lateral gene transfer, plasmid etc.)</li> <li>• Understand the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy. Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.</li> </ul>
<b>Name of Course -</b>	<b>Chemistry-I</b>

<b>Course Outcomes</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand the basic structure of the atom &amp; Correlate the atomic structure of an element to its physical and chemical properties.</li> <li>• To remember the role of ions in human body through bio-inorganic chemistry.</li> <li>• To compare various types of solids &amp; laws of crystallography.</li> <li>• To illustrate the chemistry of d-block elements and their properties student must aware with the S, P, block elements and role of Periodic table and their groups in the field of inorganic chemistry.</li> <li>• To develop relationship between the elements situated into similar groups and similar periods. Students also learn characteristic feature of different families of the elements like, oxygen, nitrogen and boron families etc.</li> </ul>
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Name of Course -</b>	<b>Introductory Mathematics</b>
<b>Course Outcomes</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand basic arithmetic operations on positive and negative whole numbers, fractions and decimals;</li> <li>• To understand basic arithmetic operations on algebraic expressions and fractional algebraic expressions;</li> <li>• interpret and perform basic operations on algebraic expressions containing exponents;</li> <li>• Build systems of linear equations in up to three unknowns and explain how to solve systems in more than three unknowns;</li> <li>• Develop a linear equation in one unknown from a descriptive problem, plot the graph of the equation and solve the equation;</li> <li>• Determine consistency or inconsistency, dependence or independence of a system of linear equations from their graphs;</li> <li>• solve quadratic equations and equations having fractional algebraic expressions;.</li> <li>• define and perform basic operations on logarithmic expressions;</li> <li>• define a set and use set notation for solutions of inequalities;</li> <li>• develop and solve absolute-value equations and absolute-value inequalities;</li> </ul>
<b>Name of Course -</b>	<b>Programming Language Fundamentals and Applications</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand the concepts of procedural programming language using C language.</li> <li>• Learn the structure of programming language using C language .</li> <li>• Learn the ability to draw flow chart and algorithms before writing program code.</li> <li>• Be able to program using C features such as basic programs, functions, pointers, etc.</li> <li>• At the end of the course students will able to simulate the problem in the subjects like Real World problems.</li> </ul>
<b>Name of Course -</b>	<b>Biochemistry – I</b>

<b>Outcomes of Course</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand origin of life with biomolecular evolution and biomolecular diversity,</li> <li>• To understand biomolecular diversity, their respective structure and functional relevance ;</li> <li>• • To learn basics of pH and buffers and understand their biological role.</li> <li>• To understand enzyme structure, function and kinetics.</li> <li>• To adopt and execute technical skills regarding estimation of biomolecules in biological samples.</li> <li>• To be able to detect and analyse enzymatic presence in a sample.</li> </ul>
<b>Name of Course -</b>	<b>Chemistry-II</b>
<b>Outcomes of Course</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To differentiate colligative properties of solution like elevation of boiling point, depression of freezing point with relatively lowering the vapor pressure. oxidation and reduction properties of compounds</li> <li>• To understand thermodynamic derivation &amp; various thermodynamic laws.</li> <li>• To analyze one and two components phase system with the help of phase diagram on the basis of Gibb's phase rule</li> <li>• To understand about electrolyte and their behavior in different solvents.</li> <li>• To examine acidity /basicity of the solution by pH and buffer solutions.</li> </ul>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To Identify the role of specific molecules in causing and counteracting diseases.</li> <li>• To Understand key principles of pharmacology and natural products and their role in shaping the pharmaceutical industry, including Traditional, Complementary and Alternative Medicines.</li> <li>• To Understand the chemical structure of a pharmaceutical agent and determine the chemical group/s responsible for a given biological effect.</li> <li>• To Critically assess the modern and innovative discovery of biopharmaceuticals as it relates to today's healthcare and future trends in modern drug discovery globally.</li> <li>• To identify drug targets as a recognition site for pharmaceutical agents; how the chemical structure of a substance influences interaction with a drug target; and the identification of new drug targets for future drug discovery.</li> <li>• To understand the pharmacological management of infectious diseases including the mechanism of action of specific agents and their structure activity relationships.</li> <li>• Develop a basic understanding of pharmaco genomics and bioinformatics as it relates to drug design and discovery.</li> </ul>
<b>Name of Course -</b>	<b>Computational Biology</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• Remember various computational tools and approaches to extract information from different types of bioinformatics data (gene, protein, disease, etc.)</li> <li>• Build diverse types of biological research data for analysis.</li> <li>• To analyse biological data in the area of research work.</li> <li>• To investigate nucleotide sequence data and elicit biological information from the data.</li> <li>• Evaluate prior biological research studies effectively.</li> </ul>

<b>Name of Course -</b>	<b>Chemistry-III</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To remember about organic compounds, their classification, how to apply nomenclature rule on the different cyclic and non-cyclic hydrocarbons.</li> <li>• To recall the stable state of organic compound either boat or cyclic form and so on.</li> <li>• To distinguish between the various oxygen containing alcohol, ester and carboxylic groups and their reactions in alkyl and aryl form.</li> <li>• To understand about epoxides and its reactions. Carboxylic groups and derivatives will be additional information for the students.</li> <li>• To compare factor direct/ indirect involves in interaction of one molecule to another.</li> <li>• To correlate the atomic structure of an element to its physical and chemical properties.</li> </ul>
<b>Name of Course -</b>	<b>Professional Communication Skills</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <p>A need to impart communication skills is felt everywhere in academics . It provides the students / learners a profound knowledge about professional communication by making them familiar with its meaning ,understanding and interpretation. Students are given the way how to cultivate their knowlege in their personal and professional life.</p> <ul style="list-style-type: none"> <li>• 1. To understand the important role of English language with propriety and effectiveness to develop an argument in a positive manner.</li> <li>• Students will be able to identify grammatically errors and will be able to write correct English and syntactically correct sentences.</li> <li>• Create an environment to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation.</li> <li>• Appreciation of the differences between primary and secondary documents, and will advance and enhance their reading comprehension.</li> <li>• To understand the importance of all communication skills, Reading texts closely and explicate texts written in a wide variety of forms, styles, structures, speaking and other modes of communication.</li> <li>• The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.</li> </ul>
<b>Semester/Year</b>	<b>IV/II Year</b>
<b>Name of Course -</b>	<b>Structural Bioinformatics and Biological Databases</b>
<b>Outcomes of paper</b>	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand the fundamental principles of nanotechnology and their applications to biomedical engineering.</li> <li>• To interpret which type of data is available from the most common protein sequence and structure databases (UniProt, GenBank, Protein Data Bank, CATH).</li> <li>• To apply the most appropriate bioinformatics sequence or structure database to retrieve or search data given a specific question in molecular biology.</li> <li>• To differentiate knowledge and skills in bioinformatics so as to compare whether a given molecular biology problem could benefit from a bioinformatics approach, and which methods to use.</li> <li>• To evaluate biological problems from global and ethical impact perspectives.</li> </ul>
<b>Name of Course -</b>	<b>Database Management System</b>

<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• Differentiate database systems from file systems by enumerating the features provided by database systems and describe each in both function and benefit.</li> <li>• Define the terminology, features, classifications, and characteristics embodied in database systems.</li> <li>• To understand the ACID properties of database systems.</li> <li>• Demonstrate an understanding of the relational data model.</li> <li>• To understand the concept, how to design E-R diagram, benefits of E-R diagram in database.</li> <li>• Formulate, using SQL, solutions to a broad range of query and data update problems.</li> <li>• Learn the SQL platform to implement structured query language.</li> </ul>
<b>Name of Course -</b>	<b>Phylogenetics&amp; Molecular Evolution</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>•Analyze what types of molecular data are appropriate for different research questions</li> <li>• To Understand how DNA evolves and its implications for evolution.</li> <li>• To build phylogenetic-based questions relevant to own research.</li> <li>• To understand what types of phylogenetic analysis are appropriate for different research questions.</li> <li>• To analyze how to interpret and discuss phylogenetic results.</li> <li>• Critically evaluate and discuss theoretical and empirical research articles in phylogenetics and molecular evolution.</li> </ul>
<b>Name of Course -</b>	<b>PERL Programming</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>•To understand the syntax and semantics of the Perl language.</li> <li>•To understand programming language Perl in theoretical and practical level.</li> <li>•To Understand modules and CGI Script.</li> <li>• To develop proficient programming in the Perl language and programming related to Molecular biology.</li> <li>• To design and revision of Perl scripts.</li> <li>• To build debugging techniques appropriate for the Perl language.</li> </ul>
<b>Semester/Year</b>	<b>V Semester /III Year</b>
<b>Name of Course -</b>	<b>Genome Analysis</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To remember pairwise sequence alignments for a protein sequence of interest.</li> <li>• To interpret metrics used to assess the quality of a pairwise sequence alignment, identity versus similarity.</li> <li>• To apply the methods for microarray analysis on real data.</li> <li>• To distinguish and manipulate simple data structures in the statistical computing environment.</li> <li>• To determine interesting hypotheses that can be addressed by microarray data analysis</li> </ul>
<b>Name of Course -</b>	<b>C++ and DSA</b>

<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++.</li> <li>• Be able to program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.</li> <li>• At the end of the course students will able to simulate the problem in the subjects like Operating system, Computer networks and real world problems.</li> <li>• To access how the choices of data structure &amp; algorithm methods impact the performance of program.</li> <li>• To solve problems based upon different data structure &amp; also write programs.</li> <li>• Choose an appropriate data structure for a particular problem.</li> </ul>
<b>Name of Course -</b>	<b>Chemiinformatics&amp; Drug Designing</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To learn an introduction to the basic techniques of Cheminformatics.</li> <li>• To apply virtual screening, covering both ligand-based and structure-based drug design method.</li> <li>• To understand Computer aided drug design, biological database and will be able to apply these methods to research problems.</li> <li>• Apply pharmacodynamic principles to clinical practice as they relate to efficacy, potency, and toxicity of drugs.</li> <li>• To build physico-chemical properties such as solubility and partition coefficients, pharmacological properties such as absorption and distribution, and global properties such as oral bioavailability and "drug-likeness".</li> </ul>
<b>Name of Course -</b>	<b>Immunology</b>
<b>Outcomes of paper</b>	<p><b>The student should be able to</b></p> <ul style="list-style-type: none"> <li>• Recognise different cells and organs of the immune system their role in immune protection</li> <li>• Understand the basics of immunology and various effector mechanisms</li> <li>• Demonstrate the use of different antigen-antibody interactions for immunological detection</li> <li>• Paraphrase the role of different effector mechanism in elimination of infectious diseases</li> <li>• Describe the role of immune system in pathogenesis of cancer, autoimmune disease, graft rejection and immunodeficiency disorders</li> </ul>
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
<b>Name of Course -</b>	<b>System Biology</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand living cells, their constituents and their functions.</li> <li>• To understand genome and gene expression and develop lists of molecules (proteins, lipids, ions) involved in cellular processes</li> <li>• To understand biomolecules interact with each other to form modules that act as discrete functional systems.</li> <li>• To Analyze Subcellular processes such as signal transduction, transcription, motility and electrical excitability. In turn these processes come together to exhibit cellular behaviors such as secretion, proliferation and action potentials.</li> <li>• To build and design, execution and interpretation of multivariable experiments that produce large data sets; quantitative reasoning, models and simulations.</li> </ul>
<b>Name of Course -</b>	<b>Genomics &amp; Proteomics</b>

<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand the development of Omics technologies, with emphasis on genomics and proteomics;</li> <li>• Explain the information to discuss the key technological developments that enabled modern genomic and proteomic studies;</li> <li>• To summarize advanced genomics and proteomics technologies and the ways in which their data are stored;</li> <li>• To apply the use bioinformatics techniques to query examples of genomic and proteomic databases to analyse cell biology;</li> <li>• To investigate how biological systems information relating to genes, proteins and cellular structures can be used to model living cells.</li> <li>• To justify the basic concepts of genomics, transcriptomics and proteomics.</li> <li>• To appraise the use of genomics and proteomics in human health.</li> </ul>
<b>Name of Course -</b>	<b>Biodiversity and Environment</b>
<b>Outcomes of paper</b>	<p><b>Students will have the knowledge and skills to realize and combine the complexity of the relations and interactions between the ecosystem structures and functions and the human impacts from the one side with the sustainable management aiming at the conservation of species habitats.</b></p> <ul style="list-style-type: none"> <li>• In-depth knowledge and critical understanding of the theory and principles of biodiversity and the interrelationships of its levels with the basic effects from infrastructure development in nature conservation areas.</li> <li>• Idea of the environmental pollution, Disaster management, sustainable development and environmental ethics.</li> <li>• Able to describe human population and the environment, population growth variation among nations, population explosion, family welfare programme and role of information technology in the environment and human health, with case studies.</li> <li>• Understanding of Indian Patent law, Intellectual/Industrial property and its legal protection in research, design and development</li> </ul>
<b>Name of Course -</b>	<b>Industry Relations and Entrepreneurship</b>
<b>Outcomes of paper</b>	<p><b>Upon successful completion of the course, students would be able:</b></p> <ul style="list-style-type: none"> <li>• To understand basic principles and concepts of management.</li> <li>• Understand different plans and list steps in planning.</li> <li>• To understand the concepts of organizing and staffing.</li> <li>• Interpret the concepts of directing and controlling.</li> <li>• Demonstrate the meaning, functions, types and roles of an entrepreneur and describe various institutional support.</li> <li>• Explain in detail about the small scale industries and prepare the project report.</li> </ul>



# **B.Sc. (Hons.) Microbiology**

<b>School of life and basic sciences</b>	
<b>Name of the programme</b>	<b>B.Sc.(Hons) -Microbiology</b>
<b>Programme Outcome</b>	<p><b>A student completing a graduation in Life Science shall be able to apply:</b></p> <p><b>POs1.</b> Nurturing novel ideas and meaningful insights through scientific thinking.</p> <p><b>POs2.</b> Enabling critical analysis of problems and situations to reach solutions.</p> <p><b>POs3</b>Development of communication skills to present scientific data in oral and written formats.</p> <p><b>POs4.</b> Providing a platform for individual and collective work.</p> <p><b>POs5.</b>Understanding the significance of sustainable scientific processes to support the environment.</p>
<b>Programme Specific Outcome</b>	<p>A student completing a graduation in Microbiology shall be able to apply:</p> <p><b>PSO1:</b> Students will be able to demonstrate advanced knowledge and understand the central facts and concepts of microbiology.</p> <p><b>PSO2:</b> Learn the importance of microorganisms in environment, brewing, food processing and preservation, pharmaceuticals and biotechnology industries.</p> <p><b>PSO3:</b> Provided with understanding of healthcare systems especially in pathological, immunological and environmental monitoring laboratories.</p> <p><b>PSO4:</b> Acquire knowledge and understanding of microbial physiology, metabolism, genetics, molecular biology and basic biological chemistry</p>
<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Name of course</b>	<b>Biostatistics and Introduction to Computers</b>
<b>Course Outcome</b>	<p>Learners completing this course should be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of statistical issues arising in medical research.</li> <li>• Apply bio statistical knowledge to real-life problems in medical research.</li> <li>• Demonstrate skills in the design and analysis of clinical trials..</li> <li>• Demonstrate skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
<b>Name of Course</b>	<b>Cell Biology and Genetics</b>

<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will understand the structures and functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles</li> <li>• Students will understand how these cellular components are used to generate and utilize energy in cells</li> <li>• Students will understand the Stages of mitosis and meiosis, highlighting similarities and differences. Describe stages of the cell cycle; focus on behavior of chromosomes and Origins of genetic variation, including independent assortment and crossing over, which happen during meiosis, combined with random fertilization</li> <li>• Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation</li> <li>• Students will learn the basic terminology, principles of inheritance at the molecular, cellular and organismal levels, cytoplasmic inheritance, inter and intragenic inheritance and epigenetic.</li> </ul>
<b>Name of Course</b>	<b>Microbiology</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will appreciate the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes</li> <li>• Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea, virus, algae, fungi and protozoa</li> <li>• Know various Culture media and their applications and also understand various physical and chemical means of sterilization. Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae</li> <li>• Students will be able to describe unique microbial genetic systems (i.e., prokaryotic and viral genomes, lateral gene transfer, plasmid etc.)</li> <li>• Understand the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy. Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.</li> </ul>
<b>Name of Course</b>	<b>Chemistry - I</b>

<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will be able to study the atom and correlate the atomic structure of an element to its physical and chemical properties.</li> <li>• Learn role of ions in human body through bio-inorganic chemistry</li> <li>• Student also got aware Classification of solids, laws of crystallography, Classification of solids, laws of crystallography</li> <li>• Class will be able to understand about the chemistry of d-block elements and their properties student must aware with the S, P, block elements and role of Periodic table and their groups in the field of inorganic chemistry.</li> <li>• Student must also know the reasons and relationship between the elements situated into similar groups and similar periods. Students also learn characteristic feature of different families of the elements like, oxygen, nitrogen and boron families etc.</li> </ul>
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Name of Course</b>	<b>Introductory Mathematics</b>
<b>Course Outcome</b>	<p>Learners completing this course will be able to:</p> <ul style="list-style-type: none"> <li>• perform basic arithmetic operations on positive and negative whole numbers, fractions and decimals;</li> <li>• perform basic arithmetic operations on algebraic expressions and fractional algebraic expressions;</li> <li>• interpret and perform basic operations on algebraic expressions containing exponents;</li> <li>• solve systems of linear equations in up to three unknowns and explain how to solve systems in more than three unknowns;</li> <li>• set up a linear equation in one unknown from a descriptive problem, plot the graph of the equation and solve the equation;</li> <li>• determine consistency or inconsistency, dependence or independence of a system of linear equations from their graphs;</li> <li>• Solve quadratic equations and equations having fractional algebraic expressions;</li> <li>• define and perform basic operations on logarithmic expressions;</li> <li>• define a set and use set notation for solutions of inequalities;</li> <li>• develop and solve absolute-value equations and absolute-value inequalities</li> </ul>
<b>Name of Course</b>	<b>Programming Language Fundamentals and Applications</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will be able to understand the concepts of procedural programming language using C language.</li> <li>• Be able to program using C features such as basic programs, functions, pointers, etc.</li> <li>• At the end of the course students will able to simulate the problem in the subjects like Real World problems.</li> </ul>
<b>Name of Course</b>	<b>Biochemistry - I</b>

<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will learn bimolecular diversity, structure and functional significance</li> <li>• basics of pH and buffers,</li> <li>• Enzyme structure, function and kinetics.</li> </ul>
<b>Name of Course</b>	<b>Chemistry - II</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• On finishing these modules of chemistry students will be able to differentiate colligative properties of solution like elevation of boiling point, depression of freezing point with relatively lowering the vapor pressure. oxidation and reduction properties of compounds</li> <li>• It is also easy to understand thermodynamic derivation</li> <li>• It comprises to study the one and two components phase system on the basis of gibb's phase rule</li> <li>• From electrochemistry class will be able to understand about electrolyte and their behavior in different solvents. pH and buffer will inform about the acidity basicity of the solution.</li> </ul>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Name of Course</b>	<b>Molecular Biology</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Learners will extend understanding of the molecular mechanisms via which genetic information is stored and expressed, regulated and transmitted among generations</li> <li>• Understand the structure of DNA and gene, and the mechanisms of gene regulation</li> <li>• Comprehend various mechanism of DNA damage and repair, mutations and applications</li> </ul>
<b>Name of Course</b>	<b>Biochemistry-II</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will learn the metabolic pathways, their physiological significance, structures of intermediates involved, associated enzymes &amp; their regulation, energetics of the pathways, site of action and networking between the carbohydrate metabolism and lipid metabolism.</li> <li>• Understand the nitrogen metabolism distributed into protein and nucleic acid metabolic pathways, their clinical significance, structures of intermediates involved, associated enzymes &amp; their regulation, site of action and molecular networking between the nucleotide metabolism and amino acid metabolism.</li> </ul>
<b>Name of Course</b>	<b>Fundamentals of Organic Chemistry</b>

<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Student will be fully aware about organic compounds their classification how to apply nomenclature rule on the different cyclic and non-cyclic hydrocarbons. Student also got aware with the stable state of organic compound either boat or cyclic form and so on.</li> <li>• Syllabus will give the information about the oxygen containing alcohol, ester and carboxylic groups and their reactions in alkyl and aryl form.</li> <li>• Students will be able to understand about epoxides and its reactions. Carboxylic groups and derivatives will be additional information for the students.</li> <li>• Factor direct indirect involves in interaction of one molecule to another.</li> <li>• Interrelate the study of light to the nature of the atom 3. Correlate the atomic structure of an element to its physical and chemical properties.</li> </ul>
<b>Name of Course</b>	<b>Professional Communication Skills</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will be able to learn English language with propriety and effectiveness to develop an argument in a positive manner.</li> <li>• Students will write clearly, grammatically and syntactically correct sentences.</li> <li>• Students will be able to speak English, including the abilities to express their feelings with proper vocabulary and pronunciation.</li> <li>• Students will have an appreciation of the differences between primary and secondary documents, and will advance their reading comprehension.</li> <li>• Students will be able to read texts closely and explicate texts written in a wide variety of forms, styles, structures, and modes.</li> <li>• The aim of this course design is to acquaint students of various aspects of a powerful and impressive personality and ways to develop these aspects to the fullest. Prescribed course design also intends to guide students in achieving their career and lifelong goals by exhibiting balanced professional attitude in every walk of life.</li> </ul>
<b>Semester/Year</b>	<b>IV Semester /II Year</b>
<b>Name of Course</b>	<b>Fundamentals of Bioinformatics and Nanotechnology</b>
<b>Course Outcome</b>	<p>Upon successful completion of the course, students would be able:</p> <ul style="list-style-type: none"> <li>• To understand which type of data is available from the most common protein sequence and structure databases (UniProt, GenBank, Protein Data Bank, CATH).</li> <li>• To apply the most appropriate bioinformatics sequence or structure database to retrieve or search data given a specific question in molecular biology.</li> <li>• To apply the knowledge and skills in bioinformatics so as to decide whether a given molecular biology problem could benefit from a bioinformatics approach, and what methods to use.</li> <li>• To interpret the fundamental principles of nanotechnology and their applications to biomedical engineering.</li> </ul>
<b>Name of Course</b>	<b>Biophysics and Instrumentation</b>

<b>Course Outcome</b>	Students will have an understanding of: <ul style="list-style-type: none"> <li>• basic atomic models and associated theories;</li> <li>• principle, components, optical path and application of different types of spectroscopic, microscopic, radioactivity measuring instruments;</li> <li>• principle, components and application of centrifugation, electrophoresis, conductometry, potentiometry and chromatographic techniques.</li> </ul>
<b>Name of Course</b>	<b>Microbial Physiology and Metabolism I</b>
<b>Course Outcome</b>	Students will be able to: <ul style="list-style-type: none"> <li>• Demonstrate an understanding of cellular superstructure and the functional components of cells.</li> <li>• Demonstrate an understanding of how organisms build and maintain a proton motive force.</li> <li>• Appreciate how biochemical pathways and processes are integrated into a network, which provides robustness to life.</li> <li>• Appreciate that the diversity of life is driven by the metabolic diversity of microbes.</li> </ul>
<b>Name of Course</b>	<b>Industrial Microbiology</b>
<b>Course Outcome</b>	Students will have understanding of: <ul style="list-style-type: none"> <li>• The objective of this course is to provide knowledge to the students about the fundamentals of industrial microbiology and fermentation technology like:</li> <li>• Isolation of industrially important microbes</li> <li>• Types of fermenters</li> <li>• Media formulations</li> <li>• Downstream processing etc.</li> </ul>
<b>Semester/Year</b>	<b>V Semester /III Year</b>
<b>Name of Course</b>	<b>Virology</b>
<b>Course Outcome</b>	Students will be able to describe general virus life cycle. <ul style="list-style-type: none"> <li>• Predict replication strategy of viruses based on genome composition</li> <li>• Apply concepts of virus structure to replication cycle</li> <li>• Evaluate different control measures of viral diseases</li> <li>• Compare possibilities and limits of methods and techniques used in virology</li> </ul>
<b>Name of Course</b>	<b>Microbial Physiology and Metabolism II</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• This course will allow the students to understand Enzyme structure, classification, mode of regulation and enzyme kinetics</li> <li>• Microbial Energetics</li> <li>• Nitrogen fixation</li> </ul>
<b>Name of Course</b>	<b>Food and Dairy Microbiology</b>

<b>Course Outcome</b>	<p>Students will be able to explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.</p> <ul style="list-style-type: none"> <li>• Explain the significance and activities of microorganisms in food.</li> <li>• Explain the effects of fermentation in food production and how it influences the microbiological quality and status of the food product.</li> <li>• Discuss the microbiology of different types of food commodities</li> <li>• Discuss the rationale for the use of standard methods and procedures for the microbiological analysis of food.</li> </ul>
<b>Name of Course</b>	<b>Immunology</b>
<b>Course Outcome</b>	<p>The student should be able to</p> <ul style="list-style-type: none"> <li>• Recognise different cells and organs of the immune system their role in immune protection</li> <li>• Understand the basics of immunology and various effector mechanisms</li> <li>• Demonstrate the use of different antigen-antibody interactions for immunological detection</li> <li>• Paraphrase the role of different effector mechanism in elimination of infectious diseases</li> <li>• Describe the role of immune system in pathogenesis of cancer, autoimmune disease, graft rejection and immunodeficiency disorders</li> </ul>
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
<b>Name of Course</b>	<b>Environmental Microbiology</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will come to know about the various habitats occupied by the microbes. The students will also be exposed to the role of microbes in the environment, waste management</li> <li>• Use of microorganisms and their products in the prevention of environmental pollution through bio-treatment, bioremediation and biomonitoring of environment</li> </ul>
<b>Name of Course</b>	<b>Medical Microbiology</b>
<b>Course Outcome</b>	<p>Students will learn detailed knowledge of normal microflora of human body and basics of host-pathogen interaction</p> <ul style="list-style-type: none"> <li>• Comprehend the role of bacteria, virus, fungi and protozoan in a range of diseases, including the nature of the disease-causing organisms routes of transmission, symptoms, pathogenesis, prophylaxis and control</li> <li>• Introduction to the diagnosis, sample collection and mechanism of action of various antimicrobial agents</li> </ul>
<b>Name of Course</b>	<b>Biodiversity and Environment</b>



<b>Course Outcome</b>	<p>Students will have the knowledge and skills to realize and combine the complexity of the relations and interactions between the ecosystem structures and functions and the human impacts from the one side with the sustainable management aiming at the conservation of species and habitats.</p> <ul style="list-style-type: none"> <li>• In-depth knowledge and critical understanding of the theory and principles of biodiversity and the interrelationships of its levels with the basic effects from infrastructure development in nature conservation areas.</li> <li>• Idea of the environmental pollution, Disaster management, sustainable development and environmental ethics.</li> <li>• Able to describe human population and the environment, population growth variation among nations, population explosion, family welfare programme and role of information technology in the environment and human health, with case studies.</li> <li>• Understanding of Indian Patent law, Intellectual/Industrial property and its legal protection in research, design and development</li> </ul>
<b>Name of Course</b>	<b>Industry Relations and Entrepreneurship</b>
<b>Course Outcome</b>	<p>Students will be able to describe the basic principles and concepts of management.</p> <ul style="list-style-type: none"> <li>• Distinguish different plans and list steps in planning.</li> <li>• Discuss the concepts of organizing and staffing.</li> <li>• Interpret the concepts of directing and controlling.</li> <li>• Demonstrate the meaning, functions, types and roles of an entrepreneur and describe various institutional support.</li> <li>• Explain in detail about the small scale industries and prepare the project report.</li> </ul>

# **B.Sc. (Hons.) Physics**

1.	<b>Name of the programme</b>	<b>B.Sc .Physics (Hons.)</b>
2.	<b>Programme Code</b>	Physics (Hons)
3.	<b>Programme Outcome</b>	<p>Students will be able to</p> <ul style="list-style-type: none"> <li>• Understand and remember the basics in the field of physics and insight on research in the field of physics and basic sciences.</li> <li>• Explore the scientific literature effectively and communicate ideas principles effectively.</li> <li>• Paraphrase advanced knowledge and apply the concepts for future application</li> <li>• interpret experimental data and critique the same for alternative strategies</li> <li>• Speak, read, write and listen clearly in person in English and make meaning of the world by connecting people, ideas, books, media and technology</li> </ul>
4.	<b>Name of the specific programme</b>	B.Sc in Physics (Hons.)
5.	<b>Programme Specific Outcome</b>	<p>After successful completion of Bachelors of Science in physics, the student should be able to</p> <ul style="list-style-type: none"> <li>• Demonstrate basic knowledge in the field of physics</li> <li>• Acquire basic knowledge of physics and skills to design and conduct experiments, analyze data and interpret the results</li> <li>• Develop understanding of modern engineering techniques used in physics</li> <li>• Communicate effectively and demonstrate professional and ethical responsibilities</li> <li>• Gain first-hand experience of working on project at individual level and exposure to industrial and research environment</li> </ul>
	<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Course Nomenclature</b>	<b>Waves and Optics</b>	course code (PHY-CC-101)

	<b>Course Outcome</b>	This course builds on the ideas of harmonic motion to cover in depth the concept of waves in physics with particular emphasis on light waves as an example. Learning Outcomes: <ul style="list-style-type: none"> <li>• Understand linear, time-invariant systems.</li> <li>• Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems</li> <li>• Understand dispersion in waves and model dispersion using Fourier theory</li> </ul>
<b>Course Nomenclature</b>	<b>Analog Systems And Applications</b>	course code(PHY-CC-102)
	<b>Course Outcome</b>	To learn function of basic component's use in linear circuits. Understand component symbol, working principle, classification and specification. To learn different theorems for simplification of basic linear electronics circuits Understand proportional relationship between a signal and voltage or current that represents the signal.
<b>Course Nomenclature</b>	<b>Objected oriented Programming in C++</b>	course code(PHY-GE-103)
	<b>Course Outcome</b>	Understand the difference between the top-down and bottom-up approach Learning Outcomes: <ul style="list-style-type: none"> <li>• Describe the object-oriented programming approach in connection with C++</li> <li>• Apply the concepts of object-oriented programming</li> <li>• Apply virtual and pure virtual function &amp; complex programming situations</li> </ul>
<b>Course Nomenclature</b>	<b>English Communication</b>	course code(PHY-AECC-104)
	<b>Course Outcome</b>	The student shall understand the process of communication and its effect on giving and receiving information Learn about historical and theoretical developments in the field of communication Apply effective communication skills in a variety of public and interpersonal settings
	<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Course Nomenclature</b>	<b>Mechnacis</b>	course code-(PHY-CC-201)

	<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will be able to articulate and describe Relative motion. Inertial and non-inertial reference frames.</li> <li>• Parameters defining the motion of mechanical systems and their degrees of freedom. Study of the interaction of forces between solids in mechanical systems. Centre of mass and inertia tensor of mechanical systems.</li> <li>• Application of the vector theorems of mechanics and interpretation of their results. Newton's laws of motion and conservation principles</li> </ul>
<b>Course Nomenclature</b>	<b>Digital Systems And Applications</b>	course code-PHY-CC-202
	<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• To learn function of basic component's use in linear circuits.</li> <li>• Understand component symbol, working principle, classification and specification.</li> <li>• To learn different theorems for simplification of basic linear electronics circuits</li> <li>• Understand proportional relationship between a signal and voltage or current that represents the signal.</li> </ul>
<b>Course Nomenclature</b>	<b>Data Structure and File Programming</b>	course code-PHY-GE-203
	<b>Course Outcome</b>	<p>Ability to analyze algorithms and algorithm correctness.          Ability to summarize searching and sorting techniques          Ability to describe stack, queue and linked list operation.          Ability to have knowledge of tree and graphs concept</p>
<b>Course Nomenclature</b>	<b>Environmental Science</b>	course code-PHY-AECC-204
	<b>Course Outcome</b>	Students will possess the intellectual flexibility necessary to view environmental questions from multiple perspectives, prepared to alter their understanding as they learn new ways of understanding.
	<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Course Nomenclature</b>	<b>Thermal Physics</b>	course code-PHY-CC-301

	<b>Course Outcome</b>	<p>Learners completing this course will be able to:</p> <ul style="list-style-type: none"> <li>• This course covers thermal physics, contains an introduction to equilibrium thermodynamics.</li> <li>• The First and Second laws of thermodynamics are introduced, along with the concepts of temperature, internal energy, heat, entropy and the thermodynamic potentials.</li> <li>• Applications of thermodynamic concepts.</li> <li>• The Third Law, and associated properties of entropy.</li> </ul> <p>Provides an introduction to the microscopic formulation of thermal physics, generally known as statistical mechanics.</p>
<b>Course Nomenclature</b>	<b>Mathematical Physics-I</b>	course code-PHY-CC-302
	<b>Course Outcome</b>	<p>After successfully completed course, student will be able to</p> <ul style="list-style-type: none"> <li>• Use vector analysis in solving physical problems.</li> <li>• Solve ordinary and partial differential equations of second order that are common in the physical sciences.</li> <li>• Use the probability theory to solve statistical mechanics problems</li> </ul>
<b>Course Nomenclature</b>	<b>Electricity And Magnetism</b>	course code-PHY-CC-303
	<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• This course continues building the foundation in electricity and magnetism.</li> <li>• Topics include vector calculus, electric fields, potential, electric work and energy, Gauss's Law, Poisson's and Laplace's equations, capacitors, D.C. circuits, transients and dielectric materials.</li> <li>• Analyze important types of integrated circuits of day-to-day requirements.</li> <li>• Demonstrate the ability to design practical circuits that perform the desired operations.</li> <li>• Understand the differences among theoretical, practical &amp; simulated results in integrated circuits.</li> <li>• Choose the appropriate integrated circuit modules to build a given application</li> </ul>
<b>Course Nomenclature</b>	<b>Mechanical Drawing</b>	course code-PHY-AEEC-304

	<b>Course Outcome</b>	<p>Upon successful completion of this course, the student shall be able to:</p> <p>Understand the importance of BIS and ISO Standards in Engineering Drafting</p> <p>Graphically construct and understand the importance of mathematical curves in Engineering applications</p> <p>Visualize geometrical solids in 3D space through exercises in Orthographic Projections</p> <p>Interpret Orthographic ,Isometric and Perspective views of object</p> <p>Develop the surfaces of geometrical solids</p>
<b>Course Nomenclature</b>	<b>Introduction to Data Management System</b>	course code-PHY-CC-305
	<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Differentiate database systems from conventional file systems by enumerating the features provided by database systems and describe each in both function and benefit.</li> <li>• Define the terminology, features, classifications, and characteristics embodied in database systems.</li> <li>• To understand the ACID properties of database systems.</li> <li>• To understand the concept, how to design E-R diagram, benefits of E-R diagram in database.</li> <li>• Formulate, using SQL, solutions to a broad range of query and data update problems.</li> <li>• Learn the SQL platform to implement structured query language</li> </ul>
	<b>Semester/Year</b>	<b>IV Semester /II Year</b>
<b>Course Nomenclature</b>	<b>Elements Of Modern Physics</b>	course code-PHY-CC-401
	<b>Course Outcome</b>	Apply the principles of quantum mechanics to predict the results of measurements in simple systems such as a free particle, simple potential wells, and central potentials. Solve problems and answer conceptual questions such as atomic physics, molecular physics, the physics of solids, statistical physics, nuclear physics, radioactivity, and particle physics.
<b>Course Nomenclature</b>	<b>Solid state physics</b>	course code-PHY-CC-402

	<b>Course Outcome</b>	This course contains classification and properties of condensed or solid state materials, which can be explained on the basis of arrangement of atom, ions and electron motion, spin etc. The main objective of this course is to learn about properties and their response to internal and external stimuli. This goal can be achieved by learning crystal structure, crystal binding, lattice dynamics, electron, electron distribution theories and the concept of energy bands. The quantum and statistical mechanics concepts and formalisms are frequently used to understand the above features in condensed or solid materials
<b>Course Nomenclature</b>	<b>Mathematical Physics - II</b>	course code-PHY-CC-403
	<b>Course Outcome</b>	After completing this course student will: <ul style="list-style-type: none"> <li>• Learn the basic elements of complex analysis, including the important integral theorems.</li> <li>• how to expand a function in a Fourier series, and under what conditions such an expansion is valid</li> </ul>
<b>Course Nomenclature</b>	<b>Electrical Circuit Networking Skills</b>	course code-PHY-CC-404
	<b>Course Outcome</b>	After completing this course student will: Learn the basic elements of complex analysis, including the important integral theorems. How to expand a function in a Fourier series, and under what conditions such an expansion is valid
<b>Course Nomenclature</b>	<b>Java Programming</b>	course code-PHY-CC-405
	<b>Course Outcome</b>	Knowledge of the structure and model of the Java programming language                      Use the Java programming language for various programming technologies                      Develop software in the Java programming language, Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis) Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)



		Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)
	<b>Semester/Year</b>	<b>V Semester /III Year</b>
<b>Course Nomenclature</b>	<b>Mathematical Physics - III</b>	course code-PHY-CC-501
	<b>Course Outcome</b>	After completing this course student will: <ul style="list-style-type: none"> <li>• Able to solve basic classical vibrational problems and received basic training in tensor calculus.</li> <li>• Student will be familiar with examples of how to formulate certain physical laws in terms of tensors, and how to simplify them using coordinate transformations</li> </ul>
<b>Course Nomenclature</b>	<b>Statistical Mechanics</b>	course code-PHY-CC-502
	<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.</li> <li>• Apply the principles of statistical mechanics to selected problems;</li> </ul> Apply techniques from statistical mechanics to a range of situations; <ul style="list-style-type: none"> <li>• use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanations</li> <li>• use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanation.</li> </ul>
<b>Course Nomenclature</b>	<b>Nuclear and Particle Physics</b>	course code-PHY-DSE-503

	<b>Course Outcome</b>	<p>Knowledge and understanding: Basic knowledge nuclear and particle physics. Knowledge and understanding of the elementary particle interactions. Capability of relating the theory predictions and measurements.</p> <p>Application: Understanding of various particle interactions and their interrelation. Relation of basic laws of particle physics and macroscopic physics phenomena. Usage of basic laws in determination of particle properties and properties of processes in the subatomic world.</p> <p>Reflection: Critical evaluation of theoretical predictions using results of measurements. Quantum mechanical reasoning in classification of processes in subatomic world.</p> <p>Transferable skills: Relativistic quantum mechanical calculations. Relation between particle properties and cosmology. Understanding of particle physics phenomena and measurement results explanation and evaluation.</p>
<b>Course Nomenclature</b>	<b>Embedded System – Introduction of Microcontroller</b>	Course code-PHY-DSE-504
	<b>Course Outcome</b>	<p>Foster ability to understand the internal architecture and interfacing of different peripheral devices with Microcontrollers.</p> <p>Foster ability to write the programs for microcontroller.</p> <p>Foster ability to understand the role of embedded systems in industry.</p>
	<b>Semester/Year</b>	<b>VI Semester /III Year</b>
<b>Course Nomenclature</b>	<b>Quantum Mechanics and Application</b>	Course code-PHY-CC-601
	<b>Course Outcome</b>	<p>Students will be familiar with the main aspects of the historical development of quantum mechanics and be able to discuss and interpret experiments that reveal the wave properties of matter, as well as how this motivates replacing classical mechanics with a wave equation.</p> <p>Students will understand the central concepts and principles in quantum mechanics, such as the Schrödinger equation, the wave function and its statistical interpretation, the uncertainty principle, stationary and non-stationary states, time evolution of solutions, as well as the relation between quantum mechanics and linear algebra. This includes an understanding of elementary concepts in statistics, such</p>

		as expectation values and variance.
<b>Course Nomenclature</b>	<b>Electromagnetic Theory</b>	Course code-PHY-CC-602
	<b>Course Outcome</b>	<p>Upon successful completion of this course, students should be able to:</p> <ul style="list-style-type: none"> <li>• Should be able to specify the “constitutive relationships” for fields and understand why they are required.</li> <li>• Have an ability to determine and describe static and dynamic electric and magnetic fields for technologically important structures: the coil, charge distributions, the dipole, the coaxial cable, dielectric and conducting spheres immersed in electric fields.</li> <li>• Knowledge of, physical interpretation, and ability to apply Maxwell’s equations to determine field waves, potential waves, energy and charge conservation conditions.</li> <li>• Experimental measurement of voltages induced by time varying magnetic flux. Flux determination.</li> </ul>
<b>Course Nomenclature</b>	<b>Nano Materials and Applications</b>	Course code-PHY-DSE-603
	<b>Course Outcome</b>	<p>After completion of the course the student should be able to:</p> <p>Qualitatively describe how the nanoparticle size can affect the morphology, crystal structure, reactivity, and electrical properties.</p> <p>Describe several synthesis methods for fabrication of inorganic nanoparticles, one-dimensional nanostructures (nanotubes, nanorods, nanowires), thin films, nanoporous materials, and nanostructured bulk materials, and also could describe how different lithography methods can be used for making nanostructures. The student should have a theoretical background within synthesis/fabrication of nanomaterials which makes he/she prepared for later literature studies and laboratory work within the field.</p> <p>Perform simple geometric calculations of surface energy, coordination number, and volume fraction related to nanoscale properties and synthesis, and also simple chemical calculations related to synthesis.</p>
	<b>Dissertation</b>	course code (PHY-DSE-604)

<p><b>Course Nomenclature</b></p>	<p><b>Course Outcome</b></p>	<p>After completing this course student will:</p> <p>Problem solving strategy: Demonstrate the ability to organize and carry out long, complex physics problems, articulate expectations for, and justify reasonableness of solutions, state strategy/model and assumptions, and demonstrate an awareness of what constitutes sufficient evidence or proof.</p> <p>Intellectual maturity: Demonstrate the ability to be aware of what is not understood, as evidenced by asking sophisticated, specific questions; articulating where they experience difficulty; and taking actions to move beyond that difficulty.</p> <p>Research: Make measurements on physical systems understanding the limitations of the measurements and the limitations of models used to interpret the measurements, computationally model the behavior of physical systems, and understand the limitations of the algorithm and the machine. Complete an experimental, computational or theoretical research project under the guidance of faculty and report on this project in writing and orally to an audience of peers and faculty.</p>
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# **B.Sc.(Hons.) Mathematics**

<b>Course</b>	<b>B.Sc.(H) Mathematics</b>
<b>Duration</b>	<b>3 years</b>
<b>Program Specific Outcomes :</b>	
<p>B.Sc. Honors is a three-year degree program of study in Mathematics. This course builds up a comprehension of analytical skills and purposeful abilities and competencies in Mathematics. The program deals with the comprehension of fundamental applications of mathematical strategies that are applied to general concepts outside the extent of theoretical mathematics. Students of the programme would have learn all basic concepts in mathematical sciences which is very much the need of the house as there is a dearth of good students in the area of basic sciences in the country. This course builds up a comprehension of analytical skills and purposeful abilities and competencies.</p>	
<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Name of Course -</b>	<b>Differential Calculus</b>
<b>Course Code-</b>	<b>MAT-CC-101</b>
<b>Course Outcomes :</b>	<p>On successful completion of this course, Students</p> <ol style="list-style-type: none"> <li>1. Able to understand the idea of derivative</li> <li>2. Choose an idea of a tangent line to the graph of a function; know how a derivative can be used to describe the rate of change of one quantity with respect to another, and how to relate the geometric ideas to the analytic ideas.</li> <li>3. Utilize the definition of derivative and compute with it.</li> <li>4. Judge to compute basic limits of functions.</li> <li>5. Determine to explain the notion of continuity.</li> </ol>
<b>Name of Course -</b>	<b>ALGEBRA</b>
<b>Course Code-</b>	<b>MAT-CC-102</b>
<b>Course Outcomes :</b>	<p>Students will be</p> <ol style="list-style-type: none"> <li>1 Assess to simplify, evaluate and analyze functions and expressions.</li> <li>2 Assess to solve algebraic, trigonometric, and transcendental equations.</li> <li>3 Determine graph functions, relations, and polar equations.</li> <li>4 Examine to define special matrices: diagonal, triangular, and symmetric</li> <li>5 Distinguish between linear independence and dependence.</li> </ol>
<b>Name of Course -</b>	<b>INTRODUCTION TO COMPUTERS</b>
<b>Course Code-</b>	<b>MAT-GE-103</b>

<b>Course Outcomes :</b>	<p>Student will learn:</p> <ul style="list-style-type: none"> <li>• Demonstrate skills in the design and analysis of clinical trials.</li> <li>• Demonstrate skills in the analysis of epidemiological data.</li> <li>• Ability to analyze biomedical data using R.</li> <li>• Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing.</li> <li>• Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components</li> <li>• Understand the difference between an operating system and an application program, and what each is used for in a computer</li> <li>• Describe some examples of computers and state the effect that the use of computer technology has had on some common products</li> <li>• Identify the principal components of a given computer system and draw a diagram after the style of Figures 6 and 12 to represent the data flows between them.</li> </ul>
<b>Name of Course -</b>	<b>ENVIRONMENTAL SCIENCES</b>
<b>Course Code-</b>	<b>MAT-AEC-104</b>
<b>Course Outcomes :</b>	Students will possess the intellectual flexibility necessary to view environmental questions from multiple perspectives, prepared to alter their understanding as they learn new ways of understanding.
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Name of Course -</b>	<b>Differential Equation</b>
<b>Course Code-</b>	<b>MAT-CC-201</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. Distinguish between linear, nonlinear, partial and ordinary differential equations.</li> <li>2. Recognize and solve a variable separable differential equation, homogeneous differential equation, exact differential equation, linear differential equation by use of an integrating factor.</li> <li>3. Recognize and solve equations of Bernoulli, Ricatti and Clairaut.</li> <li>4. Solve basic application problems described by first order differential equations</li> <li>5. Find the complete solution of a non-homogeneous differential equation with constant coefficients by the method of undetermined coefficients Solving Homogeneous Heat and Wave, Laplace's Equations</li> </ol>
<b>Name of Course -</b>	<b>REAL ANALYSIS I</b>
<b>Course Code-</b>	<b>MAT-CC-202</b>

<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. To understand the important role of fundamental properties of the real numbers that lead to the formal development of real analysis;</li> <li>2. Apply rigorous arguments developing the theory underpinning real analysis;</li> <li>3. To understand the important role of limits and how they are used in sequences, series, differentiation and integration;</li> <li>4. Build rigorous mathematical proofs of basic results in real analysis;</li> <li>5. Propose how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.</li> </ol>
<b>Name of Course -</b>	<b>MATHEMATICAL FINANCE</b>
<b>Course Code-</b>	<b>MAT-GE-203</b>
<b>Course Outcomes :</b>	<p>the student will be able to:</p> <ol style="list-style-type: none"> <li>1 Develop a broad, systematic and critical knowledge of the mathematical, statistical and computing methods appropriate for specifying mathematical problems in banks and other financial institutions;</li> <li>2 Built a comprehensive understanding of the most common applications of mathematics in finance and recent extensions thereof;</li> <li>3 Assemble an ability to select and apply numerical methods appropriate for the solution of financial problems.</li> <li>4 Apply familiarities with emerging mathematical techniques appropriate in banks and other financial institutions.</li> <li>5 To identify and solve experimental problems and explore new ideas in banking sector.</li> </ol>
<b>Name of Course -</b>	<b>Professional Communication Skills</b>
<b>Course Code-</b>	<b>MAT-AEC-204</b>
<b>Course Outcomes :</b>	<ol style="list-style-type: none"> <li>1. To understand the process of communication and its effect on giving and receiving information.</li> <li>2. To learn about historical and theoretical developments in the field of communication.</li> <li>3. To apply effective communication skills in a variety of public and interpersonal settings.</li> <li>4. To develop analytical, research and organizational skills.</li> <li>5. To discover the impact of changing communication methods on society.</li> <li>6. Become aware of the numerous career opportunities within the field of communication.</li> </ol>
<b>Semester/Year</b>	<b>III Semester /II Year</b>



<b>Name of Course -</b>	<b>Real Analysis II</b>
<b>Course Code-</b>	<b>MAT-CC-301</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. To understand the important role of fundamental properties of the real numbers that lead to the formal development of real analysis;</li> <li>2. Apply rigorous arguments developing the theory underpinning real analysis;</li> <li>3. To understand the important role of limits and how they are used in sequences, series, differentiation and integration;</li> <li>4. Built rigorous mathematical proofs of basic results in real analysis;</li> <li>5. Propose how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.</li> </ol>
<b>Name of Course -</b>	<b>PARTIAL DIFFERENTIAL EQUATION</b>
<b>Course Code-</b>	<b>MAT-CC-302</b>
<b>Course Outcomes :</b>	<p>On successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Extend their knowledge of partial differential equations (PDEs), modeling, the general structure of solutions, and analytic and numerical methods for solutions.</li> <li>2. Built physical problems as PDEs using conservation laws.</li> <li>3. Differentiate between mathematical descriptions of different (wave) phenomena in physics and engineering.</li> <li>4. Investigate PDEs, apply analytical methods, and physically interpret the solutions.</li> <li>5. Explain practical PDE problems with finite difference methods, implemented in code, and analyze the consistency, stability and convergence properties of such numerical methods.</li> </ol>
<b>Name of Course -</b>	<b>RIEMANN INTEGRATION AND SERIES OF FUNCTION</b>
<b>Course Code-</b>	<b>MAT-CC-303</b>
<b>Course Outcomes :</b>	<p>At the end of the course students will be able to</p> <ol style="list-style-type: none"> <li>1. Built an integral from fundamental principles, including important theorems.</li> <li>2. Interpret how it is possible to integrate or differentiate term-by-term</li> <li>3. Apply Riemann Integration</li> <li>4. Assess and evaluate improper integrals of Type I and Type II.</li> <li>5. Explain clearly the definition of an infinite series as the limit of a sequence of partial sums.</li> </ol>
<b>Name of Course -</b>	<b>INFORMATION SECURITY</b>
<b>Course Code-</b>	<b>MAT-GE-304</b>

<b>Course Outcomes :</b>	<p>After studying this course, student should be able to:</p> <ol style="list-style-type: none"> <li>1 Illustrate what information is</li> <li>2 Determine the value of information to the modern organization</li> <li>3 The CIA triad of Confidentiality, Integrity and Availability</li> <li>4 Appraise the difficulties that arise when valuable information needs to be shared</li> <li>5 Identify the five leading-edge resources that have up-to-date information on information security.</li> </ol>
<b>Name of Course -</b>	<b>VECTOR CALCULUS</b>
<b>Course Code-</b>	<b>MAT-SEC-305</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. Investigate when it is appropriate to use a point and when to use a vector in problem solving.</li> <li>2. Recall formulae for length and direction of vector</li> <li>3. Interpret Dot and Cross Product (Vector Algebra)</li> <li>4. Recall algebraic definitions and explain geometric meanings of dot and cross products and Compute dot and cross products given either algebraic or geometric information.</li> <li>5 Apply dot or cross product to determine angles between vectors, orientation of axes, areas of triangles and parallelograms in space, scalar and vector projections,.</li> </ol>
<b>Name of Course -</b>	<b>PARTIAL DIFFERENTIAL EQUATION LAB</b>
<b>Course Code-</b>	<b>MAT-CCP-306</b>
<b>Course Outcomes :</b>	<p>On successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Use knowledge of partial differential equations (PDEs), modeling, the general structure of solutions, and analytic and numerical methods for solutions.</li> <li>2. Formulate physical problems as PDEs using conservation laws.</li> <li>3. Understand analogies between mathematical descriptions of different (wave) phenomena in physics and engineering.</li> <li>4. Classify PDEs, apply analytical methods, and physically interpret the solutions.</li> <li>5. Solve practical PDE problems with finite difference methods, implemented in code, and analyze the consistency, stability and convergence properties of such numerical methods.</li> </ol>
<b>Semester/Year</b>	<b>IV Semester /IIYear</b>
<b>Name of Course -</b>	<b>MULTIVARIATE CALCULUS</b>
<b>Course Code-</b>	<b>MAT-CC-401</b>

<b>Course Outcomes :</b>	<p>At the end of the course students will be able to</p> <ol style="list-style-type: none"> <li>1. Explain the basic concepts and know the basic techniques of differential and integral calculus of functions of several variables;</li> <li>2. Apply the theory to calculate the gradients, directional derivatives, arc length of curves, area of surfaces, and volume of solids;</li> <li>3. Choose problems involving maxima and minima, line integral and surface integral, and vector calculus;</li> <li>4. Develop mathematical maturity to undertake higher level studies in mathematics and related fields</li> </ol>
<b>Name of Course -</b>	<b>Algebra II</b>
<b>Course Code-</b>	<b>MAT-CC-402</b>
<b>Course Outcomes :</b>	<p>The student will be able to</p> <ol style="list-style-type: none"> <li>1. Explain insight into abstract algebra with focus on axiomatic theories</li> <li>2. Apply algebraic ways of thinking</li> <li>3. Explain knowledge and understanding of fundamental concepts including groups, subgroups, normal subgroups, homomorphism and isomorphism</li> <li>4. Extend knowledge and understanding of rings, fields and their properties</li> <li>5. Explain and prove fundamental results and solve algebraic problems using appropriate techniques</li> </ol>
<b>Name of Course -</b>	<b>METRIC SPACE AND COMPLEX ANALYSIS</b>
<b>Course Code-</b>	<b>MAT-CC-403</b>
<b>Course Outcomes :</b>	<p>The student is able to</p> <ol style="list-style-type: none"> <li>1. Explain point-set topology and will know the central importance of complex variables in analysis.</li> <li>2. Summarize of differentiation and integration in this setting</li> <li>3. Examine the tools and results of complex analysis including Cauchy's Theorem, Cauchy's integral formula</li> <li>4. Explain Liouville's Theorem, Laurent's expansion and the theory of residues</li> </ol>
<b>Name of Course -</b>	<b>Applications of Algebra</b>
<b>Course Code-</b>	<b>MAT-GE-404</b>

<b>Course Outcomes :</b>	<p>Students will be:</p> <ul style="list-style-type: none"> <li>• Work with functions presented in tables, graphs, with algebraic expression, or in words. Determine if relations presented in any of these formats are functions. The functions covered in this course are linear, exponential, logarithmic, quadratic, square root, and power.</li> <li>• Find the domain, x-intercepts, y-intercepts, output given the input, and input given the output for all functions presented in tables, graphs or with algebra. Find the range of functions presented graphically.</li> </ul>
<b>Name of Course -</b>	<b>Operating System: Linux</b>
<b>Course Code-</b>	<b>MAT-SEC-405</b>
<b>Course Outcomes :</b>	<p>Student will be able to</p> <ol style="list-style-type: none"> <li>1. Describe and explain the fundamental components of a computer operating system</li> <li>2. Describe and explain the fundamental components of a computer operating system</li> <li>3. Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.</li> <li>4. Describe and extrapolate the interactions among the various components of computing systems.</li> <li>5. Design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.</li> <li>6. Students will design and implement the above OS components within NACHOS with C++.</li> <li>7. Illustrate, construct, compose and design solutions via C/C++ programs, and through NACHOS.</li> <li>8. Measure, evaluate, and compare OS components through instrumentation for performance analysis.</li> <li>9. OS components and the components provided by NACHOS and Students will perform scientific analysis on the performance of the components and are asked to submit a short paper on their experimental results.</li> </ol>
<b>Semester/Year</b>	<b>V Semester /III Year</b>
<b>Name of Course -</b>	<b>RING THEORY AND LINEAR ALGEBRA I</b>
<b>Course Code-</b>	<b>MAT-CC-501</b>

<b>Course Outcomes :</b>	<p>Students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Explain the fundamental concepts of advanced algebra such as groups and rings and their role in modern mathematics and applied contexts</li> <li>2. Illustrate accurate and efficient use of advanced algebraic techniques</li> <li>3. Illustrate capacity for mathematical reasoning through analyzing, proving and explaining concepts from advanced algebra</li> <li>4. Apply problem-solving using advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematical contexts</li> </ol>
<b>Name of Course -</b>	<b>Group Theory</b>
<b>Course Code-</b>	<b>MAT-CC-502</b>
<b>Course Outcomes :</b>	<p>Students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Apply Abstract Algebra for other areas of knowledge.</li> <li>2. Build critical and analytical skills that prepare students to be</li> <li>3. Illustrate the basic definitions and theorems on homomorphism, direct product, Inner Product and direct sums of groups;</li> <li>4. Build the concept of a normal subgroup in a group</li> <li>5. In order to build their knowledge to understand the basic results and fundamental theorem of finite abelian groups.</li> </ol>
<b>Name of Course -</b>	<b>Linear Programming</b>
<b>Course Code-</b>	<b>MAT/DSE/503</b>
<b>Course Outcomes :</b>	<p>the Student will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply mathematical concepts and principles to perform numerical and symbolic computations.</li> <li>2. Assess technology appropriately assignment to suitable person for complete any task.</li> <li>3. Extend in order of constraint, his knowledge utilize to minimize cost in transportation.</li> <li>4. Communicate effectively in both written and oral form.</li> <li>5. Illustrate the ability to optimize cost of any industries independently</li> </ol>
<b>Name of Course -</b>	<b>PROBABILITY AND STATISTICS</b>
<b>Course Code-</b>	<b>MAT-DSE-504</b>

<b>Course Outcomes :</b>	<p>the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Build the knowledge of importance of probability and statistics in computing and research</li> <li>2. Extend skills in presenting quantitative data using appropriate diagrams, tabulations and summaries</li> <li>3. Apply appropriate statistical methods in the analysis of simple datasets</li> <li>4. Interpret and clearly present output from statistical analyses in a clear concise and understandable manner</li> </ol>
<b>Name of Course -</b>	<b>Finite Element Methods</b>
<b>Course Code-</b>	<b>MAT/GE/505</b>
<b>Course Outcomes :</b>	<ol style="list-style-type: none"> <li>1. Implement numerical methods to solve mechanics of solids problems.</li> <li>2. Formulate and Solve axially loaded bar Problems.</li> <li>3. Formulate and analyze truss and beam problems.</li> <li>4. Implement the formulation techniques to solve two-d Dimensional problems using triangle and quadrilateral elements.</li> <li>5. Formulate and solve Axi-symmetric and heat transfer Problems</li> </ol>
<b>Semester/Year</b>	<b>VI Semester /VYear</b>
<b>Name of Course -</b>	<b>Numerical Method</b>
<b>Course Code-</b>	<b>MAT-CC-601</b>
<b>Course Outcomes :</b>	<p>Students are able to</p> <ol style="list-style-type: none"> <li>1 Explain the nature and operations of Numerical Analysis, demonstrate familiarity with theories and concepts used in Numerical Analysis</li> <li>2 Distinguish between the steps required to carry out a piece of research on a topic in Numerical Analysis,</li> <li>3 Derive Numerical Methods</li> <li>4 Determine their convergence rate and performance, applicability of the methods on different test examples.</li> <li>5 Recognize and apply appropriate theories, principles and concepts relevant to Numerical Analysis</li> </ol>
<b>Name of Course -</b>	<b>RING THEORY AND LINEAR ALGEBRA II</b>
<b>Course Code-</b>	<b>MAT-CC-602</b>
<b>Course Outcomes :</b>	<p>the Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain how to determine the angle between vectors and the orthogonality of vectors.</li> <li>2. Discuss orthogonal and orthonormal bases</li> <li>3. Explain the Gram-Schmidt orthogonalization process</li> <li>4. Illustrate orthogonal complements and orthogonal projections</li> <li>5. Summarize the orthogonal projection of a vector onto a subspace, given a basis for the subspace</li> </ol>

<b>Name of Course -</b>	<b>MATHEMATICAL MODELING</b>
<b>Course Code-</b>	<b>MAT-DSE-603</b>
<b>Course Outcomes :</b>	<p>the Students will be able to:  After studying this course, you should be able to:</p> <ol style="list-style-type: none"> <li>1 Illustrate mathematical models of empirical or theoretical phenomena in domains such as the physical, natural, or social science;</li> <li>2 Illustrate variables and other abstractions to solve college-level mathematical problems in conjunction with previously-learned fundamental mathematical skills such as algebra;</li> <li>3 Investigate inferences from models using college-level mathematical techniques including problem solving, quantitative reasoning, and exploration using multiple representations such as equations, tables, and graphs;</li> <li>4 Identify an analytical approach to problems in their future endeavors.</li> </ol>
<b>Name of Course -</b>	<b>MECHANICS</b>
<b>Course Code-</b>	<b>MAT-DSE-604</b>
<b>Course Outcomes :</b>	<p>Student will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify the type of force, type of supports and the reactions on beams and plane frames.</li> <li>2. Explain the fundamental principles of the general theory of relativity. They shall know the meaning of basic concepts like the equivalence principles, inertial frames and time dilation</li> <li>3. Build the non-existence of the hypothesized stationary aether through the null result of Michelson-Morley experiments with interferometer.</li> <li>4. Explain the true nature of Newtonian mechanics and Lorentz Transformation equations</li> <li>.5 Apply the concept of constant relative motion of different bodies in different frames of references</li> </ol>
<b>Name of Course -</b>	<b>NUMERICAL METHOD LAB</b>
<b>Course Code-</b>	<b>MAT-CCP-605</b>

**Course Outcomes :**

By the end of the course student will have the ability to

1. Compare the computational methods for advantages and drawback,
2. choose the suitable computational method among several existing methods ,
3. Utilize the computational methods using any of existing programming languages,
4. Test such methods and compare between them, identify the suitable computational technique for a specific type of problems and develop the computational method that is suitable for the underlying problem.,
5. Prioritize the work effectively both in a team and independently, apply the best computational methods to solve real-life and Engineering applications via computational packages such as MATLAB or Mathematica



# **B.Sc. (Hons.) Chemistry**

**School of life and basic sciences**

<b>1.</b>	<b>Name of the programme</b>	<b>B.Sc Chemistry(Hons)</b>
<b>2.</b>	<b>Programme Code</b>	<b>Chemistry (Hons)</b>
3.	Programme Outcome	<p>Students will be able to</p> <ul style="list-style-type: none"> <li>• Understand and remember the basics in the field of chemistry and insight on research in the field of chemistry and basic sciences.</li> <li>• Explore the scientific literature effectively and communicate ideas principles effectively.</li> <li>• Paraphrase advanced knowledge and apply the concepts for future application</li> <li>• interpret experimental data and critique the same for alternative strategies</li> <li>• Speak, read, write and listen clearly in person in English and make meaning of the world by connecting people, ideas, books, media and technology</li> </ul>
4.	Name of the specific programme	B.Sc in Chemistry (Hons.)
5.	Programme Specific Outcome	<p>After successful completion of Bachelors of Science in chemistry, the student should be able to</p> <ul style="list-style-type: none"> <li>• The degree is three years of duration and also course syllabus (Theory plus Practical) is divided into three years. After completing the course candidates have a lot of career opportunities in different spheres- Agricultural Research Services, Biotechnology Firms, Chemical Industry, Cosmetic Companies, Food Institutes</li> <li>• B.Sc. (Hons.) (Chemistry) degree course also includes the study of atomic structure, chemical bonding, thermodynamics, chemistry of various elements, classes of organic compounds, electrochemistry, coordination chemistry, quantum mechanics, spectroscopy, computer applications in chemistry, method of chemical analysis, environmental and biochemistry</li> <li>• B.Sc. (Hons.) Chemistry is an undergraduate Chemistry course.</li> </ul>

		<p>Chemistry is the science of the composition, structure, properties, and reactions of matter, especially of atomic and molecular systems</p> <ul style="list-style-type: none"> <li>• Communicate effectively and demonstrate professional and ethical responsibilities</li> <li>• Gain first-hand experience of working on project at individual level and exposure to industrial and research environment</li> </ul>
	<b>Semester/Year</b>	<b>I Semester /I Year</b>
Course Nomenclature	Inorganic I:Atomic Structure & Chemical Bonding-I	course code (CHY-CC-101)
		<p>To understand the Basic structure of atom.</p> <ul style="list-style-type: none"> <li>•To examine &amp; Associate polarization of a bond with electronegativity.</li> <li>•. To Understand nucleophile and electrophile groups and their properties.</li> <li>• To recall different bond types of carbon and its hybrid orbitals.</li> <li>•. To differentiate between valence bond and molecular orbital approaches.</li> <li>•. To determine the energy change in different redox reaction.</li> </ul>
Course Nomenclature	Physical I: States of Matter & Ionic Equilibrium	course code(CHY-CC-102)
	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge of:</p> <ul style="list-style-type: none"> <li>• Basic understanding of state of matter</li> <li>• Ideal gas and real gas behavior</li> <li>•To understand different methods to study of liquids</li> <li>• To Explain structure of different Solids</li> <li>• To understand preparation and dilution of standard solutions</li> </ul>
Course Nomenclature	<b>Object Oriented Programming in C++</b>	course code-CHY-GE-103

	Course Outcome	<ul style="list-style-type: none"> <li>• To Have basic idea about programming language</li> <li>•To describe the object-oriented programming approach in connection with C++</li> <li>• To apply concepts of object oriented programming</li> <li>•To Illustrate the process of data file manipulation using C++</li> <li>• To apply virtual and pure virtual function and complex programming situation</li> </ul>
Course Nomenclature	<b>Environmental Science Environmental Studies</b>	course code-CHY-AECC-104
	Course Outcome	<ul style="list-style-type: none"> <li>• To remember characterization and importance of biodiversity.</li> <li>.• To summarize the hotspots of biodiversity in India.</li> <li>.• To organize various food chains by considering examples.</li> <li>.• To compare various ecosystems-foreest, grassland, desert, aquatic etc</li> <li>•. To prioritize the need of biodiversity conservation and sustainable development.</li> <li>• Students will be able to articulate and describe Relative motion. Inertial and non-inertial reference frames.</li> </ul>
	<b>Semester/Year</b>	<b>II Semster/I Year</b>
Course Nomenclature	Organic I:Basics & Hydrocarbons	course code-CHY-CC-201
	Course Outcome	<ul style="list-style-type: none"> <li>• Derive mechanism of a reaction.</li> <li>• Design reactions of aliphatic &amp; aromatic hydrocarbons.</li> <li>• Prepare alkane, alkene and alkynes using different methods.</li> <li>• Isomerism in molecule</li> <li>• To apply basic concepts of electronic effects and intermediate on reaction mechanism</li> </ul>
Course Nomenclature	Physical II:Chemical Thermodynamics &its Applications	course code-CHY-CC-202

	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• To provide an insight into the thermodynamic and kinetic aspects of chemical reactions and phase equilibria.</li> <li>• Basic understanding of thermodynamic processes</li> <li>• Raoult's law &amp; Various colligative properties</li> <li>• To apply thermodynamic application in different branches of science.</li> <li>• To understand the effect of temperature and pressure in different thermodynamic process.</li> </ul>
Course Nomenclature	Data Structure	course code-CHY-GE-203
	Course Outcome	<p>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the concept of dynamic memory management, data type, algorithms.</li> <li>• Understand basic data structure such as arrays, linked lists, stacks and queues.</li> <li>• Describe the hash function and concepts of collisions and its resolution methods</li> <li>• Solve the problems involving graphs, trees and heaps</li> <li>• Apply Algorithm for solving problems like sorting, searching and detection of data.</li> </ul>
Course Nomenclature	English Communication	course code-CHY-AECC-204
	Course Outcome	<p>The student shall:</p> <ul style="list-style-type: none"> <li>• Understand the process of communication and its effect on giving and receiving information</li> <li>• Learn about historical and theoretical developments in the field of communication</li> <li>• Apply effective communication skills in a variety of public and interpersonal settings</li> </ul>

	Semester/Year	III Semester /II Year
Course Nomenclature	Inorganic II:: s- and p-Block Elements	course code-CHY-CC-301
	Course Outcome	On satisfying the requirements of this course, students will have the knowledge and skills to: <ul style="list-style-type: none"> <li>• Basic understanding of general principles of metallurgy</li> <li>• Study of Acids and Bases</li> <li>• To understand Chemistry of s and p Block Elements</li> <li>• Study of inorganic polymers</li> </ul>
Course Nomenclature	Organic II: Oxygen Containing Functional Groups	course code-CHY-CC-302
	Course Outcome	On satisfying the requirements of this course, students will have the knowledge and skills to: <ul style="list-style-type: none"> <li>• Basic understanding Chemistry of Halogenated Hydrocarbons</li> <li>• Understand Alcohols, Phenols, Ethers and Epoxides:</li> <li>• Study of Carboxylic Acids and their Derivatives.</li> <li>• Express the differences between Carbonyl Compounds.</li> </ul>
Course Nomenclature	Physical III : Phase Equilibria & Chemical Kinetics	course code-CHY-CC-303
	Course Outcome	On satisfying the requirements of this course, students will have the knowledge and skills to: <ul style="list-style-type: none"> <li>• Basic understanding of Phase Equilibria.</li> <li>• Understand chemical kinetics.</li> <li>• Associate different catalysis.</li> <li>• Express surface chemistry.</li> </ul>
Course Nomenclature	CHEMOINFORMATICS	course code-CHY-AEEC-304

	Course Outcome	On satisfying the requirements of this course, students will have the knowledge and skills to: <ul style="list-style-type: none"> <li>• Basic understanding of molecular modelling.</li> <li>• Understand molecular dynamics.</li> <li>• Study about comparative Modeling.</li> </ul>
Course Nomenclature	Introduction to Database Mangment Systems	course code-CHY-GE-305
	Course Outcome	Upon successful completion of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Differentiate database systems from file systems by enumerating the features provided by database systems</li> <li>• To describe database in both function and benefit.</li> <li>• Analyze an information storage problem and derive an information model</li> <li>• Expressed these models in the form of an entity relation diagram and other optional analysis forms, such as a data dictionary.</li> </ul>
	<b>Semester/Year</b>	<b>IV Semester /II Year</b>
Course Nomenclature	Inorganic III : Coordination Chemistry	course code-CHY-CC-401
	Course Outcome	<ul style="list-style-type: none"> <li>• On satisfying the requirements of this course, students will have the knowledge and skills to: <ol style="list-style-type: none"> <li>1. Basic understanding of coordination chemistry</li> <li>2. Understand transition elements.</li> <li>3. Associate different bond types of carbon and its hybrid orbitals.</li> <li>4. Express the differences between Lanthanoids and Actinoids.</li> </ol> </li> </ul>
Course Nomenclature	Organic III: Heterocyclic Chemistry	course code-CHY-CC-402

	Course Outcome	<ul style="list-style-type: none"> <li>• On satisfying the requirements of this course, students will have the knowledge and skills to:</li> <li>• Understand the preparation and important reaction of nitrogen containing functional group.</li> <li>• To apply Applications of heterocyclic compounds &amp; alkaloids.</li> <li>• Applications of heterocyclic compounds &amp; alkaloids</li> <li>• Applications of heterocyclic compounds &amp; alkaloids.</li> </ul>
Course Nomenclature	Physical IV : Electrochemistry	course code-CHY-CC-403
	Course Outcome	<p>After completing this course student will:</p> <ul style="list-style-type: none"> <li>• Understand about the basic concepts &amp; applications of electrochemistry.</li> <li>• Identify an redox reaction on the basis of change in oxidation number</li> <li>• To illustrate relationship between free energy and cell potential</li> <li>• Apply standard potential data to determine the relative strength of oxidising and reducing agents</li> </ul>
Course Nomenclature	Pharmaceutical chemistry	course code-CHY-AEEC-404
	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Study about drugs and pharmaceutical agents.</li> <li>• Basic understanding about aerobic and anaerobic fermentation.</li> <li>• Illustrate the uses of pharmaceutical drugs in different fields</li> </ul>
Course Nomenclature	Computer Networking	course code-CHY-GE-405



	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge of:</p> <ul style="list-style-type: none"> <li>• Understand computer network basics, network architecture, TCP/IP and OSI reference models</li> <li>• Describe data link protocols, multichannel access protocols.</li> <li>• To describe routing and congestion in network layer</li> <li>• To discuss the elements and protocols of transport layer</li> <li>• To understand network security and define various protocols</li> </ul>
	<b>Semester/Year</b>	<b>V Semester /III Year</b>
Course Nomenclature	Organic chemistry- IV: Biomolecules	course code-CHY-CC-501
	Course Outcome	<p>After completing this course student will:</p> <ul style="list-style-type: none"> <li>• Have basic understanding of biomolecules and their functioning.</li> <li>• Study Structure and importance of various pharmaceutical drugs.</li> <li>• Understand about the chemical reaction of biomolecules</li> <li>• Study structure and function of different biomolecules</li> </ul>
Course Nomenclature	Physical Chemistry V: Quantum Chemistry & Spectroscopy	course code-CHY-CC-502
	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Postulates &amp; principles of quantum chemistry.</li> <li>• Basic understanding of molecular spectroscopy &amp; photochemistry.</li> <li>• Can draw the structure of compound by the spectroscopic data</li> <li>• To understand three dimensional structure of atoms</li> </ul>
Course Nomenclature	Industrial chemicals and environment	course code-CHY-DSE-503

	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• To know the basics principle of different techniques employed in Industrial Metallurgy.</li> <li>• To study the analysis and hazards in handling the chemicals.</li> <li>• To understand the functions and applications of biogeochemical cycles of carbon, nitrogen and sulphur.</li> <li>• To study the Major sources of air pollution, water pollution and its purification methods.</li> <li>• To have a basic idea about nuclear pollution and biocatalysts.</li> </ul>
Course Nomenclature	Analytical Methods in Chemistry	course code-CHY-DSE-504
	Course Outcome	<p>on satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Basic understanding of qualitative and quantitative analysis .</li> <li>• Understand optical method and thermal methods of analysis.</li> <li>• Study about different separation techniques and there qualitative and quantitative aspects. <ul style="list-style-type: none"> <li>• To apply these techniques to understand analysis of properties of different compounds</li> </ul> </li> </ul>
	<b>Semester/Year</b>	<b>VI Semester /III Year</b>
Course Nomenclature	Inorganic Chemistry IV: Organometallic	course code-CHY-CC-601
	Course Outcome	<p>Students should gain basic knowledge of solid state physics. This implies that the student will:</p> <ul style="list-style-type: none"> <li>• Basic understanding of organo-metallic compounds &amp; their reactions.</li> <li>• Kinetics of substitution reactions in square planar complexes.</li> <li>• Discuss about synthesis and properties of organometallic compounds</li> <li>• Understand the use of organometallic compounds in biological bodies</li> </ul>

Course Nomenclature	Organic V: Spectroscopy	course code-CHY-CC-602
	Course Outcome	<p>Upon successful completion of this course, students should be able to:</p> <ul style="list-style-type: none"> <li>• Understand the principle of absorption &amp; emission spectroscopy.</li> <li>• Classification &amp; their biological importance of carbohydrates.</li> <li>• Applications of dyes and polymers in daily life.</li> </ul>
Course Nomenclature	Molecular Modelling & Drug Design	CHY-DSE-603
	Course Outcome	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Basic understanding of molecular modelling.</li> <li>• Understand molecular dynamics.</li> <li>• Study about comparative Modeling.</li> <li>• Use the concept like branching statements, loops, and additional datatype</li> <li>• Use network simulators to analyze various network parameters</li> </ul>
Course Nomenclature	Dissertation	CHY-DSE-604

**B.Sc. (PCM)**

<b>Name of Program</b>	B.Sc.
<b>Programme outcome</b>	
<p>B.Sc. is an undergraduate course offering Physics, Mathematics and Chemistry as core subjects and various other electives related to discipline and skill. The duration of the course is three years and the syllabus for the course is also divided into three years.</p> <p>Students of the programme would have learn all basic concepts in physical, mathematical and chemical sciences which is very much the need of the house as there is a dearth of good students in the area of basic sciences in the country. This course builds up a comprehension of analytical skills and purposeful abilities and competencies.</p>	
<b>Course</b>	B.Sc.(PCM)
<b>Course Outcomes :</b>	
<p>B.Sc. (PCM) degree serves as a basis for further higherstudies in any of these fields such as M.Sc., Ph.D. and M.Phil. After completing the degree course they can pursue careers in arange of sectors such as IT and consultancy, Food industry, Chemical industry, environmentalindustry, financial services, and the legal sector, transport andutilities. They can become school teacher on private basis after it andlecturer after completing Master’s degree plus NET exam permanently and can also compete for various government exams.</p>	
<b>Semester/Year</b>	<b>I Semester /I Year</b>
<b>Name of Course -</b>	<b>Waves and Optics</b>
<b>Course Code-</b>	<b>CC/Phys-101</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. On satisfying the requirements of this course, students will have the knowledge and skills to:</li> <li>2. Appreciate the efficacy of Fourier transforms and their application to physical systems.</li> <li>3. Understand linear, time-invariant systems.</li> <li>4. Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems</li> <li>5. Understand dispersion in waves and model dispersion using Fourier theory</li> <li>6. Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics via the spatial Fourier Transform.</li> <li>7. Understand optical phenomena such as polarization, birefringence, interference and diffraction in terms of the wave model.</li> <li>8. Understand the foundations of fluid dynamics.</li> </ol> <p>Through the lab course, understand the principles of measurement and error analysis and develop skills in experimental design.</p>
<b>Name of Course -</b>	<b>Atomic Structure, Bonding, General Organic Chemistry &amp; Aliphatic Hydrocarbons</b>
<b>Course Code-</b>	<b>CC/Chem-102</b>

<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To understand the Basic structure of atom.</li> <li>2. To examine &amp; Associate polarization of a bond with electronegativity.</li> <li>3. To Understand nucleophile and electrophile groups and their properties.</li> <li>4. To recall different bond types of carbon and its hybrid orbitals.</li> <li>5. To differentiate between valence bond and molecular orbital approaches.</li> <li>6. To derive mechanism of a reaction.</li> <li>7. To Interpret the reactions and properties of halogen compounds.</li> <li>8. To Design reactions of aliphatic hydrocarbons.</li> <li>9. To develop alkane, alkene and alkynes using different methods.</li> </ol>
<b>Name of Course -</b>	<b>Differential Calculus</b>
<b>Course Code-</b>	<b>CC/Maths-103</b>
<b>Outcomes of paper</b>	<p>On successful completion of this course, Students</p> <ol style="list-style-type: none"> <li>1. Able to understand the idea of derivative</li> <li>2. Choose an idea of a tangent line to the graph of a function, know how a derivative can be used to describe the rate of change of one quantity with respect to another, and how to relate the geometric ideas to the analytic ideas.</li> <li>3. Utilize the definition of derivative and compute with it.</li> <li>4. Judge to compute basic limits of functions.</li> <li>5. Determine to explain the notion of continuity.</li> </ol>
<b>Name of Course -</b>	<b>Professional Communication Skills</b>
<b>Course Code-</b>	<b>AEC/Eng-104</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To understand the process of communication and its effect on giving and receiving information.</li> <li>2. To learn about historical and theoretical developments in the field of communication.</li> <li>3. To apply effective communication skills in a variety of public and interpersonal settings.</li> <li>4. To develop analytical, research and organisational skills.</li> <li>5. To discover the impact of changing communication methods on society.</li> <li>6. Become aware of the numerous career opportunities within the field of communication.</li> </ol>
<b>Name of Course -</b>	<b>Waves and Optics Lab</b>
<b>Course Code-</b>	<b>PR/Phys-105</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. The student explains simple harmonic motion</li> <li>2. Defines period, frequency and force constant.</li> </ol> <p>Explains motion of pendulum, physical pendulum and torsional pendulum</p>
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Name of Course -</b>	<b>Mechanics</b>
<b>Course Code-</b>	<b>CC/Phys-201</b>

<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Get the knowledge about forces helps the students in their daily life. Students will be able to identify the type of force, type of supports and the reactions on beams and plane frames.</li> <li>2. The students shall be familiar with the fundamental principles of the general theory of relativity. They shall know the meaning of basic concepts like the equivalence principles, inertial frames and time dilation</li> <li>3. Establish the nonexistence of the hypothesized stationary aether through the null result of Michelson-Morley experiments with interferometer.</li> <li>4. Explain the true nature of Newtonian mechanics and Lorentz Transformation equations.</li> <li>5. Understand the concept of constant relative motion of different bodies in different frames of reference.</li> </ol>
<b>Name of Course -</b>	<b>Chemical Energetics, Equilibrium &amp; Functional Organic Chemistry-I</b>
<b>Course Code-</b>	<b>CC/Chem-202</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To provide an insight into the thermodynamic and kinetic aspects of chemical reactions and phase equilibria.</li> <li>2. To understand thermodynamic derivation &amp; various thermodynamic laws.</li> <li>3. To Distinguish aliphatic and aromatic halogenated organic compounds.</li> <li>4. To explain Preparation methods for the halogenated organic compounds.</li> <li>5. To illustrate reactions of halogenated organic compounds.</li> </ol>
<b>Name of Course -</b>	<b>Differential Equation</b>
<b>Course Code-</b>	<b>CC/Maths-203</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. Distinguish between linear, nonlinear, partial and ordinary differential equations.</li> <li>2. Recognize and solve a variable separable differential equation, homogeneous differential equation, exact differential equation, linear differential equation by use of an integrating factor.</li> <li>3. Recognize and solve equations of Bernoulli, Ricatti and Clairaut.</li> <li>4. Solve basic application problems described by first order differential equations</li> <li>5. Find the complete solution of a nonhomogeneous differential equation with constant coefficients by the method of undetermined coefficients Solving Homogeneous Heat and Wave, Laplace's Equations</li> </ol>
<b>Name of Course -</b>	<b>Environmental Science Environmental Studies</b>
<b>Course Code-</b>	<b>ACE/Env-204</b>

<b>Course Outcomes :</b>	<ol style="list-style-type: none"> <li>1. To remember characterization and importance of biodiversity.</li> <li>2. To summarize the hotspots of biodiversity in India.</li> <li>3. To organize various food chains by considering examples.</li> <li>4. To compare various ecosystems- forest, grassland, desert, aquatic etc</li> <li>5. To prioritize the need of biodiversity conservation and sustainable development.</li> </ol>
<b>Name of Course -</b>	<b>Mechanics Lab</b>
<b>Course Code-</b>	<b>PR/Phys-205</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Ability to Identify, name, and characterize flow patterns and regimes</li> <li>2. Capability to understand basic units of measurement, converts units, and appreciate their magnitudes.</li> <li>3. Measure fluid pressure and relate it to flow velocity</li> </ol>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Name of Course -</b>	<b>Thermal Physics</b>
<b>Course Code-</b>	<b>CC/Phys-301</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <p><b>THERMAL PHYSICS:</b></p> <ol style="list-style-type: none"> <li>1. Demonstrate a basic understanding of the concepts and underlying principles of classical physics.</li> <li>2. Gain an appreciation of the quantitative methods used in Physics and in other STEM disciplines.</li> <li>3. Demonstrate knowledge-based competencies in the fields of Thermodynamics &amp; Statistical Mechanics, keystones of Classical and Quantum Physics.</li> <li>4. Demonstrate a mastery of the core knowledge base expected of Physics professionals in areas of Thermal Physics.</li> </ol> <p><b>STATISTICAL MECHANICS::</b></p> <ol style="list-style-type: none"> <li>1. Determine the probability of any type of events. They are able to interpret different types of events.</li> <li>2. Understood the concept of phase space and its volume.</li> <li>3. Easily distinguish between different types of particles and statistics and can easily distribute bosons, fermions and classical particles among energy levels.</li> <li>4. After studying Fermi Dirac statistics, students have learnt to deal with many electron systems in real life.</li> </ol>
<b>Name of Course -</b>	<b>Solutions, Phase Equilibrium, Conductance, Electrochemistry &amp; Functional Group Organic Chemistry-II</b>
<b>Course Code-</b>	<b>CC/Chem-302</b>



<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1.To Understand,the and differentiate between,voltaic/galvanic and,electrolytic electrochemical cells.</li> <li>2. To recall standard states used for <math>E^\circ</math> and <math>\Delta G^\circ</math> are defined for gases, solids, liquids and solutes.</li> <li>3. To Applies conversion of carboxylic acids to their derivatives on example reactions,</li> <li>4. To Illustrates reactions of carboxylic acid derivatives and preparation methods of carboxylic acid derivatives.</li> <li>6. To investigate different preparation methods for amines.</li> </ol>
<b>Name of Course -</b>	<b>Real Analysis II</b>
<b>Course Code-</b>	<b>CC/Maths-303</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. To understand the important role of fundamental properties of the real numbers that lead to the formal development of real analysis;</li> <li>2. Apply rigorous arguments developing the theory underpinning real analysis;</li> <li>3. To understand the important role of limits and how they are used in sequences, series, differentiation and integration;</li> <li>4. Built rigorous mathematical proofs of basic results in real analysis;</li> <li>5. Propose how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.</li> </ol>
<b>Name of Course -</b>	<b>VECTOR CALCULUS</b>
<b>Course Code-</b>	<b>SEC/Maths-304</b>
<b>Course Outcomes :</b>	<p>Students will be able to</p> <ol style="list-style-type: none"> <li>1. Investigate when it is appropriate to use a point and when to use a vector in problem solving.</li> <li>2. Recall formulae for length and direction of vector</li> <li>3. Interpret Dot and Cross Product (Vector Algebra)</li> <li>4. Recall algebraic definitions and explain geometric meanings of dot and cross products and Compute dot and cross products given either algebraic or geometric information.</li> <li>5 Apply dot or cross product to determine angles between vectors, orientation of axes, areas of triangles and parallelograms in space, scalar and vector projections,.</li> </ol>
<b>Name of Course -</b>	<b>Thermal Physics Lab</b>
<b>Course Code-</b>	<b>PR/Phys-305</b>

<b>Course Outcomes :</b>	<ol style="list-style-type: none"> <li>1. To apply the knowledge of mathematics, science and engineering fundamentals to model the energy conversion phenomenon.</li> <li>2. To identify and formulate power production based on the fundamentals laws of thermal engineering.</li> <li>3. To instill upon to envisage appropriate experiments related to heat engines.</li> <li>4. To investigate the effectiveness of energy conversion process in mechanical power generation for the benefit of mankind</li> <li>5. To appreciate concepts learnt in fundamentals laws of thermodynamics from which learning ideas how to sustain in energy crisis and think beyond curriculum in the field of alternative and renewable sources of energy.</li> <li>6. To communicate effectively the concepts of internal combustion engines and try to think beyond curriculum in alternative sources of energy</li> </ol>
<b>Semester/Year</b>	<b>IV Semester /II Year</b>
<b>Name of Course -</b>	<b>Electricity and Magnetism</b>
<b>Course Code-</b>	<b>CC/Phys-401</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Explain various phenomenon like Ferromagnetism, anti-ferromagnetism etc. Understand the relation in between Electromagnetic theory.</li> <li>2. Explain various phenomenon in light of Maxwell equations</li> </ol>
<b>Name of Course -</b>	<b>Transition Metal &amp; Coordination Chemistry, States of Matter &amp; Chemical Kinetics</b>
<b>Course Code-</b>	<b>CC/Chem-402</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To understand the general characteristics of the d block elements</li> <li>2. To summarise knowledge of the different theories to explain the bonding in coordination compounds.</li> <li>3. To distinguish understanding of the chemistry of organometallic compounds, metal carbonyls and metal clusters.</li> <li>4. To learn the different theories of reaction rates and factors affecting reaction rates</li> <li>5. To differentiate types of catalysis and their mechanisms</li> </ol>
<b>Name of Course -</b>	<b>Algebra II</b>
<b>Course Code-</b>	<b>CC/Maths-403</b>

<b>Course Outcomes :</b>	The student will be able to 1. Explain insight into abstract algebra with focus on axiomatic theories 2. Apply algebraic ways of thinking 3. Explain knowledge and understanding of fundamental concepts including groups, subgroups, normal subgroups, homomorphism and isomorphism 4. Extend knowledge and understanding of rings, fields and their properties 5. Explain and prove fundamental results and solve algebraic problems using appropriate techniques
<b>Name of Course -</b>	<b>Pharmaceutical Chemistry</b>
<b>Course Code-</b>	<b>SEC/Chem-404</b>
<b>Outcomes of paper</b>	1. To recall knowledge of the chemistry relevant to the study of pharmaceutical drugs. 2. To understand an overview of the structure of the activity relationships of a variety of drug classes. 3. To introduces the processes of drug discovery 4. To analyze the methodologies of rational drug design. 5. To determine methods of synthesis of pharmaceutical drugs.
<b>Name of Course -</b>	<b>Electricity and Magnetism Lab</b>
<b>Course Code-</b>	<b>PR/Phys-405</b>
<b>Course Outcomes :</b>	On satisfying the requirements of this course, students will have the knowledge and skills to: 1. Explain various phenomenon like Ferromagnetism ,anti-ferromagnetism etc. 2. Understand the relation in between Electromagnetic theory. 3. Explain various phenomenon in light of Maxwell equations
<b>Semester/Year</b>	<b>V Semester /IIIYear</b>
<b>Name of Course -</b>	<b>Solid State Physics</b>
<b>Course Code-</b>	<b>DSE/Phys-501</b>

<b>Course Outcomes :</b>	<p>Students should gain basic knowledge of solid state physics. This implies that the student will:</p> <ol style="list-style-type: none"> <li>1. be able to account for interatomic forces and bonds have a basic knowledge of crystal systems and spatial symmetries</li> <li>2. be able to account for how crystalline materials are studied using diffraction, including concepts like form factor, structure factor, and scattering amplitude.</li> <li>3. Know the principles of structure determination by diffraction and Know the significance of Brillouin zones</li> <li>4. Know what phonons are, and be able to perform estimates of their dispersive and thermal properties</li> <li>5. Be able to calculate thermal and electrical properties in the free-electron model</li> <li>6. Know Bloch's theorem and what energy bands are</li> <li>6. Know the fundamental principles of semiconductors, including pn-junctions, and be able to estimate the charge carrier mobility and density.</li> <li>7. be able to account for what the Fermi surface is and how it can be measured</li> <li>8. know basic models of magnetism</li> <li>9. Be able to outline the importance of solid state physics in the modern society.</li> <li>10. Understand the concept of reciprocal space and be able to use it as a tool</li> </ol>
<b>Name of Course -</b>	<b>Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy</b>
<b>Course Code-</b>	<b>DSE/Chem-502</b>
<b>Outcomes of paper</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To understand the various spectroscopic methods used for the characterization of organic compounds.</li> <li>2. To analyze the structure of compounds spectral data.</li> <li>3. To interpret basics principle of different techniques employed in molecular spectroscopy</li> <li>4. To explain origin, instrumentation and important applications of Microwave, IR, Raman, UV, techniques</li> <li>5. To recall the functions and applications of bioorganic compounds</li> <li>6. To understand about nuclear Chemistry and its applications</li> </ol>
<b>Name of Course -</b>	<b>Linear Programming</b>
<b>Course Code-</b>	<b>DSE/Maths-503</b>
<b>Course Outcomes :</b>	<p>the Student will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply mathematical concepts and principles to perform numerical and symbolic computations.</li> <li>2. Assess technology appropriately assignment to suitable person for complete any task.</li> <li>3. Extend in order of constraint, his knowledge utilize to minimize cost in transportation.</li> <li>4. Communicate effectively in both written and oral form.</li> <li>5. Illustrate the ability to optimize cost of any industries independently</li> </ol>

<b>Name of Course -</b>	<b>Computer Graphics</b>
<b>Course Code-</b>	<b>SEC/Comp-504</b>
<b>Course Outcomes :</b>	<p>Students will able to</p> <ol style="list-style-type: none"> <li>1. Implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.</li> <li>2. Describe the importance of viewing and projections.</li> <li>3. Define the fundamentals of animation, virtual reality and its related technologies.</li> <li>4. Understand a typical graphics pipeline</li> </ol>
<b>Name of Course -</b>	<b>Solid State Physics Lab</b>
<b>Course Code-</b>	<b>PR/Phys-505</b>
<b>Course Outcomes :</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate an understanding of the crystal lattice and how the main lattice types are described</li> <li>2. Formulate the theory of Xray diffraction in the reciprocal lattice (k-space) formalism and apply this knowledge to generalize the formulation for matter waves</li> <li>3. Be able to perform structure determination of simple structures</li> <li>4. Learn that Dulong-Petit Law is valid only at high temperature.</li> <li>5. Learn that lattice specific heat of solid vary <math>T^3</math> at very low temperature.</li> </ol>
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
<b>Name of Course -</b>	<b>Quantum Mechanics</b>
<b>Course Code-</b>	<b>DSE/Phys-601</b>
<b>Course Outcomes :</b>	<ol style="list-style-type: none"> <li>1. Show an understanding of wave mechanics in three dimensions;</li> <li>2. describe the structure of the hydrogen atom and show an understanding of quantization of angular momentum;</li> <li>3. Apply techniques such as Fourier methods and ladder operators for selected problems in quantum mechanics;</li> <li>4. Use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanations;</li> </ol>
<b>Name of Course -</b>	<b>Quantum Chemistry, Spectroscopy &amp; Photochemistry</b>
<b>Course Code-</b>	<b>DSE/Chem-602</b>
<b>Outcomes of paper</b>	<p>Students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To impart the students concepts of the fundamentals of quantum mechanics</li> <li>2. To learn valence bond and molecular orbital theory.</li> <li>3. To summarise knowledge of the fundamentals of microwave, infra red, Raman, electronic and magnetic resonance spectroscopy, mass spectrometry.</li> <li>4. To understand basic concept of photochemistry.</li> <li>5. To apply applications of quantum mechanics in the study of structure of atoms, bonding in molecules and molecular spectroscopy.</li> </ol>
<b>Name of Course -</b>	<b>Numerical Method</b>

<b>Course Code-</b>	<b>DSE/Chem-603</b>
<b>Course Outcomes :</b>	<p>Students are able to</p> <ol style="list-style-type: none"> <li>1 Explain the nature and operations of Numerical Analysis, demonstrate familiarity with theories and concepts used in Numerical Analysis</li> <li>2 Distinguish between the steps required to carry out a piece of research on a topic in Numerical Analysis,</li> <li>3 Derive Numerical Methods</li> <li>4 Determine their convergence rate and performance, applicability of the methods on different test examples.</li> <li>5 Recognize and apply appropriate theories, principles and concepts relevant to Numerical Analysis</li> </ol>
<b>Name of Course -</b>	<b>Electrical circuits and Network Skills</b>
<b>Course Code-</b>	<b>SEC/Phys-604</b>
<b>Course Outcomes :</b>	<p>After completing this course student will:</p> <p>Learn the basic elements of complex analysis, including the important integral theorems.</p> <p>How to expand a function in a Fourier series, and under what conditions such an expansion is valid</p>
<b>Name of Course -</b>	<b>Quantum Mechanics Lab</b>
<b>Course Code-</b>	<b>PR/Phys-605</b>
<b>Course Outcomes :</b>	<p>To acquire working knowledge of the Quantum Mechanics postulate on the physical systems. Outcomes:</p> <ol style="list-style-type: none"> <li>1. Student identifies correctly the mathematical space that contains all possible states of a physical system, using Dirac's notation.</li> <li>2. Student computes the probability of finding the system in a given state given that it was prepared in another given state.</li> <li>3. Student forms a mental picture on the meaning of linear combination of states within Quantum Mechanics.</li> <li>4. Student distinguishes between the geometrical Euclidean space and the abstract space of Quantum Mechanics.</li> <li>5. Student uses geometrical language to describe the state of a physical system.</li> <li>6. Student recognizes the expansion of wave functions in terms of special functions as casting vectors as the linear combination of the basis elements.</li> </ol>

**B.Sc. (CBZ)**

<b>Jaipur National University, Jaipur</b>	
<b>School of life and basic sciences</b>	
<b>Name of Program</b>	<b>B.Sc.(Pass Course) -CBZ</b>
<b>Programe outcome</b>	
<p><b>1-</b>Students of the programme would have learnt all basic concepts in biological and chemical sciences which are very much the need of the hour as there is a dearth of good students in the area of basic sciences in the country. The students would be equipped to continue higher studies in any of the branches of Life Sciences and Chemical Sciences. The modules on tissue culture, pharmaceutical botany, analytical chemistry etc makes them fit to be employable in industries.</p> <p><b>2-</b>BSc programme aims to develop scientific temper, observational skills and analytical ability in students. The programme leads the students to higher learning in biological, chemical and applied sciences and contributes to the welfare of the society. It is designed to help the students to understand the importance and judicious use of technology for the sustainable growth of mankind in synergy with nature. It makes them appreciate the role of chemicals, chemical industries and their role in improving the quality of human life. It is tailored to make the students geared up for employment in the relevant industries, develop the culture of research and use these skills in ensuring food security of the nation. It also aims to create environmental awareness and sensitivity among students.</p> <p><b>3-</b>The B.Sc programme enabled the students to enhance their critical thinking, during the three year period of study and the curriculum stimulates the mental thoughts and assumptions of the students. This helps the students to take up practical work and compare the results with their assumptions, there by leading to accuracy and validity of the practical knowledge. This Analysis leads to take decisions at intellectual, organizational and personal from different perspectives of life. Most of the students are getting selected for placements.</p> <p><b>4-</b>All the UG programmes have English as compulsory language subjects. The motto behind is to improve the language skills like listening, speaking, reading and writing of all students in the class. This helped the students to develop better communication skills in English. THIS promotes culture, customs, moral and literary values in the students.</p>	
<b>Programe Specific outcome</b>	



- 1: The students gained the knowledge relating to the interrelations hips of different plant groups and their evolutionary tendencies
- 2: The students acquired the knowledge enough to differentiate animals plants and Micro organisms with their distinguishing characteristics.
- 3: Student of the gained the Knowledge and acquired capability of applying the Knowledge in the areas of like Agriculture, Plant Medicines, Horticulture and Tissue culture.
- 4: Learned about Ecological adaptations and the knowledge of inter relationships of the animal with other groups like plants and microbes.
- 5 : The students gained practical knowledge about the specimen observation and its classification depending on the observed characteristics,Determination of PH , Alkalinity, concentration of oxygen in the given water sample and also analysis of human blood regarding types of blood groups( A,B,AB,O),Estimation of Haemoglobin, total count of RBC ,WBC etc.
- 6: The students understood the applications of Zoology in Aquaculture, Vermiculture, Sericulture, Poultry Science and Fundamentals of Clinical Science and Immunology.
- 7: Understand the structural difference among solids, liquids , gases and solutions
- 8: Gained the Knowledge in electrical and thermal properties of d- block elements through Free Electron Theory, Valency Bond Theory and Band Theory
- 9: Analyze the structures of glucose, fructose and sucrose and their chemical properties
- 10: Use spectrophotometer to analyze known and unknown organic and natural compounds.

#### Course Outcomes

Semester/Year	I Semester /I Year
Name of Course -	Plant diversity
Outcomes of paper	<ol style="list-style-type: none"> <li>1.To illustrate the structure, pigmentation, food reserves and methods of reproduction of Algae.</li> <li>2.To summerized about the structure, pigmentation, food reserves and methods of reproduction of Fungi.</li> <li>3.To explain about the Economic importance of algae, Fungi and lichen.</li> <li>4.To differentiate some plant diseases with special reference to the causative agents, symptoms, etiology and control measures.</li> <li>5.To interpret the general characters and classification by K.R. Sporne, stelar evolution in Pteridophytes, heterospory and origin of seed habit.</li> <li>6.To determine the structure, life history and Economic importance of Gymnosperms.</li> <li>7. To explain the methods of fossilization and fossil plants.</li> </ol>
Name of Course -	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To understand the Basic structure of atom.</li> <li>2. To examine &amp; Associate polarization of a bond with electronegativity.</li> <li>3. To Understand nucleophile and electrophile groups and their properties.</li> <li>4. To recall different bond types of carbon and its hybrid orbitals.</li> <li>5. To differentiate between valence bond and molecular orbital approaches.</li> <li>6. To derive mechanism of a reaction.</li> <li>7. To Interpret the reactions and properties of halogen compounds.</li> <li>8. To Design reactions of aliphatic hydrocarbons.</li> <li>9. To develop alkane, alkene and alkynes using different methods.</li> </ol>
<b>Name of Course -</b>	<b>Animal Diversity</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall general taxonomic rules on animal classification.</li> <li>2. To summarize Protista upto phylum Echinodermata using examples.</li> <li>3. To organize various phyla with respect to taxonomic keys.</li> <li>4. To differentiate between vertebrates and invertebrates.</li> <li>5. To assess various pathogenic diseases caused by Nematodes.</li> </ol>
<b>Name of Course -</b>	<b>Environmental Science Environmental Studies</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To remember characterization and importance of biodiversity.</li> <li>2. To summarize the hotspots of biodiversity in India.</li> <li>3. To organize various food chains by considering examples.</li> <li>4. To compare various ecosystems- forest, grassland, desert, aquatic etc</li> <li>5. To prioritize the need of biodiversity conservation and sustainable development.</li> </ol>
<b>Semester/Year</b>	<b>II Semester /I Year</b>
<b>Name of Course -</b>	<b>Plant Ecology and Taxonomy</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To explain the types of classifications- artificial, Natural and phylogenetic.</li> <li>2. Gain knowledge about Botanical Survey of India (BSI).</li> <li>3. To explain the herbarium techniques.</li> <li>4. to compare the taxonomic evidences from molecular, numerical and chemicals.</li> <li>5. To illustrate the approaches to the study of Ecology (Autecology, Synecology and Genecology).</li> <li>6. to determine the population &amp; Community Ecology - concept of metapopulation.</li> </ol>
<b>Name of Course -</b>	<b>Chemical Energetics, Equilibrium &amp; Functional Organic Chemistry-I</b>
<b>Outcomes of paper</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To provide an insight into the thermodynamic and kinetic aspects of chemical reactions and phase equilibria.</li> <li>2. To understand thermodynamic derivation &amp; various thermodynamic laws.</li> <li>3. To Distinguish aliphatic and aromatic halogenated organic compounds.</li> <li>4. To explain Preparation methods for the halogenated organic compounds.</li> </ol>

	5. To illustrate reactions of halogenated organic compounds.
<b>Name of Course -</b>	<b>Comparative Anatomy and Developmental Biology</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall the conceptual knowledge of vertebrates.</li> <li>2. To understand their adaptations and associations in relation to their environment.</li> <li>3. To experiment with chick eggs and make permanent slides of various hours in the development of chick.</li> <li>4. To differentiate between various classes of vertebrates with respect to their anatomy.</li> </ol>
<b>Name of Course -</b>	<b>Professional Communication Skills</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To understand the process of communication and its effect on giving and receiving information.</li> <li>2. To learn about historical and theoretical developments in the field of communication.</li> <li>3. To apply effective communication skills in a variety of public and interpersonal settings.</li> <li>4. To develop analytical, research and organisational skills.</li> <li>5. To discover the impact of changing communication methods on society.</li> <li>6. Become aware of the numerous career opportunities within the field of communication.</li> </ol>
<b>Semester/Year</b>	<b>III Semester /II Year</b>
<b>Name of Course -</b>	<b>Plant Anatomy and Embryology</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To explain the structure, chemistry and functions of cellular organelles Meristems.</li> <li>2. To illustrate about double fertilization and their significance.</li> <li>3. To differentiate between the Structure and development of dicot and monocot embryos.</li> <li>4. To assess about the production of Synthetic seeds &amp; significance.</li> </ol>
<b>Name of Course -</b>	<b>Solutions, Phase Equilibrium, Conductance, Electrochemistry &amp; Functional Group Organic Chemistry-II</b>
<b>Outcomes of paper</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To Understand, the and differentiate between, voltaic/galvanic and, electrolytic electrochemical cells.</li> <li>2. To recall standard states used for <math>E^\circ</math> and <math>\Delta G^\circ</math> are defined for gases, solids, liquids and solutes.</li> <li>3. To Applies conversion of carboxylic acids to their derivatives on example reactions,</li> <li>4. To Illustrates reactions of carboxylic acid derivatives and preparation methods of carboxylic acid derivatives.</li> <li>5. To investigate different preparation methods for amines.</li> </ol>
<b>Name of Course -</b>	<b>Physiology and Biochemistry</b>

<b>Outcomes of paper</b>	1. To identify structure of a neuron and its propagation in myelinated and non-myelinated nerve fibres. 2. To explain transport of oxygen and carbon dioxide in human blood. 3. To build an understanding about the structure and function of endocrine glands. 4. To examine carbohydrate, protein, and lipid metabolism. 5. To assess enzyme kinetics and its regulation.
<b>Name of Course -</b>	<b>Medicinal Botany</b>
<b>Outcomes of paper</b>	1. To remember about history and relevance of herbal drugs in Indian system of medicine. 2. To explain the macroscopic and microscopic characters, chemical constituents, adulterants, therapeutical and pharmaceutical uses of medicinal plants. 3. To differentiate the techniques for drug evaluation (Chemical, Physical and Biological). 4. To determine the phytochemical investigations, standardization and quality control of herbal drugs. 5. To assess the techniques of medicinal gardening - Cultivation practices, marketing and utilization of selected medicinal plants.
<b>Semester/Year</b>	<b>IV Semester /II Year</b>
<b>Name of Course -</b>	<b>Plant Physiology and Metabolism</b>
<b>Outcomes of paper</b>	1. To identify the requirement of mineral nutrition for plant growth. 2. To differentiate between the process of Photosynthesis, Respiration and Nitrogen metabolism. 3. To examine Sensory photobiology. 4. To utilize the knowledge about Plant Growth hormones (Auxins, Gibberellins, Cytokinins, Ethylene).
<b>Name of Course -</b>	<b>Transition Metal &amp; Coordination Chemistry, States of Matter &amp; Chemical Kinetics</b>
<b>Outcomes of paper</b>	On satisfying the requirements of this course, students will have the knowledge and skills to: 1. To understand the general characteristics of the d block elements 2. To summarise knowledge of the different theories to explain the bonding in coordination compounds. 3. To distinguish understanding of the chemistry of organometallic compounds, metal carbonyls and metal clusters. 4. To learn the different theories of reaction rates and factors affecting reaction rates • 5. To differentiate types of catalysis and their mechanisms
<b>Name of Course -</b>	<b>Genetics &amp; Evolutionary Biology</b>

<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall the Structural and functional aspects of basic unit of life i.e. cell concepts</li> <li>2. To understand Mendelian and non- Mendelian inheritance.</li> <li>3. To apply laws of inheritance by considering various examples.</li> <li>4. To compare the characters of stone age man with modern man.</li> <li>5. To assess the concept behind genetic disorder, gene mutations, inborn errors of metabolism etc.</li> </ol>
<b>Name of Course -</b>	<b>Pharmaceutical Chemistry</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall knowledge of the chemistry relevant to the study of pharmaceutical drugs.</li> <li>2. To understand an overview of the structure of the activity relationships of a variety of drug classes.</li> <li>3. To introduce the processes of drug discovery</li> <li>4. To analyse the methodologies of rational drug design.</li> <li>5. To determine methods of synthesis of pharmaceutical drugs.</li> </ol>
<b>Semester/Year</b>	<b>V Semester /III Year</b>
<b>Name of Course -</b>	<b>Cell and Molecular Biology</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall knowledge base in genetics, cell and molecular biology, and anatomy and physiology.</li> <li>2. To extend knowledge of common and advanced laboratory practices in cell and molecular biology.</li> <li>3. To organize and utilize clear and concise communication of scientific data.</li> <li>4. To examine and review scientific literature in the areas of biomedical sciences.</li> <li>5. To determine critique and professionally present primary literature articles in the general biomedical sciences field</li> </ol>
<b>Name of Course -</b>	<b>Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy</b>
<b>Outcomes of paper</b>	<p>On satisfying the requirements of this course, students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To understand the various spectroscopic methods used for the characterisation of organic compounds. •</li> <li>2. To analyse the structure of compounds spectral data.</li> <li>3. To interpret basic principle of different techniques employed in molecular spectroscopy •</li> <li>4. To explain origin, instrumentation and important applications of Microwave, IR, Raman, UV, techniques</li> <li>5. To recall the functions and applications of bioorganic compounds •</li> <li>6. To understand about nuclear Chemistry and its applications</li> </ol>
<b>Name of Course -</b>	<b>Immunology</b>

<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To identify various immune responses.</li> <li>2. To explain immune dysfunction and its consequences.</li> <li>3. To organize infectious diseases according to their mode of action and signalling.</li> <li>4. To distinguish between various cells of the immune system, interactions of antigens, antibodies, complement proteins and other immune components.</li> <li>5. To determine the role of vaccines and host defense mechanisms and assess immune mechanisms in disease control.</li> </ol>
<b>Name of Course -</b>	<b>Public Health &amp; Hygiene</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To recall the basic knowledge about various food components.</li> <li>2. Students will be able to identify current public health problems nationally and globally.</li> <li>3. To build awareness about fatal diseases nationally and globally.</li> <li>4. They will be able to analyze case studies on national and global health issues (e.g. food safety, water safety, vaccination, exercise and obesity, exposure to toxins).</li> <li>5. Students will assess research papers and make oral presentations in which they will describe a current public health issue and prioritize health awareness in the rural sector.</li> </ol>
<b>Semester/Year</b>	<b>VI Semester /III Year</b>
<b>Name of Course -</b>	<b>Economic Botany and Biotechnology</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To identify the economic products with special reference to the Botanical name, family, morphology of useful part and the uses. Learn the micro and megasporogenesis.</li> <li>2. To differentiate between the morphogenesis and organogenesis in plants.</li> <li>3. To compare the specific and non-specific methods of gene transfer.</li> <li>4. To examine Recombinant DNA technology.</li> <li>5. To prioritize the usage of Applications of Biotechnology in Plant, Animal and Human welfare. Biotechnology and IPR, Biosafety, Biopiracy, Bioterrorism and Bioethics.</li> </ol>
<b>Name of Course -</b>	<b>Quantum Chemistry, Spectroscopy &amp; Photochemistry</b>
<b>Outcomes of paper</b>	<p>Students will have the knowledge and skills to:</p> <ol style="list-style-type: none"> <li>1. To impart the students concepts of the fundamentals of quantum mechanics</li> <li>2. To learn valence bond and molecular orbital theory.</li> <li>3. To summarise knowledge of the fundamentals of microwave, infra red, Raman, electronic and magnetic resonance spectroscopy, mass spectrometry.</li> <li>4. To understand basic concept of photochemistry.</li> <li>5. To apply applications of quantum mechanics in the study of structure of atoms, bonding in molecules and molecular spectroscopy.</li> </ol>
<b>Name of Course -</b>	<b>Applied Zoology</b>

<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1.To identify various diversified fish cultures in and around the world.</li> <li>2.To interpret the concept of fisheries, fishing tools and site selection.</li> <li>3. To build pearl culture system.</li> <li>4. To differentiate between various aqua culture systems.</li> <li>5.. To assess and understand the pathology of diseases caused by various micro-organisms such as bacteria, virus and parasites.</li> <li>6. To propose various process involved in silk production.</li> </ol>
<b>Name of Course -</b>	<b>Intellectual Property Rights</b>
<b>Outcomes of paper</b>	<ol style="list-style-type: none"> <li>1. To acquaint the students with basics of intellectual property rights with special reference to Indian laws and its practices.</li> <li>2. To compare and contrast the different forms of of intellectual property protection in terms of their key differences and similarities.</li> <li>3. To provide an overview of the statutory, procedural and case law underlining these processes and their interplay with litigation.</li> <li>4. To encourage and protect innovation in the form of intellectual property rights.</li> </ol>

# **M.Sc. Chemistry**



### **Programme Outcomes of the M.Sc. Chemistry programme**

- The Programme enable the students To understand basic facts and concepts in Chemistry while retaining the exciting aspects of Chemistry so as to develop interest in the study of chemistry as a discipline.
- To develop the ability to apply the principles of Chemistry.
- To appreciate the achievements in Chemistry and to know the role of Chemistry in nature and in society.
- To develop problem solving skills.
- To be familiarised with the emerging areas of Chemistry and their applications in various spheres of Chemical sciences and to apprise the students of its relevance in future studies.
- To develop skills in the proper handling of apparatus and chemicals.
- To be exposed to the different processes used in industries and their applications.

### **Programme Specific Outcomes of the M.Sc. Chemistry programme**

- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries.
- Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
- Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.
- Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
- Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

- Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.
- Students will be able to function as a member of an interdisciplinary problem solving team.

## Course Outcomes-M.Sc. Chemistry

### **MCHT-101 –Inorganic Chemistry -I**

#### **MCHT-201 – Inorganic Chemistry-II**

- To know and understand the different properties and structures for organometallic compounds from different parts of the periodic table and their trends.
- To know principal synthetic routes to various classes of organometallic compounds.
- To know and understand the reactivity of organometallic compounds including their application in synthesis.
- To know methods and examples for the study of organometallic compounds in the gas phase, solution phase and solid state.
- To know common ligand classes in organometallic chemistry, their effects on organometallic compounds, and influence on reactivity and catalysis.
- To know and understand key mechanistic steps in reactions involving organometallic compounds.

### **MCHT-102- Organic Chemistry-I**

#### **MCHT-202-Organic Chemistry-II**

- Predict the major and minor products of a variety of organic reactions with appropriate stereochemistry and regiochemistry.
- Understand and reproduce accepted mechanisms of organic reactions including all intermediates, arrows, charges, and resonance structures.
- Name or draw the structure of an organic molecule using substitutive and/or functional class IUPAC nomenclature.
- Devise reasonable high-yield synthesis of a target molecule from given organic starting materials.
- Understand physical properties of organic molecules.
- Perform a laboratory experiment using conventional equipment, instrumentation, and techniques and understand the principles well enough to interpret the data collected.
- Emphasis on aromatic and aliphatic substitution reactions, elimination reactions, and the chemistry of carbonyl compounds; application of spectroscopic methods to organic chemistry.

- Students will transition from memorization to understanding by programmed exposure to integrated problems involving mechanism, multi-step synthetic planning, and organic spectroscopy.

### **MCHT-103 Physical Chemistry-I**

### **MCHT-203 Physical Chemistry-II**

- Introduction to the postulates and general principles of quantum mechanics. Approximations based on variational method and time independent perturbation theory. Application to harmonic oscillator, rigid rotor, one-electron and many-electron atoms, and homo-and hetero-nuclear diatomic molecules
- Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics;
- Understand rate of reaction and factors affecting it.
- Derive integrated rate expressions for zero order, first order, second order and third order reaction.
- Understand theories of reaction kinetics and differentiate them.
- Apply the principles of statistical mechanics to selected problems;
- Apply techniques from statistical mechanics to a range of situations;
- Use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanations.

### **MCHTO-301 Spectroscopy**

- Modern theoretical and experimental methods used to study problems of molecular structure and bonding; emphasis on spectroscopic techniques.
- The student performs rigorous characterization of their compound using 1- and 2-dimensional NMR techniques ( $^1\text{H}$  and  $^{13}\text{C}$ ), mass spectrometry, infrared spectroscopy.
- In order to study the spectroscopy to understand the important role of nuclear magnetic resonance spectroscopy, Mass , IR, Electron, AAS spectroscopy in the study of the structures of organic compounds.

- To be able to assign structures to simple molecules on the basis of combined data of spectra.
- After study of course students have firm foundations in the fundamentals and application of current chemical and scientific theories.
- Students are able to identify and solve chemical problems and explore new areas of research.
- Students are skilled in problemsolving, critical thinking and analytical reasoning.
- After completion of course students should have the ability to identify organic compounds by analysis and interpretation of spectral data.
- Students are skilled to perform the most commonly used NMR, Mass and electron Spectroscopy experiments and to interpret and document their results.

### **MCHTO-302 Instrumentation**

Upon successful completion of the course, students would be :

- Able to understand the important role of analytical principles to carry out an experiment in laboratory.
- Able to separate and identify the components (inorganic or organic) present in an unknown sample by polarographic, chromatographic, thermal ,turbidimetric and nephelometric techniques on the basis of combined data .
- After study of course students have firm foundations in the fundamentals and application of current instrumentation techniques for the identification of compounds.
- Students are able to identify and solve experimental problems and explore new areas of research.
- After completion of course students should have the ability to synthesize, separate and identify compounds with the help of analytical principles and results of instrumentation techniques
- Students are skilled to perform the most commonly used Paper, Thin Layer and column chromatography experiments and to interpret their results.

### **MCHTO-303 ORGANIC SYNTHESIS-I**

### **MCHTO-402 ORGANIC SYNTHESIS-II**

- It provides an introduction to the synthesis of complex organic molecules.
- Transformations for C-X and C-C bond-formation, functional group reactivity, chemo selectivity, regioselectivity.
- The strategy of multistep synthesis will be the core topics that are covered. Concepts include strategy/retro synthesis.
- Recognize the basic practical skills for the synthesis and analysis of organic compounds.

### **MCHTO-304 HETEROCYCLIC CHEMISTRY AND PHOTOCHEMISTRY**

- Heterocyclic compounds are very interesting due to their distinct structure and the availability of this kind of heterocyclic structures in medicinal drugs. So the technique of synthesis of heterocyclic compounds is important in the synthesis of different drugs. This course gives the quantitative ideas about the synthesis, properties and uses of such heterocyclic compounds like pyrrole, pyridine, quinoline, thiophene, furan etc
- Photo means light. Exposure of light on different chemicals produce colour of chemicals and also can carry out chemical conversion. This course discussed the theoretical basis of photochemistry as well as different types of spectroscopy.

### **MCHTC401-GREEN CHEMISTRY**

- Students learn the basic principles of green and sustainable chemistry. They must be able to do and understand stoichiometric calculations and relate them to green process metrics. They learn alternative solvent media and energy sources for chemical processes. They learn about renewable feedstocks for the chemical industry, present and under development. They review the principles of catalysis, photochemistry and other interesting processes from the viewpoint of green chemistry. They perform laboratory experiments in which they apply some of the concepts previously learnt (stoichiometry, green metrics ...) and they put into practice some of the principles of green chemistry

### **MCHTO-403 CHEMISTRY OF NATURAL PRODUCTS**

- Alkaloids and terpenes are two very important class of organic chemicals available in different kind of drugs and perfumery chemicals like ephedrine, conium, citral, jasmone etc. The contents of this course deals with synthesis and structural determination of these class of chemicals. Few reactions of them are also discussed here.

### **MCHTO-404 BIO ORGANIC CHEMISTRY**

- A central theme of this course is to recognize the chemical building blocks in nature that enable student to link structures to biosynthetic hypotheses.
- This class provides an introduction to the chemical principles behind the design and production of pharmaceutical agents. Focus is on explaining and predicting how small organic molecules bind to biological receptors, inhibit enzymes and get metabolized.
- This course draws on and expands upon material covered in introductory organic chemistry such as proposing reasonable arrow-pushing mechanisms for organic reactions and predicting the reactivity of organic molecules with particular reagents.

# **M.Sc. Mathematics**



## **Name of Program: M.Sc.**

### **Program Outcomes:**

- Post-Graduates of the course will have strong background in the interface of applied & pure mathematics and be able to use these tools in industry and/or institutes wherever necessary.
- Graduates will identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of natural sciences and engineering sciences.
- The student should be able to demonstrate knowledge and understanding of the mathematics and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- Post-Graduates of the course will have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- Post-Graduates of the course will function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings in industries
- Post-Graduates of the course will communicate effectively on complex engineering activities with the engineering community and with the society at large.
- Post-Graduates of the course will apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering and technology practice.

## **Name of the Specific Program: M.Sc. Mathematics**

### **Program Specific Outcomes:**

- The program will prepare student to be competitive for the entry level mathematician positions in private and public sector and also prepare students for advanced degree in mathematical science and technology program.
- Provide a systematic understanding of the concepts and theories of mathematics and their application in the real world – to an advanced level, and enhance career prospects in a huge array of fields..
- The program will prepare student to apply ethical reasoning within the discipline of mathematical science.
- The program will prepare student to effectively communicate discipline-specific information in written and oral forms to scientific audiences as well as effectively interact within scientific teams.
- Students will develop theoretical and practical knowledge. It will help them to understand the basic concept of industries related to mathematics.
- Students will develop and evaluate quality of new research in mathematics using objective and subjective methodologies.
- Students will understand the basic concepts as well as future trends in mathematics.

## **Course Outcomes:**

**Semester:** First

**Year:** First

**Paper Title:** Calculus of variation and special functions    **Paper Code:** MMAT101T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Understand what functionals are, and have some appreciation of their applications
- Apply the formula that determines stationary paths of a functional to deduce the differential equations for stationary paths in simple cases
- Design the Euler-Lagrange equation or its first integral to find differential equations for stationary paths
- Develop differential equations for stationary paths, subject to boundary conditions, in straightforward cases

**Semester:** First

**Year:** First

**Paper Title:** Differential Equations

**Paper Code:** MMAT102T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember the basic terms of differential equations.
- Students will be able to explain and differentiate the concept of differential equation.
- Expresses and utilize the existence-uniqueness theorem of differential equations.
- Solve and build simple initial and boundary value problems by Laplace's equation in two dimensions, Diffusion equation in one dimension.
- Apply various Solutions near a regular singular point (Method of Forbenius) for different cases.
- Analyze the changes Radius of convergence.
- Determine the various Method of Separation of variables-Application to the solution of wave equation.
- Judge the properties of total differential equations.

**Semester:** First

**Year:** First

**Paper Title:** Real Analysis

**Paper Code:** MMAT103T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember the fundamental properties of the real numbers that lead to the formal development of real analysis.
- Expresses and utilize the rigorous arguments developing the theory underpinning real analysis.
- Determine an understanding of limits and how they are used in sequences, series, differentiation and integration.

**Semester:** First

**Year:** First

**Paper Title:** Industrial Mathematics

**Paper Code:** MMAT104T

**Course Outcome**

Upon successful completion of the course, students would be able:

- **Formulate** and solve mathematical model (linear programming problem) for a physical situations like production, distribution of goods and economics.
- **Apply** the concept of simplex method and its extensions to dual simplex algorithm.
- **Solve** the problem of transporting the products from origins to destinations with least transportation cost.
- To acquire skills in handling situations involving more than one random variable and functions of random variables.
- To apply basic probability techniques and models to analyze the performance of computer systems, and, in particular, of networks and queues.
- To have a well – founded knowledge of standard distributions which can describe real life phenomena.
- To understand and characterize phenomena which evolve with respect to time in a probabilistic manner.
- To expose the basic characteristic features of a queuing system and acquire skills in analyzing queuing models.
- To use discrete time Markov chains to model computer systems.
- To learn how to analyze a network of queues with Poisson external arrivals, exponential service requirements and independent routing.

**Semester:** First

**Year:** First

**Paper Title:** C Programming (Theory)

**Paper Code:** MMAT105T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember the flowchart and design of an algorithm for a given problem and to develop IC programs using operators.
- Develop conditional and iterative statements to write C programs.
- Exercise user defined functions to solve real time problems.
- Determine C programs that use Pointers to access arrays, strings and functions

**Semester:** First

**Year:** First

**Paper Title:** C' Programming (Practical)

**Paper Code:** MMAT106P

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember flowchart and algorithm to the given problem.
- Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables.
- Determine C programs using operators.
- Exercise conditional and iterative statements to Write C programs.

**Semester:** First

**Year:** First

**Paper Title:** Communication & Soft Skills

**Paper Code:** MMAT107P

**Course Outcome**

Upon successful completion of the course, students would be able:

- Understand and develop Reading, Writing, Listening and Speaking Skills which will help them to grow in their professional career after the degree.
- Expresses and utilize Good Communication skills, Rich Vocabulary, Reading Skills, Personality development are some of the major outcomes of this Lab.

**Semester:** First

**Year:** First

**Paper Title:** Seminar

**Paper Code:** MMAT108P

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the topic using in the seminar.
- Understand the ability to think critically, research, and reason. (Ethical Leadership).
- Utilize various methods engage in activities directly benefitting the broad community
- Compare the effectiveness of different methods of particular topic.
- Determine understanding of the common body of knowledge in mathematics.
- Generate the ability to apply analytical and theoretical skills to model and solve the problems.

**Semester:** Second

**Year :** First

**Paper Title:** Numerical and Statistical Techniques **Paper Code:** MMAT- 201T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall theoretical knowledge for solving simple problems.
- Understand the ability to test and evaluate the methods to get numerical solution to ODE.
- Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems

**Semester:** Second

**Year :** First

**Paper Title:** Abstract Algebra

**Paper Code:** MMAT- 202T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Students will remember working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.
- Students will be able to explain different types of subgroups such as normal subgroups, cyclic subgroups and understand the structure and characteristics of these subgroups.
- Students will be introduced to and have knowledge of many mathematical concepts studied in abstract mathematics such as permutation groups, factor groups and Abelian groups.
- Students build and understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.

- Students will generate confidence in proving theorems. A blended teaching method will be used requiring the students to prove theorems give the student the experience, knowledge, and confidence to move forward in the study of mathematics.

**Semester:** Second

**Year :** First

**Paper Title:** **Mathematical Programming**

**Paper Code:** MMAT- 203T

### **Course Outcome**

- Build a mathematical programming model of a real-life situation
- Understand the basic theory and methods for linear programming problems
- Understand the basic properties of the interior point method and how to use it to solve convex optimization problems
- Apply branch and bound and/or cutting plane algorithms to solve integer programming problems
- Use a computer package to solve a mathematical programming problem that arises in practice

**Semester:** Second

**Year :** First

**Paper Title:** Continuum Mechanics

**Paper Code:** MMAT- 204T

### **Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the motion and deformation of body.
- Understand the principles of various Lagrangian and Eulerian description of deformation of flow.
- Utilize various methods of linear strain tensors, principal axes, for theory of linear strain successfully.
- Compare the effectiveness of different methods of Linear rotation tensor with rotation vector.
- Determine the method to calculate Transformation law of stress tensor.
- Generate the habit of calculation of Rate of cubical dilation.

**Semester:** Second

**Year :** First

**Paper Title:** Computer Application (Theory) **Paper Code:** MMAT- 205T

### **Course Outcome**

Upon successful completion of the course, students would be able:

- Remember flowchart and algorithm to the given problem.
- Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables.
- Determine C programs using operators.
- Exercise conditional and iterative statements to Write C programs.

**Semester:** Second

**Year :** First

**Paper Title:** Optimization Techniques Simulation Lab **Paper Code:** MMAT- 206P

### **Course Outcome**

Upon successful completion of the course, students would be able:

- Build a mathematical programming model of a real-life situation
- Understand the basic theory and methods for linear programming problems
- Understand the basic properties of the interior point method and how to use it to solve convex optimization problems

- Apply branch and bound and/or cutting plane algorithms to solve integer programming problems
- Use a computer package to solve a mathematical programming problem that arises in practice

**Semester: Second**

**Year : First**

**Paper Title: Numerical & Statistical Techniques Lab Paper Code: MMAT- 207P**

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall theoretical knowledge for solving simple problems.
- Understand the ability to test and evaluate the methods to get numerical solution to ODE.
- Utilize the techniques of developing discrete & continuous probability distributions and its applications apply the knowledge in solving Problems

**Semester: Second**

**Year : First**

**Paper Title: Computer Application (Practical) Paper Code: MMAT- 208P**

**Course Outcome**

Upon successful completion of the course, students would be able:

- Remember flowchart and algorithm to the given problem.
- Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables.
- Determine C programs using operators.
- Exercise conditional and iterative statements to Write C programs.

**Semester: Second**

**Year : First**

**Paper Title: Seminar**

**Paper Code: MMAT- 209P**

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the topic using in the seminar.
- Understand the ability to think critically, research, and reason. (Ethical Leadership).
- Utilize various methods engage in activities directly benefitting the broad community
- Compare the effectiveness of different methods of particular topic.
- Determine understanding of the common body of knowledge in mathematics.
- Generate the ability to apply analytical and theoretical skills to model and solve the problems.

**Semester: Third**

**Year: Second**

**Paper Title: Linear Algebra Paper Code: MMAT- 301 T**

**Course Outcome**

Upon successful completion of the course, students would be able:

- On successful completion of this course unit students will be able to:
- Solve systems of linear equations by using Gaussian elimination to reduce the augmented matrix to row echelon form or to reduced row echelon form;
- Understand the basic ideas of vector algebra: linear dependence and independence and spanning

**Semester:** Third

**Year:** Second

**Paper Title:** Combinatorics and Graph Theory **Paper Code:** MMAT- 302 T

### **Course Outcome**

Upon successful completion of the course, students would be able:

- Explain basic concepts in combinatorial graph theory.
- Define how graphs serve as models for many standard problems.
- Discuss the concept of graph, tree, Euler graph, cut set and Combinatorics.
- See the applications of graphs in science, business and industry

**Semester:** Third

**Year:** Second

**Paper Title:** Integral Transforms **Paper Code:** MMAT- 303 T

### **Course Outcome**

Upon successful completion of the course, students would be able:

- Remember the basic terms of Integral Transforms.
- Students will be able to equip with the methods of finding Laplace transform and Fourier Transforms of different functions.
- Expresses and utilize with the methods of solving differential equations, partial differential equations, IVP and BVP using Laplace transforms and Fourier transforms..
- Solve and build simple initial and boundary value problems by Laplace's equation in two dimensions, Diffusion equation in one dimension.
- Apply various Solutions to integral transform.
- Analyze the changes in different types of integral transform.
- Determine to use Fourier transform in communication theory and signal analysis, image processing and filters, data processing and analysis, solving partial differential equations for problems on gravity.
- Judge the properties include in integral transform.

**Semester:** Third

**Year:** Second

**Paper Title:** Differential Geometry **Paper Code:** MMAT- 304 T

### **Course Outcome**

Upon successful completion of the course, students would be able:

- The student will be able to compute quantities of geometric interest such as curvature, as well as develop a facility to compute in various specialized systems, such as semigeodesic coordinates or ones representing asymptotic lines or principal curvatures.
- The student will also be introduced to the method of the moving frame and overdetermined systems of differential equations as they arise in surface theory.
- Students will start being able to develop arguments in the geometric description of curves and surfaces in order to establish basic properties of geodesics, parallel transport, evolutes, minimal surfaces and consequences of the Poincaré index theory

**Semester:** Third

**Year:** Second

**Paper Title:** Advance Differential Equations **Paper Code:** MMAT-305T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the basics of linear partial differential equation.
- Understand the Eigen values and eigen functions with Sturm-Liouville boundary value problems.
- Apply the properties of Green's function for Inhomogeneous boundary conditions.
- Investigate differ Cauchy's problem of first and second order partial differential equation.
- Judge the PDEs with constant coefficients.
- Design Dirac delta function for partial differential equation of second order.

**Semester:** Third

**Year:** Second

**Paper Title:** Viscous Fluid Dynamics **Paper Code:** MMAT- 306 T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Develop an appreciation for the properties of Newtonian fluids, study analytical solutions to variety of simplified problems,
- Understand the dynamics of fluid flows and the governing non-dimensional parameters,
- Apply concepts of mass, momentum and energy conservation to flows,
- Grasp the basic ideas of turbulence..

**Semester:** Third

**Year:** Second

**Paper Title:** Seminar

**Paper Code:** MMAT- 307P

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the topic using in the seminar.
- Understand the ability to think critically, research, and reason. (Ethical Leadership).
- Utilize various methods engage in activities directly benefitting the broad community
- Compare the effectiveness of different methods of particular topic.
- Determine understanding of the common body of knowledge in mathematics.
- Generate the ability to apply analytical and theoretical skills to model and solve the problems.

**Semester:** Fourth

**Year:** Second

**Paper Title:** Functional Analysis **Paper Code:** MMAT- 401T

**Course Outcome**

Upon successful completion of the course, students would be able:

- Recall the research, inquiry and analytical thinking abilities of the students.
- Determine the understanding of use of contractions of Banach spaces via Brouwers and Schauders fixed point theorems.



**Semester:** Fourth  
**Paper Title:** Integral Equations  
**Course Outcome**

**Year:** Second  
**Paper Code:** MMAT- 402T

Upon successful completion of the course, students would be able:

- Remember the different kinds of kernels and techniques for solving each Integral Equations .
- Understand the Volterra integral equations of second kind with convolution type kernels.
- Apply various methods for Fredholm and Volterra integral equations of second kind by methods of successive substitutions.
- Analyze the Integral equations with symmetric kernels.
- Determine the various initial and boundary value problems to an integral equation.
- Judge the properties of different general Fredholm integral equations of second kind with separable kernels.

**Semester:** Fourth  
**Paper Title:** Complex Analysis **Paper Code:** MMAT- 403T  
**Course Outcome**

**Year:** Second

Upon successful completion of the course, students would be able:

- Explain the concepts and language of differential geometry and its role in modern mathematics
- Analyse and solve complex problems using appropriate techniques from differential geometry
- Apply problem-solving with differential geometry to diverse situations in physics, engineering or other mathematical contexts
- Apply differential geometry techniques to specific research problems in mathematics or other fields

**Semester:** Fourth  
**Paper Title:** Topology and Measure Theory **Paper Code:** MMAT- 404T  
**Course Outcome**

**Year:** Second

Upon successful completion of the course, students would be able:

- Explain the concepts of Basic notions of metric and topological spaces.
- Analyse the methods and techniques of proving basic theorems on topological spaces and continuous mappings.
- Determine the Equivalent methods of introducing topology in a set.

**Semester:** Fourth  
**Paper Title:** Number Theory **Paper Code:** MMAT- 405T  
**Course Outcome**

**Year:** Second

Upon successful completion of the course, students would be able:

- A rigorous development of Number Theory using axioms, definitions, examples, theorems and their proofs.
- Apply different methods of proof to verify mathematical assertions, including proof by induction, by contra positive and by contradiction.

- Solve systems of Diophantine equations using the Chinese Remainder Theorem & the Euclidean algorithm  
analyses hypotheses and conclusions of mathematical statements

**Semester:** Fourth

**Year:** Second

**Paper Title:** Dissertation **Paper Code:** MMAT- 406P

**Course Outcome**

Upon successful completion of the course, students would be able:

- Identify the major piece of guided independent research on a topic agreed between the student and their supervisor.
- Interpret the literature review and an appropriate form of critical analysis of sources of primary and /or secondary data; it may involve field and/or laboratory work
- In dissertation we apply evidence of wide reading and understanding, of critical analysis and/or appropriate use of advanced research techniques Compare the effectiveness of different methods of particular topic.
- Students determine the knowledge and skills to: plan, and engage in, an independent and sustained critical investigation and evaluation of a chosen research topic relevant to environment and society
- Generate the ability to apply analytical and theoretical skills to model and solve the problems.

# **M.Sc. Physics**

1.	<b>NAME OF THE PROGRAMME</b>	<b>Master of Science (M. Sc.)</b>
2.	<b>PROGRAMME CODE</b>	MPH
3.	<b>PROGRAMME OUTCOME</b>	<p>The Master of Science programme provides the candidate with knowledge, general competence, and analytical skills on an advanced level, needed in industry, consultancy, education, research, or public administration.</p> <p>The work with the master thesis gives special expertise within one of the research areas represented at the respective departments: Physics, Chemistry, Mathematics and life science education and dissemination.</p>
4.	<b>NAME OF THE SPECIFIC PROGRAMME</b>	M.Sc.(Physics)
5.	<b>PROGRAMME SPECIFIC OUTCOME</b>	<p>Students will have understanding of</p> <ol style="list-style-type: none"> <li>1. Fundamentals and advancements in nuclear physics, Quantum Physics, and their applications in the area of nuclear reactors, accelerators, and medical.</li> <li>2. Fundamentals and advancements in electronics, microprocessors, and their applications in electronic devices, microwave and optical fiber communications.</li> <li>3. Fundamentals and electromagnetic properties of materials, their characterization techniques, as well as various advancements.</li> </ol>

## Course outcomes

**Semester/Year: I/I**

**Name of the Course: Solid State Physics (MPHT-101)**

**Course outcomes:**

After completion the course, students will be able:

- Understand basic crystal structures, models for electrons and lattice vibrations for describing the physics of crystalline materials
- Develop an understanding of relation between band structure and the electrical properties of a material.
- Formulate the motion of electrons in constant and periodic potential.

**Semester/Year: I/I**

**Name of the Course: Classical Mechanics (MPHT-102)**

**Course Outcomes:** After completion the course, students will be able:

- To use Newton's laws of motion to solve advanced problems involving the dynamic motion of classical mechanical systems.
- To apply the Variational principles to real physical problems.
- To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.
- Describe and understand the motion of a mechanical system using Lagrange-Hamilton formalism.

**Semester/Year: I/I**

**Name of the Course: Quantum Mechanics-I (MPHT-103)**

**Course Outcomes:** After completion the course:

- The students will be able to formulate and solve problems in quantum mechanics using Dirac representation.
- The students will be able to grasp the concepts of spin and angular momentum, as well as their quantization and addition rules.
- The students will be able to understand the identical particles and their representation according to Pauli's principle.

**Semester/Year: I/I**

**Name of the Course: Electronics (MPHT-104)**

**Course Outcomes:**

Upon successful completion of this course module students possess advanced knowledge, skill and competences in the subject of Analog Electronics that enable them to:

- The students will be able to understand the working, operation, properties, mode of operations of Operational amplifier.
- After completion of the subject the students will be able to draw different characteristics of op-amp and compare their theoretical knowledge with lab experiment's results.
- The students will have knowledge of different number system and different minimization of logic function used for implementation in different digital circuit

**Semester/Year: I/I**

**Name of the Course: General Physics Laboratory (MPHP-105)**

**Course Outcomes:**

After completion of GPL , student are able to :

- Understanding the physical phenomenon i.e optical, electrical, thermal etc. used in different experiments
- During laboratory exercise they get sufficient training to carrying out precise measurements and handling sensitive equipment.

**Semester/Year: I/I**

**Name of the Course: Electronics Laboratory-I (MPHP-106)**

**Course Outcomes:**

After completion of the course, students are able to:

- Verify electronic circuit theory by laboratory exercises.
- Verify characteristic of electronic devices.
- During laboratory student will get sufficient training to carrying out precise measurements and handling sensitive equipment

**Semester/Year: II/I**

**Name of the Course: Lasers and Holography (MPHT-201)**

**Course Outcomes:**

On completion of this course content the student should have acquired the following reasonable level of knowledge/competence:

- They know about the laser technology which is used recently.
- They know about the application of laser in research and industry.
- They know about the technology of hologram which is used now days like bar code of any item etc.

**Semester/Year: II/I**

**Name of the Course: Advanced Quantum Mechanics (MPHT-202)**

**Course Outcomes**

- The students will be able to grasp the concepts of spin arising naturally from the Dirac equation.
- The students will be familiar with various approximation methods applied to atomic, nuclear and solid-state physics.
- The students will also be able to understand the concept of scattering and their physical uses.

**Semester/Year: II/I**

**Name of the Course: Atomic and Molecular Physics (MPHT-203)**

**Course Outcomes:**

- The students will have an understanding of quantum behavior of atoms in external electric and magnetic fields.
- The students will have an also familiar with the working of Raman and IR spectroscopy.

- The student will be encouraged in the research field of the respective areas.

**Semester/Year: II/I**

**Name of the Course: Electrodynamics (MPHT-204)**

**Course Outcomes:**

On completion of this course content the student should have acquired the following reasonable level of knowledge/competence:

- Understanding and using (skill of solving problems, calculating) electrostatics and magnetostatics, in vacuum, in the presence of conductors and linear dielectrics by using methods of electrodynamics.
- Formulate potential problems within electrostatics, magnetostatics and stationary current distributions in linear, isotropic media, and also solve such problems in simple geometries using separation of variables and the method of images.
- Define and derive expressions for the energy both for the electrostatic and magnetostatic fields, and derive Poynting's theorem from Maxwell's equations and interpret the terms in the theorem physically.
- Describe and make calculations of plane electromagnetic waves in homogeneous media, including reflection of such waves in plane boundaries between homogeneous media.
- Interpret the deeper meaning of the Maxwellian field equations and account for their symmetry and transformation properties, domain of validity, and limitations.

**Semester/Year: II/I**

**Name of the Course: Laboratory Project-I (MPHP-205)**

**Course Outcome:**

After completion of the Laboratory project II subject the students will be able to Learn about

- the concept of physical phenomenon used in different branch of Physics i.e. electronic, quantum, atomic and condensed matter physics
- Motivate for construct tool for material characterization

**Semester/Year: II/I**

**Name of the Course: Electronics Laboratory-II (MPHP-206)**

**Course Outcomes :**

After completion of the course, student are able to :

- Understand the design and functional performance of electronic circuits using various semiconductor devices.
- Understand the functional properties and characteristics of semiconductor devices in analog & digital circuits using analog and digital signals.
- During these laboratories they will get sufficient training to carrying out precise measurements and handling sensitive equipment

**Semester/Year: III/II**

**Name of the Course: Nuclear and Particle Physics (MPHT-301)**

**Course Outcomes :**

- The students will have an understanding of the structure of the nucleus, radioactive decay, nuclear reactions and the interaction of nuclear radiation with matter.
- Develop an insight into the building block of matter along with the fundamental interactions of nature.

**Semester/Year: III/II****Name of the Course: Mathematical Methods in Physics (MPHT-302)****Course Outcomes:**

On completion of this course content the student should have acquired the following reasonable level of knowledge/competence:

- Understanding Fourier Series, Fourier and Laplace Transformation , complex functions, special functions, group theory, and vector space
- Mathematical method used for developing a strong background to pursue research in theoretical physics and higher physics

**Semester/Year: III/II****Name of the Course: Thermodynamics and Statistical Physics (MPHT-303)****Course Outcomes :**

The outcome of course is to the students will be able to understand,

- Laws of thermodynamics and their consequences, Phase space , Blackbody radiation and Planck's distribution law and quantization of fermion operators
- student can use the concept of the macroscopic properties of the matter in bulk in terms of its microscopic constituents.

**Semester/Year: III/II****Name of the Course: Advanced Digital Electronics (MPHT-304)****Course Outcomes :**

Students will continue use of concepts covered in Digital Fundamentals.

- Will be able to demonstrate understanding of the different families of digital integrated circuits and their characteristics.
- Will be able to analyze, design, build, and troubleshoot a broad range of combinational circuits using digital ICs.
- Will demonstrate understanding of flip-flops, one-shots, and timers.
- Will be able to analyze, design, build, and troubleshoot a broad range of counters.
- Will demonstrate understanding of shift register basics, the various kinds, their operating characteristics, and applications.
- Will be able to use the computer for modeling digital circuits.
- Will demonstrate understanding of the basics of programmable logic devices and implement circuits on them.

**Semester/Year: III/II****Name of the Course: Microwave and Communication Lab. (MPHP-305)****Course Outcome :**

At the end of the course students will be able to



- Know a range of communication engineering fundamentals, Performance of receivers and information theory concept for applications in Communication systems
- Know the concepts & calculations pertaining to electric, magnetic and electromagnetic fields so that an in depth understanding of antennas and Waveguides is possible to support RF and Microwave Communication systems

**Semester/Year: III/II**

**Name of the Course: MATLAB Lab (MPHP-306)**

**Course Outcomes :**

MATLAB course Outcomes

- Ability to express programming & amp; simulation for engineering problems.
- Ability to find importance of this software for Lab Experimentation
- Articulate importance of software's in research by simulation work.
- In-depth knowledge of providing virtual programming knowledge.
- Ability to write basic physics,mathematical ,electrical ,electronic problems in Matlab.
- Ability to simulate basic electrical circuit in Simulink.
- Ability to connect programming files with GUI Simulink.

**Semester/Year: IV/II**

**Name of the Course: Microwave Devices and Communications (MPHT-401)**

**Course Outcomes :**

At the end of the course students will be able to

- Know about the microwave frequencies and the waveguides that are used in communication.
- Understand the operation and working of the various tubes or sources for the transmission of the microwave frequencies.
- Understand and Analyze various parameters and characteristics of the various waveguide components.
- Understand and analyze various semiconductor devices.
- Apply Smith chart use for solution of transmission line problems and impedance matching.
- Analyze the difference between the conventional tubes and the microwave tubes for the transmission of the EM waves.
- Acquire knowledge about the measurements to be done at microwaves.
- Acquire complete knowledge about the applications of the microwaves for Radar Communications.
- Design and simulate waveguide components for various applications.

**Semester/Year: IV/II**

**Name of the Course: Analog and Digital Communications (MPHT-402)**

**Course Outcome :**

On completion of this course content the student should have acquired the following reasonable level of knowledge/competence:

- Design simple systems for generating and demodulating amplitude modulated signals
- Derive the energy or power spectral density of signals

- Sketch the spectrum of amplitude modulated signals, given the baseband spectrum
- Explain the difference between narrow-band and wide-band angle modulation
- Design basic systems for the indirect and direct generation of FM signals
- Explain how a simple differentiator FM demodulator operates
- Explain how phase-locked loops are used for FM demodulation
- Determine the Nyquist sampling rate of a given signal
- Determine the number of levels in a quantizer given signal-to-noise ratio and maximum input voltage
- Describe the different types of line codes

**Semester/Year: IV/II**

**Name of the Course: Major Project (MPHP-403)**

**Course Outcomes :**

On completion of this course content the student should have acquired the following reasonable level of knowledge/competence

- students understand how to search problem with the help of previous work and literature .
- how to solve problem with different methodology .
- how to write synopsis before join in higher studies

# **M.Sc. Biotechnology**

## **Name of the Programme : Master of Science**

**Programme Code: M.Sc.**

### **Programme Outcomes (POs)**

**PO1. Life Sciences Knowledge:** Apply the knowledge of various branches of Life Sciences and General Biology meant both for a graduate terminal course and for higher studies; and a skillful specialization to the solution of complex biological problems. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.

**PO2. Problem analysis and Solutions Development:** Identify, formulate, study research literature, and analyze simple or complex biological problems using first principles of biological sciences reaching substantiated conclusions, and design and develop solutions that meet the specified needs with appropriate consideration for organisms and environment as well as for human beings. Problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.

**PO3. Modern tool usage and Biological investigations:** Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4. The Biologist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, environmental and cultural issues and the consequent responsibilities relevant to the professional biological practice.

**PO5. Environment and Sustainability:** Understand the impact of the professional biological solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Develop positive attitude towards sustainable development.

**PO6. Ethics:** Apply ethical principles and commit to Life Sciences professional ethics and responsibilities and abide by the norms of the practices in biology and regulatory procedures.

**PO7. Individual and Team Work** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core biological sciences/ technology area of practice.

**PO8. Communication:** Communicate effectively on theoretical and experimental biological activities with the community engaged in Life Sciences and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. Students will be able to compete in international exams. like GRE or Toefl.

**PO9. Project Management:** Demonstrate knowledge and understanding of the project management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO10. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of biological information and technological change. Lend the support to other students to grow with them with equal opportunities. Global thinking, knowledgeable disciplined students with good values, ethics, kind heart will help in nation building globally.

**Name of the Specific Programme: Master of Science (Biotechnology) or M.Sc. (Biotechnology)**  
**Specific Programme Code: MBT**

### **Programme Specific Outcomes (POs)**

**PSO1. Biodiversity:** Knowledge of fundamentals and advances of Biodiversity in terms of structure, function and environmental relationships- ranging from Archea, Bacteria to higher life forms and their interaction with other forms which affects or benefit them. Classifying organisms on the basis of their identifying attributes and interpreting anatomical details.

**PSO2. Applied Biotechnology:** Students will understand the importance of microbiology which is an important component of Biotechnology. Students will become familiar with the tools and techniques of genetic engineering-DNA manipulation enzymes, genome and transcriptome analysis and manipulation tools, gene expression regulation, production and characterization of recombinant proteins. Students can work in various capacities in manufacturing units, research and development, quality control, quality assurance, regulatory affairs and intellectual property rights in biotechnology, pharmaceutical, bio fertilizer, aquaculture, environmental, crop production, food processing industries and national bio-resource development firms.

**PSO3. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for biochemical estimation, molecular biology, biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the applications and limitations. It can also be applied to study natural product profile of plants and traditional, medicinal and economic values of plants.

**PSO4. The Biotechnologist and society:** Apply reasoning informed by the contextual and updated knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the professional Biotechnologist, biodiversity and conservation practices.

**PSO5. Environment and sustainability:** Understand the impact of the Biodiversity in societal and environmental contexts, and demonstrate the knowledge for sustainable development.

**PSO6. Ethics:** Apply ethical principles and commit to environmental and biological ethics and responsibilities and norms of practices in biodiversity and regulatory procedures.

**PSO7. Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core plant biology / plant technology area of practice.

**PSO8. Specialized expertise and Project Management:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. The learners specializes in one of the applied research areas through one of the chosen elective / specialization paper and work with the Master Thesis, which gives special expertise to the students in one of various project areas represented at School of Life Sciences.

Students with a competitive aptitude for higher studies (M.Phil, Ph.D) in order to attain research positions. Various examinations such as CSIR-NET, ARS-NET GATE, ICMR, DBT and many other opens channels for promising career in research.

## Course Outcome

<b>Paper wise Course Outcome</b>	
Paper Code	MBT -101
Paper Title	Cell Biology
Paper Outcome	<ul style="list-style-type: none"> <li>□ Students will understand about biology of cell, they will able to interpret origins of cells and the generation of cell diversity, as well as the common features of cellular structure and function.</li> <li>□ Students will understand the basic structures and function of basic components of prokaryotic and eukaryotic cells</li> <li>□ Students will able to analyze how cell obtain energy, synthesize new molecules, communicate, proliferate and survive.</li> <li>□ Students will analyse the cellular components underlying mitotic cell division and which are responsible for its regulation.</li> <li>□ The basic of cell biology will be utilized for learning the processes such as, absorption, how electrical signals are carried, and investigate why some things such as lack of oxygen can cause death, etc.</li> </ul>
Paper Code	MBT-102
Paper Title	<b>BIOMOLECULES AND BASIC ENZYMOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ Basic knowledge of structure and functions of major bio-molecules will make the students to understand and implement the acquired knowledge in future</li> <li>□ Practical knowledge and hands on tools and techniques used for the characterization of bio-molecules will the students in advanced research program</li> <li>□ Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km, Vmax, Kcat etc)</li> <li>□ Concepts of enzyme kinetics, regulation and specificity of enzymes, enzyme engineering, can be applied in large scale industrial processes.</li> </ul>
Paper Code	MBT-103
Paper Title	<b>ANALYTICAL TECHNIQUES</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ At the end of this course students would be able to understand the instrumentation, principle, and application of bioanalytical tools and techniques for industrial and research purpose.</li> <li>□ Specifically students will be able to learn underlying principle of techniques like electrophoresis, microscopy, spectroscopy, centrifugation and chromatography and apply their knowledge in advance research.</li> </ul>
Paper Code	MBT-104
Paper Title	<b>IMMUNOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of types of immunity, Cells of immune system, complements, Antigens and Antibodies, Immunology in Health &amp; Disease.</li> <li>□ The course will provide technical knowledge as to how different diseases are caused and various responses mediated by living cells to combat pathogen attack which can be used in disease management</li> <li>□ Along with this the students will learn about concept, synthesis and action mechanism of vaccines which can be utilize it in field of vaccine development and biomanufacturing</li> </ul>
Paper Code	MBT-105

Paper Title	<b>VIROLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of structure of viruses, their nomenclature and their unique characters</li> <li>□ Course will provide knowledge of bacteriophages and virus cultivation, laboratory diagnosis of Plant viruses, animal and Human viruses</li> <li>□ They will be able to justify the role of viruses in cancer and utilize the knowledge in cancer research</li> </ul>

Paper Code	MBT-201
Paper Title	<b>MICROBIAL DIVERSITY AND PHYSIOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ Course will provide practical knowledge about structural and physiological characteristics of different types of bacteria, algae and fungi found in environment and to understand their biodiversity</li> <li>□ Course will develop students to acquire skills and competency in microbiological laboratory practices applicable to microbiological research or clinical methods, including observations and analysis.</li> <li>□ Course will provide sound knowledge about different metabolic processes of microbes.</li> </ul>
Paper Code	MBT-202
Paper Title	<b>METABOLISM OF BIOMOLECULES</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of energy metabolism, carbohydrate metabolism, lipid metabolism, amino acid and nucleic acid metabolism.</li> <li>□ Understanding of metabolic pathways (catabolism as well as anabolism), can be utilized to know their diversity and how these are specifically regulated and interrelated in different cells</li> </ul>
Paper Code	MBT-203
Paper Title	<b>MOLECULAR BIOLOGY AND GENETICS</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of DNA structure, replication, recombination, repair, transcription, protein synthesis, oncogenes, tumor suppressor genes and genetics.</li> <li>□ Students will understand the importance of genetic code and wobble hypothesis in molecular biology</li> <li>□ Students will be able to investigate role of different gene in regulation of various molecular processes.</li> <li>□ Course on genetics will impart complete knowledge as how genes are transmitted in plants and animals from one generation to another</li> <li>□ The course will help to determine the role of genetics / mutations in animal and plant breeding, pedigree analysis and population genetics .</li> </ul>
Paper Code	MBT-204
Paper Title	<b>BIostatISTICS AND BIOINFORMATICS</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of Importance and scope in biological experiments, Measures of Central Tendency, ANOVA.</li> <li>□ Students will utilize basics knowledge of of Bioinformatics, Computational Biology solving in complex biological problems</li> <li>□ Students will be able to characterize data and understand different sampling methods assess the role of biostatistics in Biological data</li> </ul>

	<p>analysis.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Retrieve information from available databases and use them for microbial identifications and drug designing.</li> </ul>
Paper Code	MBT-205
Paper Title	<b>Conventional &amp; Biotechnological Diagnosis of Infectious Diseases</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon successful completion of the course, students will learn about Microbial Diseases, their causative organism.</li> <li><input type="checkbox"/> Students will develop knowledge of diagnostic techniques, prevention and control of diseases.</li> <li><input type="checkbox"/> They will be able to justify how biotechnological methods of disease diagnosis have edge over conventional methods</li> <li><input type="checkbox"/> Learners will be able to organize knowledge of bioinformatics tools in disease diagnosis.</li> </ul>

Paper Code	MBT-301
Paper Title	<b>GENETIC ENGINEERING (MBT301)</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon successful completion of the course, students will be acquainted with versatile tools and techniques employed in genetic engineering and recombinant DNA technology. A sound knowledge on methodological repertoire allows students to innovatively apply these in basic and applied fields of biological research.</li> <li><input type="checkbox"/> Students will Acquire knowledge about antisense technology, pharmacogenetics, toxicogenomics, biomolecular engineering and the impact of these novel strategies on human population.</li> <li><input type="checkbox"/> Appraise the bioethical issues &amp; concerns linked to Genetically modified organism</li> </ul>
Paper Code	MBT-302
Paper Title	<b>ENVIRONMENTAL BIOTECHNOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon successful completion of the course, students will be acquainted with global problem of pollution</li> <li><input type="checkbox"/> The student will be able to evaluate the potential of biodegradation of organic pollutants, taking microbial and physical/chemical environments, as well as the chemical structure of the compound itself in consideration</li> <li><input type="checkbox"/> Students will understand the phenomenon of phytoremediation for the decontamination of soil and water,</li> <li><input type="checkbox"/> Students will learn about the environmental quality evaluation, monitoring, and remediation of contaminated environments</li> <li><input type="checkbox"/> Students will analyse the use of biosensors in environmental analysis</li> </ul>
Paper Code	MBT-303
Paper Title	<b>ANIMAL CELL SCIENCE AND TECHNOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon successful completion of this course, students will learn about aseptic techniques applied in cell culture laboratories, different types of contamination, their sources, ways to monitor and eradicate contamination from cell culture, cryopreservation-introduction, types and principle, somatic cell cloning,</li> <li><input type="checkbox"/> They will develop concept of stem cells-therapy and tissue engineering</li> <li><input type="checkbox"/> Develop concept of cell culture based vaccines, hybridoma technology and application of monoclonal antibodies in various applied research</li> </ul>



Paper Code	MBT-304
Paper Title	<b>PLANT BIOTECHNOLOGY AND BIORESOURCE MANAGEMENT</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ Upon successful completion of the course, students should have an understanding of the applications of plant biotechnology and improvement of crops for various traits.</li> <li>□ Students will assess the applications of plant transformation for improving the productivity and performance of plants under biotic and abiotic stresses</li> <li>□ Students will also evaluate the importance of biodiversity, its conservation and management of bioresources.</li> </ul>
Paper Code	MBT-305
Paper Title	<b>BIOPROCESS ENGINEERING AND TECHNOLOGY</b>
Paper Outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of large scale production of biological products ,</li> <li>□ They will be able develop concept of bioreactors, concept of isolation and maintenance of microbial culture in bioreactor</li> <li>□ They will develop concept of industrial production of primary and secondary metabolites of microorganisms and their extraction and purification process.</li> <li>□ They will build knowledge of large scale production of recombinant proteins and single cell proteins</li> </ul>

### **Dissertation: Project work- Presentation and Viva-voce**

- The purpose of a thesis is to enable the student to develop deeper knowledge, understanding, capabilities and attitudes in the context of the programme of study. It offers the opportunity to develop more deep knowledge acquired in previous studies. A thesis for a Master of science programmes should place emphasis on the technical/scientific/artistic aspects of the subject matter.
- The overall goal of the thesis is for the student to display the knowledge and capability required for independent work as a Master of Science The learning objectives for a thesis are based on the objectives for Master of Science in specific learning outcomes for a Master's thesis are for the student to demonstrate:
- Considerably more in-depth knowledge of the major subject/field of study, including deeper insight into current research and development work.
- Deeper knowledge of methods in the major subject/field of study.
- A capability to contribute to research and development work.
- The capability to use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues.
- The capability to plan and use adequate methods to conduct qualified tasks in given frameworks and to evaluate this work.
- The capability to create, analyse and critically evaluate different technical solutions

# **M.Sc. Microbiology**

## **Name of the Programme : Master of Science**

**Programme Code: M.Sc.**

### **Programme Outcomes (POs)**

**PO1. Life Sciences Knowledge:** Apply the knowledge of various branches of Life Sciences and General Biology meant both for a graduate terminal course and for higher studies; and a skillful specialization to the solution of complex biological problems. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.

**PO2. Problem analysis and Solutions Development:** Identify, formulate, study research literature, and analyze simple or complex biological problems using first principles of biological sciences reaching substantiated conclusions, and design and develop solutions that meet the specified needs with appropriate consideration for organisms and environment as well as for human beings. Problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.

**PO3. Modern tool usage and Biological investigations:** Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4. The Biologist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, environmental and cultural issues and the consequent responsibilities relevant to the professional biological practice.

**PO5. Environment and Sustainability:** Understand the impact of the professional biological solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Develop positive attitude towards sustainable development.

**PO6. Ethics:** Apply ethical principles and commit to Life Sciences professional ethics and responsibilities and abide by the norms of the practices in biology and regulatory procedures.

**PO7. Individual and Team Work** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core biological sciences/ technology area of practice.

**PO8. Communication:** Communicate effectively on theoretical and experimental biological activities with the community engaged in Life Sciences and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. Students will be able to compete in international exams. like GRE or Toefl.

**PO9. Project Management:** Demonstrate knowledge and understanding of the project management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO10. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of biological information and technological change. Lend the support to other students to grow with them with equal opportunities. Global thinking, knowledgeable disciplined students with good values, ethics, kind heart will help in nation building globally.

**Name of the Specific Programme: Master of Science (Microbiology) or M.Sc. (Microbiology)**  
**Specific Programme Code: MMB**

**Programme Specific Outcomes (POs)**

**PSO1. Biodiversity of Microorganism:** Knowledge of fundamentals and advances of microbial diversity in terms of structure, function and environmental relationships- ranging from. Archea, Bacteria to higher life forms and their interaction with other forms which affects or benefit them. Classifying microorganism on the basis of their identifying attributes and interpreting anatomical details.

**PSO2. Applied Microbiology:** Demonstrate practical skills in the use of tools, technologies and methods common to microbiology, and apply the scientific method and hypothesis testing in the design and execution of experiments. Students can work in various capacities in manufacturing units, research and development, quality control, quality assurance, regulatory affairs and intellectual property rights in biotechnology, pharmaceutical, bio fertilizer, aquaculture, environmental, crop production, food processing industries and national bio-resource development firms.

**PSO3. Modern tool usage:** Students will become familiar with the tools and techniques of genetic engineering-DNA manipulation enzymes, genome and transcriptome analysis and manipulation tools, gene expression regulation, production and characterization of recombinant proteins

**PSO4. Microbiologist and society:** Apply reasoning informed by the contextual and updated knowledge to assess microbial diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the professional microbiologist, biodiversity and conservation practices. Can work as bacteriologists, clinical microbiologists, environmental microbiologists, industrial microbiologists, mycologists, virologists, parasitologists, public health microbiologists etc. in various industries based on various fields of life sciences.

**PSO5. Environment and sustainability:** Understand the impact of the microbial diversity in societal and environmental contexts, and demonstrate the knowledge for sustainable development.

**PSO6. Ethics:** Apply ethical principles and commit to environmental and biological ethics and responsibilities and norms of practices in biodiversity and regulatory procedures.

**PSO7. Individual and Team Work:** Develop ability to independently carry out a complete scientific work process in coordination with team, including the understanding of theoretical background, hypothesis generation, collection and analysis of data, and interpretation and presentation of results.

**PSO8. Specialized expertise and Project Management:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. The learners specializes in one of the applied research areas through one of the chosen elective / specialization paper and work with the Master Thesis, which gives special expertise to the students in one of various project areas represented at School of Life Sciences.

Students with a competitive aptitude for higher studies (M.Phil, Ph.D) in order to attain research positions. Various examinations such as CSIR-NET, ARS-NET GATE, ICMR, DBT and many other opens channels for promising career in research.

## Course Outcome

<b>Paper wise Course Outcome</b>	
Paper Code	<b>MMB101</b>
Paper Title	<b>Bacteriology</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understanding of basic microbial structure and similarities and differences among various groups of microorganisms such as bacteria/archaea/cyanobacteria/fungi/protozoans.</li> <li><input type="checkbox"/> Acquaintance on study of microbial diversity using different methods and systematics of bacteria and archaea using polyphasic approach</li> <li><input type="checkbox"/> To apply the various methods for identification of isolated and unculturable microorganisms.</li> </ul>

Paper Code	<b>MMB102</b>
Paper Title	<b>MYCOLOGY, PHYCOLOGY &amp; LICHENOLOGY</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> On completion of the course student will understand fungal, algal and lichen diversity and classification</li> <li><input type="checkbox"/> They will appraise the role of fungi in bioinsecticide and their role in disease caused in economically important plants utilize their knowledge in control of disease.</li> <li><input type="checkbox"/> To evaluate role of endophytic fungi, Mycorrhizae in production of secondary metabolites in plants</li> <li><input type="checkbox"/> To evaluate role of algae in biofuel production,</li> <li><input type="checkbox"/> Role of fungi and algae in food industries edible mushrooms, Spirulina</li> </ul>

Paper Code	<b>MMB103</b>
Paper Title	<b>Immunology</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> On successful completion of the course, students should have a clear understanding of types of immunity, Cells of immune system, complements, Antigens and Antibodies, Immunology in Health &amp; Disease.</li> <li><input type="checkbox"/> The course will provide technical knowledge as to how different diseases are caused and various responses mediated by living cells to combat pathogen attack which can be used in disease management</li> <li><input type="checkbox"/> Along with this the students will learn about concept, synthesis and action mechanism of vaccines which can utilize it in field of vaccine development and biomanufacturing</li> </ul>

Paper Code	<b>MMB104</b>
Paper Title	<b>BIOCHEMISTRY – I</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Basic knowledge of structure and functions of major bio-molecules will make the students to understand and implement the acquired knowledge in future</li> <li><input type="checkbox"/> Practical knowledge and hands on tools and techniques used for the characterization of bio-molecules will the students in advanced research program</li> <li><input type="checkbox"/> Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (<math>K_m</math>, <math>V_{max}</math>, <math>K_{cat}</math> etc)</li> <li><input type="checkbox"/> Concepts of enzyme kinetics, regulation and specificity of enzymes,</li> </ul>

	enzyme engineering, can be applied in large scale industrial processes.
Paper Code	<b>MMB105</b>
Paper Title	<b>ANALYTICAL TECHNIQUES IN MICROBIOLOGY</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Define and explain various fundamentals of spectroscopy, qualitative and quantitative analysis and characterize functionalities of biomolecules by using spectroscopic techniques.</li> <li><input type="checkbox"/> Explain the various separation techniques and its instrumentation.</li> <li><input type="checkbox"/> Describe the principle and working of various radiation detectors and apply it for analysis of the micromolecules and macromolecules</li> </ul>

Paper Code	<b>MMB201</b>
Paper Title	<b>VIROLOGY</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recognize characters of different types of viruses.</li> <li><input type="checkbox"/> Discerning the plant and animal viruses and their replication strategies inside the host and also methods used in cultivation and detection of viruses</li> <li><input type="checkbox"/> Theoretical knowledge on techniques employed for culturing and detection of plant and animal viruses</li> <li><input type="checkbox"/> Comprehend the complex interaction between viruses and host cells</li> <li><input type="checkbox"/> Understand how viruses can be used as biotechnological tools, as cloning vectors and for gene transfer.</li> </ul>
Paper Code	<b>MMB202</b>
Paper Title	<b>MOLECULAR BIOLOGY AND GENETICS</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> On successful completion of the course, students should have a clear understanding of DNA structure, replication, recombination, repair, transcription, protein synthesis, oncogenes, tumor suppressor genes and genetics.</li> <li><input type="checkbox"/> Students will understand the importance of genetic code and wobble hypothesis in molecular biology</li> <li><input type="checkbox"/> Students will be able to investigate the role of different genes in regulation of various molecular processes.</li> <li><input type="checkbox"/> Course on genetics will impart complete knowledge as to how genes are transmitted in microorganisms from one generation to another</li> <li><input type="checkbox"/> The course will help to determine the role of genetics / mutations pedigree analysis and population genetics.</li> </ul>
Paper Code	<b>MMB203</b>
Paper Title	<b>MICROBIAL PHYSIOLOGY</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Will have knowledge of morphological and photosynthetic diversity of microorganisms and ATP synthesis through photosynthesis.</li> <li><input type="checkbox"/> To develop understanding about microbial metabolism, growth and energy generation</li> <li><input type="checkbox"/> Gain knowledge of various fermentation pathways, microbial communication and energetics</li> <li><input type="checkbox"/> Course will provide sound knowledge about different metabolic processes of microbes.</li> <li><input type="checkbox"/> Familiarize students with concepts of nitrogen and phosphate assimilation, electron transport chain and transfer of genetic information among microbial communities.</li> <li><input type="checkbox"/> Assess the concepts of microbial cross-talk.</li> </ul>
Paper Code	<b>MMB204</b>
Paper Title	<b>BIostatistics AND BIOINFORMATICS</b>

Paper outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of Importance and scope in biological experiments, Measures of Central Tendency, ANOVA.</li> <li>□ Students will utilize basics knowledge of of Bioinformatics, Computational Biology solving in complex biological problems</li> <li>□ Students will be able to characterize data and understand different sampling methods asses the role of biostatistics in Biological data analysis.</li> <li>□ Retrieve information from available databases and use them for microbial identifications and drug designing.</li> </ul>
Paper Code	<b>MMB205</b>
Paper Title	<b>BIOCHEMISTRY –II</b>
Paper outcome	<ul style="list-style-type: none"> <li>□ On successful completion of the course, students should have a clear understanding of energy metabolism, carbohydrate metabolism, lipid metabolism, amino acid and nucleic acid metabolism.</li> <li>□ Understanding of metabolic pathways (catabolism as well as anabolism), can be utilized to know their diversity and how these are specifically regulated and interrelated in different cells</li> </ul>
Paper Code	<b>MMB301</b>
Paper Title	<b>Genetic Engineering</b>
Paper outcome	<ul style="list-style-type: none"> <li>□ Upon successful completion of the course, students will be acquainted with versatile tools and techniques employed in genetic engineering and recombinant DNA technology. A sound knowledge on methodological repertoire allows students to innovatively apply these in basic and applied fields of biological research.</li> <li>□ Students will Acquire knowledge about antisense technology, pharmacogenetics, toxicigenomics, biomolecular engineering and the impact of these novel strategies on human population.</li> <li>□ Appraise the bioethical issues &amp; concerned linked to Genetically modified organism.</li> </ul>
Paper Code	<b>MMB302</b>
Paper Title	<b>INDUSTRIAL MICROBIOLOGY</b>
Paper outcome	<ul style="list-style-type: none"> <li>□ Learning of different fermentation techniques, bioreactor design, inoculum development for industrial fermentations, Microbial growth and product formation kinetics, media formulation and sterilization, isolation, preservation and improvement of industrially important micro-organisms.</li> <li>□ The knowledge of industrial production and purification of organic acids, alcohols, wine and vinegar with help of different microbes and their applications.</li> <li>□ The students will have the elaborative knowledge of industrial production and purification of antibiotics, enzymes, amino acids and steroids.</li> <li>□ The application of these bio-molecules in benefit of mankind.</li> </ul>
Paper Code	<b>MMB303</b>
Paper Title	<b>Food Microbiology</b>
Paper outcome	<ul style="list-style-type: none"> <li>□ After completion of the course students will have the knowledge of different forms of microorganism associated with the food. and to determine the role of intrinsic and extrinsic factors leading to food spoilage</li> <li>□ Understanding the role of microorganism in food preservation.</li> <li>□ To assess the importance of various microorganisms associated with spoilage of food and various changes associated with spoilage.</li> <li>□ To isolate detect and identify important food borne pathogens</li> <li>□ Understand the beneficial role of microorganism in food processing</li> <li>□ To understand the basic concept of food safety .</li> </ul>

Paper Code	<b>MMB304</b>
Paper Title	<b>Medical Microbiology</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon completion, students gained the knowledge of isolation and identification of various pathogenic organism</li> <li><input type="checkbox"/> Basic concepts of different microorganism causing disease.</li> <li><input type="checkbox"/> Evaluate the mechanism of pathogenesis in human body utilizing various diagnostic tools</li> </ul>
Paper Code	<b>MMB305</b>
Paper Title	<b>Environmental Microbiology</b>
Paper outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Students will get the basic knowledge how to prepare and perform sampling and microbial analyses to determine the abundance, growth rate and microbial community composition together with the basic environmental parameters.</li> <li><input type="checkbox"/> Describe role of microorganism in recycling soil nutrients, biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability, production of plant growth promoting substances and inhibiting pathogens.</li> <li><input type="checkbox"/> Critically discuss the need for environmental microbiology and agricultural microbiology and explain their limitations.</li> <li><input type="checkbox"/> Clarify application of microorganisms in varied fields of agricultural and environmental microbiology like bioremediation, biofertilizers and waste water treatment</li> <li><input type="checkbox"/> Analyse various aspects of N<sub>2</sub>fixation, Phosphate solubilization, PGPR, biodegradation and bioremediation mechanisms provided by microbes</li> </ul>

## Semester – IV

### Dissertation: Project work- Presentation and Viva-voce

- The purpose of a thesis is to enable the student to develop deeper knowledge, understanding, capabilities and attitudes in the context of the programme of study. It offers the opportunity to develop more deep knowledge acquired in previous studies. A thesis for a Master of science programmes should place emphasis on the technical/scientific/artistic aspects of the subject matter.
- The overall goal of the thesis is for the student to display the knowledge and capability required for independent work as a Master of Science The learning objectives for a thesis are based on the objectives for Master of Science in specific learning outcomes for a Master's thesis are for the student to demonstrate:
- Considerably more in-depth knowledge of the major subject/field of study, including deeper insight into current research and development work.
- Deeper knowledge of methods in the major subject/field of study.
- A capability to contribute to research and development work.
- The capability to use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues.
- The capability to plan and use adequate methods to conduct qualified tasks in given frameworks and to evaluate this work.
- The capability to create, analyse and critically evaluate different technical solutions



# **M.Sc. Bioinformatics**

## **Name of the Programme : Master of Science**

**Programme Code: M.Sc.**

### **Programme Outcomes (POs)**

**PO1. Life Sciences Knowledge:** Apply the knowledge of various branches of Life Sciences and General Biology meant both for a graduate terminal course and for higher studies; and a skillful specialization to the solution of complex biological problems. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.

**PO2. Problem analysis and Solutions Development:** Identify, formulate, study research literature, and analyze simple or complex biological problems using first principles of biological sciences reaching substantiated conclusions, and design and develop solutions that meet the specified needs with appropriate consideration for organisms and environment as well as for human beings. Problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.

**PO3. Modern tool usage and Biological investigations:** Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4. The Biologist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, environmental and cultural issues and the consequent responsibilities relevant to the professional biological practice.

**PO5. Environment and Sustainability:** Understand the impact of the professional biological solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Develop positive attitude towards sustainable development.

**PO6. Ethics:** Apply ethical principles and commit to Life Sciences professional ethics and responsibilities and abide by the norms of the practices in biology and regulatory procedures.

**PO7. Individual and Team Work** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core biological sciences/ technology area of practice.

**PO8. Communication:** Communicate effectively on theoretical and experimental biological activities with the community engaged in Life Sciences and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. Students will be able to compete in international exams. like GRE or Toefl.

**PO9. Project Management:** Demonstrate knowledge and understanding of the project management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO10. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of biological information and technological change. Lend the support to other students to grow with them with equal opportunities. Global thinking, knowledgeable disciplined students with good values, ethics, kind heart will help in nation building globally.

**Name of the Specific Programme : Master of Science (Bioinformatics) or M.Sc. (Bioinformatics)**  
**Specific Programme Code: MBIT**

### **Programme Specific Outcomes (POs)**

**PSO1.**Imparts multi-disciplinary practical skills and knowledge of computational, mathematical and biological sciences to prepare them for challenging careers in academic research, biotechnology, pharmaceutical and health care industries.

**PSO2.**Introduce the commonly used computational, statistical and analytical approaches to post genomic analysis and make meaningful predictions.

**PSO3.**Develop problem solving skills, including the ability to develop new algorithms and apply in a novel manner when analyzing common problems in industry or research;

**PSO4.** Make competent users of the basic experimental skills of bioinformatics.

**PSO5.**The students will be able to understand the biological problem at hand and device appropriate computational strategies to solve it and interpret the results.

**PSO-6** The students will be able to analyze the contents and properties of the important bioinformatics databases, perform text and sequence-based searches and interpret the results under the umbrella of interdisciplinary knowledge.

**PSO-7** The student will be able to develop the concepts of the intersection of system science and information science.

**PSO-8** The student will get trained and apply the concepts of the quantitative structure-function relationships and its role in drug designing, gene expression, and database queries.

**PSO-9** The students will be able to explain the major steps in pairwise and multiple sequence alignment, explain the principles and execute pairwise sequence alignment by dynamic programming.

**PSO-10** The students will be able to predict the secondary and tertiary structures of protein sequences.

<b>Paper wise Course outcomes (CO)</b>	
Paper Code	<b>MBIT 101 A</b>
Paper Title	<b>Basic Mathematics and Statistics</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The students will illustrate the trends, patterns, connections and relationships in a quantitative manner that can lead to important discoveries in biology.</li> <li><input type="checkbox"/> Mathematical models will help the student in making simulations in their minds.</li> <li><input type="checkbox"/> Students will simplify and evaluate algebraic expressions.</li> <li><input type="checkbox"/> Students will form and solve linear equations in one variable.</li> </ul>
Paper Code	<b>MBIT 101 B</b>
Paper Title	<b>Fundamentals of Biology</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> This paper is compulsory for those students who have not developed the basic biology concepts due to their non biology background.</li> <li><input type="checkbox"/> Collaborate and communicate within biology and across disciplines.</li> <li><input type="checkbox"/> Demonstrate deep understanding of five core concepts in biology: evolution; pathways and transformations of energy and matter; information flow, exchange, and storage; structure and function; and biological systems.</li> <li><input type="checkbox"/> Collaborate and communicate within biology and across disciplines.</li> </ul>

Paper Code	<b>MBIT 102</b>
Paper Title	<b>Computers and Advanced Programming in C++</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> This course will provide a fast paced introduction to the C++ programming.</li> <li><input type="checkbox"/> It is required to learn the background coding knowledge of different softwares including memory management, pointers, preprocessor macros, object-oriented programming.</li> <li><input type="checkbox"/> The student will learn that how to find bugs when inevitably use any of those incorrectly.</li> <li><input type="checkbox"/> To learn how to write inline functions for efficiency and performance.</li> <li><input type="checkbox"/> To <b>learn</b> the syntax and semantics of the C++ <b>programming</b> language.</li> </ul>
Paper Code	<b>MBIT 103</b>
Paper Title	<b>Immunoinformatics and Biochemical Techniques</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The students will be able to develop an understanding with the principles of core immunology and In-silico processing of the concerned data to simulate the natural /In-vivo processes.</li> <li><input type="checkbox"/> The students will also learn the In-silico based In-vivo strategies.</li> <li><input type="checkbox"/> The students will have knowledge of immune responses to various</li> </ul>

	<p>pathogens by integrating genomics and proteomics with bioinformatics strategies.</p> <p><input type="checkbox"/> The student will be proficient in computer aided vaccine design.</p>
Paper Code	<b>MBIT 104</b>
Paper Title	<b>Bioinformatics and Genome analysis</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> This Paper depicts the fundamental concepts and methods in Bioinformatics, a field at the junction of biology and computing. Data intensive, large-scale biological problems are addressed from a computational point of view.</li> <li><input type="checkbox"/> The students will learn to develop the optimized solution of any biological problem using dynamic programming methods.</li> <li><input type="checkbox"/> The student will develop the knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics.</li> <li><input type="checkbox"/> The student will handle existing software effectively to extract information from large databases and to use this information in computer modeling</li> </ul>
Paper Code	<b>MBIT 105</b>
Paper Title	<b>Molecular Biology and Genetic Engineering</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The students will apply the concepts and understanding of the central dogma of molecular biology: DNA makes RNA, and RNA makes protein.</li> <li><input type="checkbox"/> They will learn about how we classify the different amino acids and their bonding form the building blocks of complex proteins.</li> <li><input type="checkbox"/> The student will learn that how to differentiate the prokaryotes and eukaryotes through their grouping abilities and list their characteristic and differentiating properties.</li> <li><input type="checkbox"/> The student will be able to develop the concepts of molecular mechanisms by which DNA controls development, growth or morphological characteristics of organisms</li> </ul>

Paper Code	<b>MBIT 201</b>
Paper Title	<b>Computer Aided Drug Designing (CADD)</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The student will learn the role of synthetic chemistry in the development of pharmaceutical agents; and the modification of chemical structures to develop new drug molecules.</li> <li><input type="checkbox"/> They will develop an understanding of drug targets as a recognition site for pharmaceutical agents; how the chemical structure of a substance influences interaction with a drug target; and the identification of new drug targets for future drug discovery.</li> <li><input type="checkbox"/> Demonstrate a basic understanding of pharmacogenomics and bioinformatics as it relates to drug design and discovery.</li> <li><input type="checkbox"/> They will apply the key principles of pharmacognosy and natural products and their role in shaping the pharmaceutical industry, including Traditional, Complementary and Alternative Medicines.</li> </ul>

Paper Code	<b>MBIT 202</b>
Paper Title	<b>Computational Biology</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> This course examines the interaction between information and methods of communication technology.</li> <li><input type="checkbox"/> It explores the impact that technology has on individuals and organizations and the effects of current technology infrastructure plus use, duplication and transmission of information in our world.</li> <li><input type="checkbox"/> They will become proficient with quantitative methods for analyzing biological data.</li> <li><input type="checkbox"/> The student will be able to critically evaluate prior biological research studies effectively.</li> </ul>
Paper Code	<b>MBIT-203</b>
Paper Title	<b>System Biology</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> This paper will build an understanding of system biology methods in modeling, simulations and analysis of cellular networks with strong relevance to synthetic biology</li> <li><input type="checkbox"/> The student will be able to apply the concept of simulations on complex systems.</li> <li><input type="checkbox"/> Identify the interaction of the components with the environment which modulate the parts either directly or indirectly through modulation of internal interact.</li> <li><input type="checkbox"/> The student will be able to learn the concepts of modeling biological networks.</li> </ul>
Paper Code	<b>MBIT-204</b>
Paper Title	<b>Data Structure Algorithm</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The student will be able to describe and explain the time complexity for inserting, finding and deleting items to/from the following data structures: ArrayList, Linked lists, stacks and queues.</li> <li><input type="checkbox"/> The student will try to learn to design and implement various data structure algorithms.</li> <li><input type="checkbox"/> The student will develop the knowledge of various techniques for representation of the data in the real world.</li> <li><input type="checkbox"/> They will learn to compute the complexity of various algorithms.</li> </ul>
Paper Code	<b>MBIT-205</b>
Paper Title	<b>Java Programming &amp; Data Mining</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The student should understand the data structure (databases) used in bioinformatics and interpret the information (especially: find genes; determine their functions)</li> <li><input type="checkbox"/> They will understand and be aware of current research and problems relating to this area.</li> <li><input type="checkbox"/> The students will be able to identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem.</li> <li><input type="checkbox"/> The students will be able to implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic.</li> </ul>

Paper Code	<b>MBIT-301</b>
Paper Title	<b>Functional and comparative genomics</b>
Paper Outcome	<input type="checkbox"/> The student shall be able to describe what is meant by functional genomics and how this area of research contributes both to new basic biomedical knowledge and to new developments in biomedicine and biotechnology. <input type="checkbox"/> The gene expression based ontologies will also be addressed in this paper. <input type="checkbox"/> After completing the course, the student shall be able apply the main principles of high throughput transcriptomics and genomic analysis by state of the art sequencing and microarray technology. <input type="checkbox"/> They will be able to explain the gene regulation processes.
Paper Code	<b>MBIT-302</b>
Paper Title	<b>Metabolomics and Proteomics</b>
Paper Outcome	<input type="checkbox"/> The student will learn about Metabolomics which is the systematic study of metabolic profiles in biological samples and tissues. <input type="checkbox"/> It is the newest omics science, and a complementary tool to genomics and proteomics in systems biology. <input type="checkbox"/> On completion of the course, the student should be able to account for applications for proteomics and metabolomics in biomedicine and biology. <input type="checkbox"/> They will be able to develop the biochemical concepts of metabolism.
Paper Code	<input type="checkbox"/> <b>MBIT-303</b>
Paper Title	<b>Gene expression and Microarray analysis</b>
Paper Outcome	<input type="checkbox"/> The student will learn the concepts of Microarray, SAGE and NGS for analysis of biological data using various softwares. <input type="checkbox"/> The students will be able to develop the data analysis practices after getting the knowledge of R package and other tools. <input type="checkbox"/> They will learn the detailed concepts of expression analysis using microarrays for simultaneous interrogation of the expression of thousands of genes in a high-throughput fashion
Paper Code	<b>MBIT-304</b>
Paper Title	<b>Molecular Structure Prediction and Visualization</b>
Paper Outcome	<input type="checkbox"/> The student will be able to learn the graphic based concepts of protein 3 D structure prediction strategy and concerned tools. <input type="checkbox"/> The deep learning of various simulatory processes will also be addressed in this paper. <input type="checkbox"/> The analysis of protein structure and function with the aim of deriving evolutionary insights. <input type="checkbox"/> The modeling and comparison of biology networks to provide insights into Systems Biology. <input type="checkbox"/> The modeling of the activity and toxicity of small molecules as an aid to the design of novel drugs.
Paper Code	<b>MBIT-305</b>
Paper Title	<b>PERL and My SQL in Bioinformatics</b>
Paper Outcome	<input type="checkbox"/> The student will learn one of the important languages which are being used to retrieve the biological information from different resources. <input type="checkbox"/> The students could also learn the basics of data mining techniques which

	<p>are very much required in large scale projects now days.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The students will be able to develop algorithms through the process of top-down, stepwise refinement and implement them in Perl.</li> <li><input type="checkbox"/> The students will be able to write scripts and programs to handle applications in various fields, such as system administration and bioinformatics</li> </ul>
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Paper Code	<b>MBIT-401 (EL)</b>
Paper Title	<b>Pharmacogenomics</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> Upon successfully completing this course, students will explain the basic principles of pharmacology and genomics as they pertain to pharmacogenomics.</li> <li><input type="checkbox"/> The students shall be able to understand several specific examples of important pharmacogenomics principles and their implementation in clinical practices.</li> <li><input type="checkbox"/> They will apply the available information resources for gene-drug interactions in informatics projects.</li> <li><input type="checkbox"/> The students shall be able to understand the issues and challenges of implementing pharmacogenomics in the clinic.</li> </ul>
Paper Code	<b>MBIT-402 (EL)</b>
Paper Title	<b>Visual Basic and Web enabling Technology</b>
Paper Outcome	<ul style="list-style-type: none"> <li><input type="checkbox"/> The student will use VB. Net to build Windows applications using structured and object-based programming techniques.</li> <li><input type="checkbox"/> Design, formulate, and construct applications with VB.NET</li> <li><input type="checkbox"/> Integrate variables and constants into calculations applying VB.NET</li> <li><input type="checkbox"/> Determine logical alternatives with VB.NET decision structures</li> </ul>



# **M.Sc. Botany**

**Name of the Programme : Master of Science**  
**Programme Code: M.Sc.**

### **Programme Outcomes (POs)**

**PO1. Life Sciences Knowledge:** Apply the knowledge of various branches of Life Sciences and General Biology meant both for a graduate terminal course and for higher studies; and a skillful specialization to the solution of complex biological problems. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.

**PO2. Problem analysis and Solutions Development:** Identify, formulate, study research literature, and analyze simple or complex biological problems using first principles of biological sciences reaching substantiated conclusions, and design and develop solutions that meet the specified needs with appropriate consideration for organisms and environment as well as for human beings. Problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.

**PO3. Modern tool usage and Biological investigations:** Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4. The Biologist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, environmental and cultural issues and the consequent responsibilities relevant to the professional biological practice.

**PO5. Environment and Sustainability:** Understand the impact of the professional biological solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Develop positive attitude towards sustainable development.

**PO6. Ethics:** Apply ethical principles and commit to Life Sciences professional ethics and responsibilities and abide by the norms of the practices in biology and regulatory procedures.

**PO7. Individual and Team Work** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core biological sciences/ technology area of practice.

**PO8. Communication:** Communicate effectively on theoretical and experimental biological activities with the community engaged in Life Sciences and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. Students will be able to compete in international exams. like GRE or Toefl.

**PO9. Project Management:** Demonstrate knowledge and understanding of the project management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO10. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of biological information and technological change. Lend the support to other students to grow with them with equal opportunities. Global thinking, knowledgeable disciplined students with good values, ethics, kind heart will help in nation building globally.

**Name of the Specific Programme : Master of Science (Botany) or M.Sc. (Botany)**  
**Specific Programme Code: MBOT**

### **Programme Specific Outcomes (POs)**

**PSO1. Knowledge of Plant Life Forms:** Knowledge of fundamentals and advances in studying plant diversity in terms of structure, function and environmental relationships- ranging from Algae to Angiosperms as well as microbial world affecting or benefitting them. Classifying the plants on the basis of their identifying attributes and interpreting anatomical details.

**PSO2. Plant Advance Biology:** Developing deeper understanding of key concepts of plant biology at biochemical, molecular and cellular level, physiology and reproduction and ecological impact on plants. Insight into developmental biology of plants as well as genetics and biotechnology for sustained benefits from plants. Students will be able to compete in national or state level research fellowship or lectureship exams like NET or SLET.

**PSO3. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations. Also, applies the tools and techniques to study Natural Product profile of plants and traditional, medicinal and economic values of plants.

**PSO4. The Botanist and society:** Apply reasoning informed by the contextual and updated knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the professional botanist, biodiversity and conservation practices.

**PSO5. Environment and sustainability:** Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PSO6. Ethics:** Apply ethical principles and commit to environmental and biological ethics and responsibilities and norms of practices in plant biodiversity and regulatory procedures.

**PSO7. Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Work competently in one or more core plant biology / plant technology area of practice.

**PSO8. Specialized expertise and Project Management:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. The learners specializes in one of the applied research areas through one of the chosen elective / specialization paper (Plant Biotechnology and Bioresource Management, Environmental Biotechnology and Plant Pathology ) and work with the Master Thesis, which gives special expertise to the students in one of various project areas represented at School of Life Sciences.

### Paper wise Course Outcomes

Paper Code	MBOT-101
Paper Title	<b>Cell Biology</b>
Course Outcome	On successful completion of the course the students will have a clear understanding of CO1: Ultrastructure of a plant cell and cell organelles, cytoskeletal filaments, nucleus and chromosomes and cell wall. CO2: Plant cell functioning, cellular connections and various types of transport across cell membranes. CO3: Cell division and its regulation. CO4: Apoptosis in plant cells. CO5: Signaling in plant cells.

Paper Code	MBOT-102
Paper Title	<b>Biology and Diversity of Viruses and Bacteria</b>
Course Outcome	CO1: Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea . CO2: Know various Culture media and their applications and also understand various physical and chemical means of sterilization CO3: Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria. CO4: Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively CO5: Understanding of viruses in general and plant viruses in specific way.

Paper Code	MBOT-103
Paper Title	<b>Morphology and Diversity of Non-Vascular Plants</b>
Course Outcome	CO1: Upon successful completion of the course, students will be able to differentiate and identify plant life forms characterized as non vascular plants including algae, fungi and bryophytes, including their morphology, classification and characteristic features. CO2: Range of thallus structure, reproduction, life cycles and importance of various algal groups. CO3: Diversity of various fungal groups, their modes of nutrition and reproduction benefits and importance. Lichens and growth forms. CO4: Morphology and reproduction of different type of plant forms in bryophyte, their ecological significance. CO5: Evolutionary trends in algae and evolution of sex in fungi.

Paper Code	MBOT-104
Paper Title	<b>Instrumentation and Analytical Techniques</b>
Course Outcome	CO1: On successful completion of this course students will have a clear knowledge of principles and working of various instruments and equipments available in a plant biology lab. CO2: Will be able to utilize normal lab microscopy and centrifugation equipments for the purpose of scientific investigation. CO3: Will be able to handle various chromatographic, spectroscopic and electrophoretic equipments and analyze the results obtained. CO4: Should be able to assist in radioactivity instruments handling.

Paper Code	MBOTP-105
Paper Title	<b>Plant Biochemistry</b>
Course Outcome	CO1: On successful completion of the course, students will be able to explore the chemistry, classifications, functioning and biological significance of various biomolecules. CO2: Amino acids- structure, types and catabolism CO3: Proteins- Primary and secondary and higher level of protein structure , Isolation and purification. CO4. Carbohydrates- structure and classification, carbohydrate metabolism. CO5: Enzymes- Mechanism of action and inhibition, CO6: Lipids, Vitamins and Nucleic Acids: Structure and metabolism.

Paper Code	MBOT-201
Paper Title	<b>Pteridophytes, Gymnosperms and Paleobotany</b>
Course Outcome	CO1: Students will learn about general characters, classification and representative plants of non-flowering vascular plants. CO2: Will be able to understand geographical time scale and paeobotanical evidences. CO3: Structure and reproduction of different orders of Pteridophytes. Apospory, Apogamy and evolution of vasculature in pteridophytes. CO4: Structure and reproduction of different orders of Gymnosperms.

Paper Code	MBOT-202
Paper Title	<b>Advance Plant Physiology</b>
Course Outcome	CO1: Upon successful completion of the course, students will learn and experiment of physiological processes of plants and their applied aspects. CO2: In water relations, transport of water and processes. CO3: Transport of minerals and solutes to the plants and their deficiency symptoms. CO4: Metabolism of Carbon, nitrogen and its importance to plants. CO5: Response of plants to various kinds of growth stimuli, molecules, physical factors and stress.

Paper Code	MBOT-203
Paper Title	<b>Taxonomy of Angiosperms</b>
Course Outcome	CO1: Upon successful completion of the course, students will have clear knowledge of Angiosperms diversity, their taxonomy and evolution. CO2: Artificial, Natural and Phylogenetic classification CO3: Important families belonging to Monocot and Dicot. CO4: Taxonomic Principles, Herbarium techniques, BSI and Botanical gardens, etc. CO5: Students will have employability in herbaria, curations or conservatories.

Paper Code	MBOT-204
Paper Title	<b>Plant Tissue Culture and Its Applications</b>
Course Outcome	CO1: On successful completion of the course, students should have significant understanding and expertise in <i>in-vitro</i> culture techniques. CO2: Will have clear knowledge of the applications of plant tissue culture – micropropagation, somatic hybridization. CO3: Haploid production and crop improvement. CO4: Students will also learn the importance of plant genetic transformation and its various techniques for improvement of crops for various traits. CO5: Significant level of employability in various tissue culture labs of govt. or private R&D units.

Paper Code	MBOT-205
Paper Title	<b>Developmental Plant Biology</b>
Course Outcome	CO1: On successful completion of the course, students will have an understanding of plant growth and development. CO2: Students be able to different plant tissues on the basis of anatomical details and internal structures. CO3: Molecular dynamics of development of meristems and various plant parts as well as their anatomical details. CO4: Molecular Genetics of Flower development CO5: Various types of surface structures and secondary growth,

Paper Code	MBOT-301
Paper Title	<b>Embryology of Angiosperms</b>
Course Outcome	CO1: Upon successful completion of the course, students should have an understanding of the principles of general plant reproduction and development. CO2: Students will also have expertise in the application of embryology for taxonomy, horticultural sciences and in the experimental plant science. CO3: Will explore the diversity of male gametophyte, female gametophyte, microsporogenesis and megasporogenesis across flowering plants. CO4: Learnt about barriers and promoters of fertilization and their application in plant improvement programs. CO5: Various phenomenon associated with embryo seeds and fruits development and their applications.

Paper Code	MBOT-302
Paper Title	<b>Plant Ecology and Environment</b>
Course Outcome	CO1: On successful completion of the course, students will have knowledge of plant ecology and environment. CO2: Students will learn about various kinds of pollution and their impact on environment. CO3: Students will have understanding about importance and methods of biodiversity conservation. CO4: Learnt the basics and applications of species, community and population ecology and ecological succession. CO5: Various kinds of biogeochemical cycles. CO6: Students learn the role of plant environment in sustainable development and regulatory procedures.

Paper Code	MBOT-303
Paper Title	<b>Genetics and Plant Breeding</b>
Course Outcome	CO1: Upon successful completion of the course, students should have clear knowledge of the elements of genetics and Inheritance. CO2: Classical Rules of Qualitative and Quantitative Genetics, Physical Basis of Heredity and structural and Numerical changes in Chromosomes. CO3: Genetic Recombination and Elements of breeding and hybridization. CO4: The concepts are foundation for advance and applied research in crop and plant improvements. CO5: The students will get advantage of developed competence in formulating research experiments based on qualitative, quantitative or molecular genetics.

Paper Code	MBOT-304
Paper Title	<b>Molecular Biology and Genetic Engineering</b>
Course Outcome	CO1: Students will be able to develop competence in molecular biology and genetic engineering of plants. CO2: Basics of Nucleic acids structure, types, their physic-chemical properties and fine structure of gene. CO3: Students will have advance learning on DNA damage and repair, DNA replication, transcription and translation. CO4: Students will also learn how recombinant DNA technology can be used for improvements of plants as well as in human welfare. CO5: Students develop expertise in various molecular biological techniques and marker genomics.

Paper Code	MBOT-305
Paper Title	<b>Phytochemistry and Ethnobotany</b>
Course Outcome	CO1: Upon successful completion of the course, students should have learnt the diversity and importance of secondary metabolites present in plants. CO2: Students have also developed concepts in biogenesis pathways of various secondary metabolites and their metabolic engineering. CO3: They develop a clear understanding of various techniques used for extraction, and isolation of secondary metabolites from plants and those to separate them. CO4: Will learn uses of plant diversity in ethno-botanical context. CO5: Student will also learn economic botany of various plant products.

Paper Code	MBOT-401
Paper Title	<b>Biostatistics and Bioinformatics</b>
Course Outcome	CO1: On successful completion of the course, students should have a clear understanding of applications of statistics and information science to plant biological research. CO2: Learn about role of Statistics in Biological data analysis. CO3: Learn about elements of Bioinformatics. CO4: Develop a clear understanding of applications of various kinds of NA or protein or other biomolecule databases to solve the biological problems.

Paper Code	MBOT-402
Paper Title	<b>Elective course: Environmental Biotechnology</b>
Course Outcome	CO1: On successful completion of the course, students should have a clear understanding of plant environment and pollution. CO2: Learn the different techniques used to control the xenobiotics in environment and their biodegradation. CO3: Use of environment friendly biological agents and development of biosensors for detection of pollution. CO4: Students will learn different kinds of treatments possible for solid and liquid wastes and bioremediation. CO5: Students develop expertise in solving plant environment problem utilizing biotechnological principles and experimenting at pilot scale.

Paper Code	MBOT-403
Paper Title	<b>Elective Course: Plant Biotechnology and Bio-resource Management</b>
Course Outcome	<p>CO1: Upon successful completion of the course, students specializes themselves in the applications of plant biotechnology and improvement of crops for various traits.</p> <p>CO2: Students will also learn the importance of biodiversity, its conservation and management of bioresources.</p> <p>CO3: Students develop the expertise for genetic engineering of plants for improvement in productivity or performance.</p> <p>CO4: Students develop the expertise in molecular analysis of transgenic plants and associated regulatory procedures.</p> <p>CO5: Have clear knowledge of basics and applications of plant functional genomics.</p>

Paper Code	MBOT-404
Paper Title	<b>Elective Course: Plant Pathology</b>
Course Outcome	<p>CO1: Introduce students to the basic principles and concepts of plant pathology.</p> <p>CO2: Familiarize students with the basic vocabulary of plant pathology and plant disease management using flash cards with images and audio files.</p> <p>CO3: Introduce and illustrate the major groups of organisms that cause plant diseases.</p> <p>CO4: Enhance student's understanding of scientific research, especially as it applies to the science of plant pathology and the study of microorganisms.</p> <p>CO5: Provide a framework that students can use in their profession to best approach plant disease management</p>



# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Pharmaceutical Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. D.Pharm
2. B.Pharm
3. Pharm.D.
4. M.Pharm
  - a) M.Pharm (Pharmaceutics)
  - b) M.Pharm (Pharmaceutical Chemistry)
  - c) M.Pharm (Pharmaceutical Quality Assurance)
  - d) M.Pharm (Pharmacology)
5. Ph.D (Pharmaceutical Sciences)

**D.Pharm**

## **1. Name of the Program: D.Pharm (Diploma in Pharmacy)**

**Programme Code: DPH**

### **Program Outcomes:**

- ✓ Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy.
- ✓ Honour personal values and apply ethical principles in professional and social contexts.
- ✓ Learn Stocking of Drugs and Medical Devices and Inventory Control Procedures.
- ✓ Develop ability for in-depth analytical and critical thinking in order to identify, formulate and solve the issues related to Pharmaceutical Industry, Regulatory Agencies, Hospital Pharmacy & Community Pharmacy.
- ✓ Handling of prescriptions, Dispensing and Patient counseling.
- ✓ Develop written and oral communication skills in order to communicate effectively the outcomes of the Pharmaceutical problems.
- ✓ Develop team spirit, apart from responding to the social needs and professional ethics.
- ✓ Develop an aptitude for lifelong learning and continuous professional development.
- ✓ Develop an understanding for the need of pharmaceutical sciences and technology towards giving quality life to people in society.

## **2. Name of the Specific Program (if any): N.A.**

**Program Specific Outcomes: N.A.**

### 3. Course Outcomes:

#### Year: I<sup>st</sup> (First)

##### **i) Name of the Course: Pharmaceutics-I (code: DPH 101T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the basics of different dosage forms, pharmacopoeia and pharmaceutical calculations.
- b) prepare various conventional dosage forms.
- c) familiarize with various processes involved in pharmaceutical sciences; like mixing, extraction, filtration, sterilization.
- d) Understand packaging aspects of various dosage forms.

##### **ii) Name of the Course: Pharmaceutical Chemistry-I (code: DPH 102T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
- b) understand the medicinal and pharmaceutical importance of inorganic compounds.

##### **iii) Name of the Course: Pharmacognosy (code: DPH 103T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the classification of drugs of natural origin.
- b) Know various techniques in the cultivation and collection of crude drugs.
- c) know the crude drugs, their uses and chemical nature.
- d) carry out the microscopic and morphological evaluation of crude drugs.

##### **iv) Name of the Course: Biochemistry and Clinical Pathology (code: DPH 104T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the role of enzymes, therapeutic and diagnostic applications of enzymes.
- b) know the chemistry and role of carbohydrate, protein and lipids.
- c) understand the normal and abnormal metabolism of nutrient molecules.

**v) Name of the Course: Human Anatomy and Physiology (code: DPH 105T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the gross morphology, structure and functions of various organs of the human body.
- b) describe the various homeostatic mechanisms and their imbalances.
- c) identify the various tissues and organs of different systems of human body.
- d) appreciate coordinated working pattern of different organs of each system.

**vi) Name of the Course: Health Education and Community Pharmacy (code: DPH 102T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand various factors associating health.
- b) impart first aid in case of emergency.
- c) know about communicable and non-communicable diseases.
- d) understand and educate people about demography and family planning.

## **Year: II<sup>nd</sup> (Second)**

### **i) Name of the Course: Pharmaceutics-II (code: DPH 201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the basics of different dosage forms.
- b) read and understand prescriptions.
- c) prepare different dosage forms.
- d) identify and correct incompatibilities in prescriptions.

### **ii) Name of the Course: Pharmaceutical Chemistry-II (code: DPH 202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand different classes of drugs.
- b) know nomenclature, chemical structure and uses of drugs.
- c) know the physical and chemical properties of drugs.
- d) know the stability and storage conditions of drugs.

### **iii) Name of the Course: Pharmacology and Toxicology (code: DPH 203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know routes of drug administration.
- b) understand the pharmacological actions of different categories of drugs.
- c) understand the mechanism of drug action.
- d) understand ADME of drugs.
- e) gain basic pharmacological knowledge in prevention and treatment of diseases.

### **iv) Name of the Course: Pharmaceutical Jurisprudence (code: DPH 204T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
- b) understand various Indian pharmaceutical Acts and Laws.
- c) understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
- d) understand the code of ethics during the pharmaceutical practice.

**v) Name of the Course: Drug Store and Business Management (code: DPH 205T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand channels of drug distribution.
- b) understand the pharmacy stores management and inventory control.
- c) Know about sales promotion and salesmanship.
- d) understand accounting concepts and conventions.

**vi) Name of the Course: Hospital and Clinical Pharmacy (code: DPH 206T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the organization and layout of hospital.
- b) understand drug distribution system in hospital.
- c) apply the basic of clinical pharmacy.
- d) know different drug interactions and adverse drug reactions.

**B.Pharm**



## **1. Name of the Program: B. Pharm (Bachelor of Pharmacy)**

**Programme code: BPH**

### **Program Outcomes:**

- ✓ Develop ability for in-depth analytical and critical thinking in order to identify, formulate and solve the issues related to Pharmaceutical Industry, Regulatory Agencies, Hospital Pharmacy and Community Pharmacy.
- ✓ Provide students with a strong and well defined concepts in the various fields of pharmaceutical sciences viz., Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology and Pharmacy Practice according to the requirement of pharmaceutical industries, community and hospital pharmacy.
- ✓ Develop an ability to solve, analyze and interpret data generated from Formulation Development, Quality Control & Quality Assurance.
- ✓ Develop written and oral communication skills in order to communicate effectively the outcomes of the Pharmaceutical problems.
- ✓ Develop team spirit, apart from responding to the social needs and professional ethics.
- ✓ Develop an aptitude for lifelong learning and continuous professional development.
- ✓ Develop an understanding for the need of pharmaceutical sciences and technology towards giving quality life to people in society.

## **2. Name of the Specific Program (if Any): N.A.**

**Program Specific Outcomes: N.A.**

### 3. Course Outcomes:

#### Semester - I

##### **i) Name of the Course: Human Anatomy and Physiology - I (BP101T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the gross morphology, structure and functions of various organs of the human body.
- b) describe the various homeostatic mechanisms and their imbalances.
- c) identify the various tissues and organs of different systems of human body.
- d) perform the various experiments related to special senses and nervous system.
- e) appreciate coordinated working pattern of different organs of each system.

##### **ii) Name of the Course: Pharmaceutical Analysis - I (BP102T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the principles of volumetric and electro chemical analysis.
- b) carryout various volumetric and electrochemical titrations.
- c) develop analytical skills.

##### **iii) Name of the Course: Pharmaceutics - I (BP103T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the history of profession of pharmacy.
- b) understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.
- c) understand the professional way of handling the prescription.
- d) preparation of various conventional dosage forms.

##### **iv) Name of the Course: Pharmaceutical Inorganic Chemistry (BP104T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
- b) understand the medicinal and pharmaceutical importance of inorganic compounds.

**v) Name of the Course: Communication Skills (BP105T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation.
- b) communicate effectively (Verbal and Non Verbal).
- c) effectively manage the team as a team player.
- d) develop interview skills.
- e) develop Leadership qualities and essentials.

**vi) Name of the Course: Remedial Biology / Remedial Mathematics**

**Course Outcomes (Remedial Biology) (BP106RBT):**

Upon completion of the course, the student shall be able to:

- a) know the classification and salient features of five kingdoms of life.
- b) understand the basic components of anatomy & physiology of plant.
- c) know understand the basic components of anatomy & physiology animal with special reference to human.

**Course Outcomes (Remedial Mathematics) (BP106PMT):**

Upon completion of the course, the student shall be able to:

- a) know the theory and their application in Pharmacy.
- b) solve the different types of problems by applying theory.
- c) appreciate the important application of mathematics in Pharmacy.

## **Semester - II**

### **i) Name of the Course: Human Anatomy and Physiology – II (BP201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the gross morphology, structure and functions of various organs of the human body.
- b) describe the various homeostatic mechanisms and their imbalances.
- c) identify the various tissues and organs of different systems of human body.
- d) perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
- e) appreciate coordinated working pattern of different organs of each system
- f) appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

### **ii) Name of the Course: Pharmaceutical Organic Chemistry - I (BP202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) write the structure, name and the type of isomerism of the organic compound.
- b) write the reaction, name the reaction and orientation of reactions.
- c) account for reactivity/stability of compounds.
- d) identify/confirm the identification of organic compound.

### **iii) Name of the Course: Biochemistry (BP203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
- b) understand the metabolism of nutrient molecules in physiological and pathological conditions.
- c) understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

**iv) Name of the Course: Pathophysiology (BP204T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) describe the etiology and pathogenesis of the selected disease states.
- b) name the signs and symptoms of the diseases.
- c) mention the complications of the diseases.

**v) Name of the Course: Computer Applications in Pharmacy (BP205T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the various types of application of computers in pharmacy.
- b) know the various types of databases.
- c) know the various applications of databases in pharmacy.

**vi) Name of the Course: Environmental Sciences (BP206T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) create the awareness about environmental problems among learners.
- b) impart basic knowledge about the environment and its allied problems.
- c) develop an attitude of concern for the environment.
- d) motivate learner to participate in environment protection and environment improvement.
- e) acquire skills to help the concerned individuals in identifying and solving environmental problems.
- f) strive to attain harmony with Nature.

## **Semester - III**

### **i) Name of the Course: Pharmaceutical Organic Chemistry - II (BP301T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) write the structure, name and the type of isomerism of the organic compounds.
- b) write the reaction, name the reaction and orientation of reactions.
- c) account for reactivity/stability of compounds.
- d) prepare organic compounds.

### **ii) Name of the Course: Physical Pharmaceutics - I (BP302T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand various physicochemical properties of drug molecules in the designing the dosage forms.
- b) know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.
- c) demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

### **iii) Name of the Course: Pharmaceutical Microbiology (BP303T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand methods of identification, cultivation and preservation of various microorganisms.
- b) understand the importance and implementation of sterilization in pharmaceutical processing and industry.
- c) Learn sterility testing of pharmaceutical products.
- d) Carried out microbiological standardization of Pharmaceuticals.
- e) Understand the cell culture technology and its applications in pharmaceutical industries.

### **iv) Name of the Course: Pharmaceutical Engineering (BP304T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know various unit operations used in Pharmaceutical industries.
- b) understand the material handling techniques.

- c) perform various processes involved in pharmaceutical manufacturing process.
- d) carry out various test to prevent environmental pollution.
- e) appreciate and comprehend significance of plant lay out design for optimum use of resources.
- f) appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

## **Semester - IV**

### **i) Name of the Course: Pharmaceutical Organic Chemistry - III (BP401T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the methods of preparation and properties of organic compounds.
- b) explain the stereo chemical aspects of organic compounds and stereo chemical reactions.
- c) know the medicinal uses and other applications of organic compounds.

### **ii) Name of the Course: Medicinal Chemistry - I (BP402T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the chemistry of drugs with respect to their pharmacological activity.
- b) understand the drug metabolic pathways, adverse effect and therapeutic value of drugs.
- c) know the Structural Activity Relationship (SAR) of different class of drugs.
- d) write the chemical synthesis of some drugs.

### **iii) Name of the Course: Physical Pharmaceutics - II (BP403T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand various physicochemical properties of drug molecules in the designing the dosage forms.
- b) know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.
- c) demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

### **iv) Name of the Course: Pharmacology-I (BP404T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the pharmacological actions of different categories of drugs.
- b) explain the mechanism of drug action at organ system/ sub cellular/ macromolecular levels.



- c) apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
- d) observe the effect of drugs on animals by simulated experiments.
- e) appreciate correlation of pharmacology with other bio medical sciences.

**v) Name of the Course: Pharmacognosy and Phytochemistry - I (BP405T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the techniques in the cultivation and production of crude drugs.
- b) know the crude drugs, their uses and chemical nature.
- c) know the evaluation techniques for the herbal drugs.
- d) carry out the microscopic and morphological evaluation of crude drugs.

## **Semester - V**

### **i) Name of the Course: Medicinal Chemistry - II (BP501T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the chemistry of drugs with respect to their pharmacological activity.
- b) understand the drug metabolic pathways, adverse effect and therapeutic value of drugs.
- c) know the Structural Activity Relationship of different class of drugs.
- d) study the chemical synthesis of selected drugs.

### **ii) Name of the Course: Industrial Pharmacy - I (BP502T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the various pharmaceutical dosage forms and their manufacturing techniques.
- b) know various considerations in development of pharmaceutical dosage forms.
- c) formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.

### **iii) Name of the Course: Pharmacology - II (BP503T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the mechanism of drug action and its relevance in the treatment of different diseases.
- b) demonstrate isolation of different organs/ tissues from the laboratory animals by simulated experiments.
- c) demonstrate the various receptor actions using isolated tissue preparation.
- d) appreciate correlation of pharmacology with related medical sciences.

### **iv) Name of the Course: Pharmacognosy and Phytochemistry - II (BP504T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.
- b) understand the preparation and development of herbal formulation.

- c) understand the herbal drug interactions.
- d) carryout isolation and identification of phytoconstituents.

**v) Name of the Course: Pharmaceutical Jurisprudence (BP505T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
- b) understand various Indian pharmaceutical Acts and Laws.
- c) understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
- d) understand the code of ethics during the pharmaceutical practice.

## **Semester - VI**

### **i) Name of the Course: Medicinal Chemistry - III (BP601T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the importance of drug design and different techniques of drug design.
- b) understand the chemistry of drugs with respect to their biological activity.
- c) know the metabolism, adverse effects and therapeutic value of drugs.
- d) know the importance of SAR of drugs.

### **ii) Name of the Course: Pharmacology - III (BP602T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the mechanism of drug action and its relevance in the treatment of different infectious diseases.
- b) comprehend the principles of toxicology and treatment of various poisonings.
- c) appreciate correlation of pharmacology with related medical sciences.

### **iii) Name of the Course: Herbal Drug Technology (BP603T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand raw material as source of herbal drugs from cultivation to herbal drug product.
- b) know the WHO and ICH guidelines for evaluation of herbal drugs.
- c) know the herbal cosmetics, natural sweeteners, nutraceuticals.
- d) appreciate patenting of herbal drugs, GMP.

### **iv) Name of the Course: Biopharmaceutics and Pharmacokinetics (BP604T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
- b) use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.

- c) understand the concepts of bioavailability and bioequivalence of drug products and their significance.
- d) understand various pharmacokinetic parameters, their significance & applications.

**v) Name of the Course: Pharmaceutical Biotechnology (BP605T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the importance of Immobilized enzymes in Pharmaceutical Industries.
- b) understand genetic engineering applications in relation to production of pharmaceuticals.
- c) understand importance of Monoclonal antibodies in Industries.
- d) appreciate the use of microorganisms in fermentation technology.

**vi) Name of the Course: Pharmaceutical Quality Assurance (BP606T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the cGMP aspects in a pharmaceutical industry.
- b) appreciate the importance of documentation.
- c) understand the scope of quality certifications applicable to pharmaceutical industries.
- d) understand the responsibilities of QA & QC departments.

## **Semester - VII**

### **i) Name of the Course: Instrumental Methods of Analysis (BP701T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the interaction of matter with electromagnetic radiations and its applications in drug analysis.
- b) understand the chromatographic separation and analysis of drugs.
- c) perform quantitative & qualitative analysis of drugs using various analytical instruments.

### **ii) Name of the Course: Industrial Pharmacy - II (BP702T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the process of pilot plant and scale up of pharmaceutical dosage forms.
- b) understand the process of technology transfer from lab scale to commercial batch.
- c) know different Laws and Acts that regulate pharmaceutical industry.
- d) understand the approval process and regulatory requirements for drug products.

### **iii) Name of the Course: Pharmacy Practice (BP703T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know various drug distribution methods in a hospital.
- b) appreciate the pharmacy stores management and inventory control.
- c) monitor drug therapy of patient through medication chart review and clinical review.
- d) obtain medication history interview and counsel the patients.
- e) identify drug related problems.
- f) detect and assess adverse drug reactions.
- g) interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states.
- h) know pharmaceutical care services.
- i) do patient counseling in community pharmacy.
- j) appreciate the concept of Rational drug therapy.

**iv) Name of the Course: Novel Drug Delivery Systems (BP704T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand various approaches for development of novel drug delivery systems.
- b) understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation.

## **Semester - VIII**

### **i) Name of the Course: Biostatistics and Research Methodology (BP801T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment).
- b) know the various statistical techniques to solve statistical problems.
- c) appreciate statistical techniques in solving the problems.

### **ii) Name of the Course: Social and Preventive Pharmacy (BP802T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
- b) have a critical way of thinking based on current healthcare development.
- c) Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

### **iii) Name of the Course: Pharma Marketing Management (BP803ET)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) marketing concepts and techniques.
- b) their applications in the pharmaceutical industry.
- c) Pharmaceutical marketing channels.

### **iv) Name of the Course: Pharmaceutical Regulatory Science (BP804ET)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) Know about the process of drug discovery and development.
- b) Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
- c) Know the regulatory approval process and their registration in Indian and international markets.



**v) Name of the Course: Pharmacovigilance (BP805ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to (know, do, and appreciate):

- a) why drug safety monitoring is important.
- b) history and development of Pharmacovigilance.
- c) national and international scenario of Pharmacovigilance.
- d) dictionaries, coding and terminologies used in Pharmacovigilance.
- e) detection of new adverse drug reactions and their assessment.
- f) international standards for classification of diseases and drugs.
- g) adverse drug reaction reporting systems and communication in Pharmacovigilance.
- h) methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle.
- i) drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation.
- j) Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India.
- k) ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning.
- l) CIOMS requirements for ADR reporting.
- m) writing case narratives of adverse events and their quality.

**vi) Name of the Course: Quality Control And Standardization of Herbals (BP806ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know WHO guidelines for quality control of herbal drugs.
- b) know Quality assurance in herbal drug industry.
- c) know the regulatory approval process and their registration in Indian and international markets.
- d) appreciate EU and ICH guidelines for quality control of herbal drugs.

**vii) Name of the Course: Computer Aided Drug Design (BP807ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) design and discovery of lead molecules.
- b) the role of drug design in drug discovery process.

- c) the concept of QSAR and docking.
- d) various strategies to develop new drug like molecules.
- e) the design of new drug molecules using molecular modeling software.

**viii) Name of the Course: Cell and Molecular Biology (BP808ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) summarize cell and molecular biology history.
- b) summarize cellular functioning and composition.
- c) describe the chemical foundations of cell biology.
- d) summarize the DNA properties of cell biology.
- e) describe protein structure and function.
- f) describe cellular membrane structure and function.
- g) describe basic molecular genetic mechanisms.
- h) summarize the Cell Cycle.

**ix) Name of the Course: Cosmetic Science (BP809ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) key ingredients used in cosmetics and cosmeceuticals.
- b) key building blocks for various formulations.
- c) various key ingredients and basic science to develop cosmetics and cosmeceuticals.
- d) Scientific knowledge to develop cosmetics and with desired safety, stability, and efficacy.

**x) Name of the Course: Experimental Pharmacology (Pharmacological Screening Methods) (BP810ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) appreciate the applications of various commonly used laboratory animals.
- b) appreciate and demonstrate the various screening methods used in preclinical research.
- c) appreciate and demonstrate the importance of biostatistics and research methodology.
- d) design and execute a research hypothesis independently.

**xi) Name of the Course: Advanced Instrumentation Techniques (BP811ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the advanced instruments used and its applications in drug analysis.
- b) understand the chromatographic separation and analysis of drugs.
- c) understand the calibration of various analytical instruments.
- d) know analysis of drugs using various analytical instruments.

**xii) Name of the Course: Dietary Supplements and Nutraceuticals (BP812ET)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the need of supplements by the different group of people to maintain healthy life.
- b) understand the outcome of deficiencies in dietary supplements.
- c) appreciate the components in dietary supplements and the application.
- d) appreciate the regulatory and commercial aspects of dietary supplements including health claims.

**Pharm.D.**

## **1. Name of the Program: Pharm.D. (Doctor of Pharmacy)**

**Programme Code: PHARMD**

### **Program Outcomes:**

- ✓ Provide high quality, evidence-based, patient-centered care in cooperation with patients, prescribers and members of the inter-professional health care team.
- ✓ Provide pharmaceutical care including, but not limited to, Medication Therapy Management (MTM), vaccinations and drug therapy monitoring in all practice areas (e.g., inpatient, ambulatory and community practice).
- ✓ Effectively manage medication use systems, Prioritize patient safety and public health, Participate in identifying system errors.
- ✓ Demonstrate mastery and application of core knowledge and skills in relation to the evolving biomedical, clinical, epidemiological and social-behavioral sciences.
- ✓ Competency in areas supporting high quality pharmacy practice (e.g., pharmaceuticals, medicinal chemistry, pharmacokinetics, pharmacodynamics, pharmacology, pathophysiology, pharmacotherapeutics, and pharmaceutical care).
- ✓ Demonstrate the ability to use critical analysis and problem solving skills for the provision of high quality, evidence-based pharmacy services and patient care.
- ✓ Locate, appraise and assimilate evidence from scientific studies to enhance the quality of care and services. Effectively utilize information, informatics and technology to optimize learning and patient care.
- ✓ Contribute to the training of pharmacy students, future colleagues, and the growth and success of the profession.
- ✓ Effectively educate families, patients, caregivers and other HCPs.
- ✓ Demonstrate exemplary professional, ethical and legal behaviors, complying with all state and local laws and regulations related to pharmacy practice.
- ✓ Demonstrate the respect for patient privacy and autonomy, as well as sensitivity and responsiveness to diverse patient populations and Demonstrate a high degree of integrity, truthfulness and fairness.

## **2. Name of the Specific Program (if Any): N.A.**

**Program Specific Outcomes: N.A.**

### 3. Course Outcomes:

#### Year: I<sup>st</sup> (First)

##### **i) Name of the Course: Human Anatomy & Physiology (code: PHARMD 1.1T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) describe the structure (gross and histology) and functions of various organs of the human body.
- b) describe the various homeostatic mechanisms and their imbalances of various systems.
- c) identify the various tissues and organs of the different systems of the human body.
- d) perform the hematological tests and also record blood pressure, heart rate, pulse and Respiratory volumes.
- e) appreciate coordinated working pattern of different organs of each system; and
- f) appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body

##### **ii) Name of the Course: Pharmaceutics (code: PHARMD 1.2T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the formulation aspects of different dosage forms.
- b) do different pharmaceutical calculations involved in formulation.
- c) formulate different types of dosage forms; and
- d) appreciate the importance of good formulation for effectiveness.

##### **iii) Name of the Course: Medicinal Biochemistry (code: PHARMD 1.3T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the catalytic activity of enzymes and importance of isoenzymes in diagnosis of diseases.
- b) know the metabolic process of biomolecules in health and illness (metabolic disorders).
- c) understand the genetic organization of mammalian genome; protein synthesis; replication; mutation and repair mechanism.
- d) know the biochemical principles of organ function tests of kidney, liver and endocrine gland; and
- e) do the qualitative analysis and determination of biomolecules in the body fluids.

**iv) Name of the Course: Pharmaceutical Organic Chemistry (code: PHARMD 1.4T)**

**Course Outcomes:**

Upon completion of the course, the student shall be imparted good knowledge about:

- a) IUPAC/Common system of nomenclature of simple organic compounds belonging to different classes of organic compounds.
- b) Some important physical properties of organic compounds.
- c) Free radical/ nucleophilic [alkyl/ acyl/ aryl] /electrophilic substitution, free radical/ nucleophilic / electrophilic addition, elimination, oxidation and reduction reactions with mechanism, orientation of the reaction, order of reactivity, stability of compounds.
- d) Some named organic reactions with mechanisms; and
- e) Methods of preparation, test for purity, principle involved in the assay, important medicinal uses of some important organic compounds.

**v) Name of the Course: Pharmaceutical Inorganic Chemistry (code: PHARMD 1.5T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the principles and procedures of analysis of drugs and also regarding the application of inorganic pharmaceuticals.
- b) know the analysis of the inorganic pharmaceuticals their applications; and
- c) appreciate the importance of inorganic pharmaceuticals in preventing and curing the disease.

**vi) Name of the Course: Remedial Mathematics / Biology**

**Course Outcomes (Remedial Mathematics) (code: PHARMD 1.6RMT):**

Upon completion of the course, the student shall be able to:

- a) Know Trigonometry, Analytical geometry, Matrices, Determinant, Integration, Differential equation, Laplace transform and their applications.
- b) solve the problems of different types by applying theory; and
- c) appreciate the important applications of mathematics in pharmacy.

**Course Outcomes (Remedial Biology) (code: PHARMD 1.6RBT):**

Upon completion of the course, the student shall be able to:

- a) know the classification and salient features of five kingdoms of life.
- b) understand the basic components of anatomy & physiology of plant.
- c) know understand the basic components of anatomy & physiology animal with special reference to human.

## **Year: II<sup>nd</sup> (Second)**

### **i) Name of the Course: Pathophysiology (code: PHARMD 2.1T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) describe the etiology and pathogenesis of the selected disease states.
- b) name the signs and symptoms of the diseases; and
- c) mention the complications of the diseases.

### **ii) Name of the Course: Pharmaceutical Microbiology (code: PHARMD 2.2T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the anatomy, identification, growth factors and sterilization of microorganisms.
- b) know the mode of transmission of disease causing microorganism, symptoms of disease, and treatment aspect.
- c) do estimation of RNA and DNA and there by identifying the source.
- d) do cultivation and identification of the microorganisms in the laboratory.
- e) do identification of diseases by performing the diagnostic tests; and
- f) appreciate the behavior of motility and behavioral characteristics of microorganisms.

### **iii) Name of the Course: Pharmacognosy & Phytopharmaceuticals (code: PHARMD 2.3T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) under stand the basic principles of cultivation, collection and storage of crude drugs.
- b) know the source, active constituents and uses of crude drugs; and
- c) appreciate the applications of primary and secondary metabolites of the plant.

### **iv) Name of the Course: Pharmacology - I (code: PHARMD 2.4T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the pharmacological aspects of drugs.
- b) handle and carry out the animal experiments.
- c) appreciate the importance of pharmacology subject as a basis of therapeutics.
- d) correlate and apply the knowledge therapeutically.



**v) Name of the Course: Community Pharmacy (code: PHARMD 2.5T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know pharmaceutical care services.
- b) know the business and professional practice management skills in community pharmacies.
- c) do patient counselling & provide health screening services to public in community pharmacy.
- d) respond to minor ailments and provide appropriate medication.
- e) show empathy and sympathy to patients; and
- f) appreciate the concept of Rational drug therapy.

**vi) Name of the Course: Pharmacotherapeutics - I (code: PHARMD 2.6T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the pathophysiology of selected disease states and the rationale for drug therapy.
- b) the therapeutic approach to management of these diseases.
- c) the controversies in drug therapy.
- d) the importance of preparation of individualised therapeutic plans based on diagnosis.
- e) needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).
- f) describe the pathophysiology of selected disease states and explain the rationale for drug therapy.
- g) summarise the therapeutic approach to management of these diseases including reference to the latest available evidence.
- h) discuss the controversies in drug therapy.
- i) discuss the preparation of individualised therapeutic plans based on diagnosis; and
- j) identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

## **Year: III<sup>rd</sup> (Third)**

### **i) Name of the Course: Pharmacology - II (code: PHARMD 3.1T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the pharmacological aspects of drugs.
- b) carry out the animal experiments confidently.
- c) appreciate the importance of pharmacology subject as a basis of therapeutics, and
- d) correlate and apply the knowledge therapeutically.

### **ii) Name of the Course: Pharmaceutical Analysis (code: PHARMD 3.2T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the importance of analysis in pharmaceutical industry.
- b) understand about assay of pharmaceutical substances and products.
- c) gain theoretical knowledge as well as practical skills on various instrumental techniques adopted for analysis of pharmaceuticals
- d) develop various methodologies for assay of various drugs and pharmaceuticals; and
- e) understand and gain knowledge on trouble shooting in adopting various methodologies using instrumental techniques.

### **iii) Name of the Course: Pharmacotherapeutics - II (code: PHARMD 3.3T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the pathophysiology of selected disease states and the rationale for drug therapy.
- b) know the therapeutic approach to management of these diseases.
- c) know the controversies in drug therapy.
- d) know the importance of preparation of individualised therapeutic plans based on diagnosis; and
- e) appreciate the needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

**iv) Name of the Course: Pharmaceutical Jurisprudence (code: PHARMD 3.4T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to (Know, do, and appreciate):

- a) practice the Professional ethics.
- b) understand the various concepts of the pharmaceutical legislation in India.
- c) know the various parameters in the Drug and Cosmetic Act and rules.
- d) know the Drug policy, DPCO, Patent and design act.
- e) understand the labeling requirements and packaging guidelines for drugs and cosmetics.
- f) be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act; and
- g) other laws as prescribed by the Pharmacy Council of India from time to time including International Laws.

**v) Name of the Course: Medicinal Chemistry (code: PHARMD 3.5T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the different modern techniques of drug design.
- b) appreciate the SAR of some important drug classes.
- c) understand the chemistry of drugs with respect to their biological activity.
- d) know the metabolism, adverse effect and therapeutic activity of drugs; and
- e) acquire knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents.

**vi) Name of the Course: Pharmaceutical Formulations (code: PHARMD 3.6T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the principle involved in formulation of various pharmaceutical dosage forms.
- b) prepare various pharmaceutical formulation.
- c) perform evaluation of pharmaceutical dosage forms; and
- d) understand and appreciate the concept of bioavailability and bioequivalence, their role in clinical situations.

## **Year: IV<sup>th</sup> (Fourth)**

### **i) Name of the Course: Pharmacotherapeutics – III (code: PHARMD 4.1T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the pathophysiology of selected disease states and the rationale for drug therapy.
- b) the therapeutic approach to management of these diseases.
- c) the controversies in drug therapy.
- d) the importance of preparation of individualised therapeutic plans based on diagnosis.
- e) needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).
- f) describe the pathophysiology of selected disease states and explain the rationale for drug therapy.
- g) to summarize the therapeutic approach to management of these diseases including reference to the latest available evidence.
- h) to discuss the controversies in drug therapy.
- i) to discuss the preparation of individualised therapeutic plans based on diagnosis; and
- j) identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

### **ii) Name of the Course: Hospital Pharmacy (code: PHARMD 4.2T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know various drug distribution methods.
- b) know the professional practice management skills in hospital pharmacies.
- c) provide unbiased drug information to the doctors.
- d) know the manufacturing practices of various formulations in hospital set up.
- e) appreciate the practice based research methods; and
- f) appreciate the stores management and inventory control.

**iii) Name of the Course: Clinical Pharmacy (code: PHARMD 4.3T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to (Know, do, appreciate):

- a) monitor drug therapy of patient through medication chart review and clinical review.
- b) obtain medication history interview and counsel the patients.
- c) identify and resolve drug related problems.
- d) detect, assess and monitor adverse drug reaction.
- e) interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and
- f) retrieve, analyse, interpret and formulate drug or medicine information.

**iv) Name of the Course: Biostatistics and Research Methodology (code: PHARMD 4.4T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the various statistical methods to solve different types of problems.
- b) operate various statistical software packages.
- c) appreciate the importance of Computer in hospital and Community Pharmacy; and
- d) appreciate the statistical technique in solving the pharmaceutical problems.

**v) Name of the Course: Biopharmaceutics and Pharmacokinetics (code: PHARMD 4.5T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) Broadly understand the concepts of biopharmaceutics and pharmacokinetics.
- b) use the concepts of pharmacokinetic principles in the clinical contexts.
- c) calculate the various pharmacokinetic parameters by using various mathematical models.
- d) design a basic protocol for the conduct of Bioavailability / Bioequivalence study and the interpretation of the BA/BE data.
- e) design and perform in-vitro dissolution studies for various drugs as per the standards of official monographs; and
- f) understand the concepts of in-vitro - in-vivo correlations (IVIVC).

**vi) Name of the Course: Clinical Toxicology (code: PHARMD 4.6T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) Develop general working knowledge of the principles and practice of clinical toxicology.
- b) function as contributing health care team member when faced with a toxic exposure experience, including emergencies.
- c) apply an understanding of general toxicology principles and clinical management practice.
- d) propose preventive approaches to reduce unintentional poisonings.
- e) understand the health implications of toxic exposures and commonly involved chemicals for toxicity.
- f) apply an understanding of the history, assessment, and therapy considerations associated with the management of a toxic exposure; and
- g) apply an understanding of the characteristics of and treatment guidelines for specific toxic substances.

## **Year: V<sup>th</sup> (Fifth)**

### **i) Name of the Course: Clinical Research (code: PHARMD 5.1T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) know the new drug development process.
- b) understand the regulatory and ethical requirements.
- c) appreciate and conduct the clinical trials activities.
- d) know safety monitoring and reporting in clinical trials; and
- e) Manage the trial coordination process.

### **ii) Name of the Course: Pharmacoepidemiology and Pharmacoeconomics (code: PHARMD 5.2T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the methods used in Pharmacoepidemiology.
- b) understand the methods used in Pharmacoeconomic analysis.
- c) develop competency in the design, conduct and evaluation of Pharmacoepidemiology studies; and
- d) Develop competency in the design, conduct and evaluation of Pharmacoeconomic studies.

### **iii) Name of the Course: Clinical Pharmacokinetics and Pharmacotherapeutic Drug Monitoring (code: PHARMD 5.3T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) apply the concepts of Pharmacokinetics to individualize the drug dosage regimen in clinical settings.
- b) design a dosage regimen of a drug based on its route of administration.
- c) understand the significance of altered pharmacokinetics, Pharmacogenetics and pharmacometrics.
- d) adjust the dosage regimen for patients with renal / hepatic impairments.
- e) design and implement pharmacokinetic services such as Intravenous to Oral conversion of dosage regimens; Therapeutic Drug Monitoring Services.
- f) assess the drug interaction issues in the clinical settings; and
- g) design and implement therapeutic drug monitoring services for various drugs.

**M.Pharm**



## **1. Name of the Program: M. Pharm (Master of Pharmacy)**

### **Program Outcomes:**

- ✓ Develop an ability to visualize and work on multidisciplinary tasks in the area pharmaceutical and its allied fields.
- ✓ Demonstrate knowledge of professional and ethical responsibilities.
- ✓ Apply problem-based learning approach and analytical thinking in academic and professional life.
- ✓ Validate the knowledge and skills gained through education to gain recognition in Pharmaceutical society and related field.
- ✓ Execute team based research to implement innovative solutions in pharmacy.
- ✓ Independently carry out research/ investigation and development work.
- ✓ Apply skills to do specialized research in the core and applied areas of pharmaceutical sciences.
- ✓ Write and present a substantial technical report/ documents and demonstrate a degree of mastery over the specialization of the program.
- ✓ To create a talent pool by involving students in research projects and to make students undertake research projects under faculty guidance for publication.

## **2. Name of the Specific Program (if Any):**

### **(A). M.Pharm (Pharmaceutics) (code: MPH)**

#### **Program Specific Outcomes:**

- ✓ Analyze, criticize, organize, improvise and manage documents, data and information related to pharmaceutical production process.
- ✓ Set-up pharmaceutical production unit to design and formulate pharmaceutical dosage forms.
- ✓ Validate the knowledge and skills gained through education to gain recognition in Pharmaceutical society and related field.
- ✓ Imbibe ethical practices and moral values in personal and professional endeavours.
- ✓ Execute team based research to implement innovative solutions in the area of formulation, quality assurance and technology transfer.
- ✓ Apply problem-based learning approach and analytical thinking in academic and professional life.
- ✓ Apply the principles of drug delivery system in the development of eco-friendly, efficacious dosage forms.

- ✓ Develop an ability to undertake multidisciplinary tasks in the pharmaceutical quality system.

## **(B). M.Pharm (Pharmaceutical Chemistry) (code: MPC)**

### **Program Specific Outcomes:**

- ✓ Use software and technology in research analysis and product/ process design.
- ✓ Gain knowledge of practical techniques and advanced techniques to solve the problems in isolation, separation, purification and confirmation of chemical entities.
- ✓ Independently carry out research/ investigation and development work related to new chemical entities and develop the synthetic strategies and drug design proposals.
- ✓ Understand various named reactions, mechanisms and properties of various groups of chemicals and optimization of drug synthesis.
- ✓ Maintain the economic and eco-friendly mechanism, reducing number of steps, minimizing wastage and avoiding pollution of surroundings by obeying green chemistry principles.
- ✓ Write and present a substantial technical report/ documents and demonstrate a degree of mastery over the specialization of the program.

## **(C). M.Pharm (Pharmaceutical Quality Assurance) (code: MQA)**

### **Program Specific Outcomes:**

- ✓ To deal with various advanced instrumental techniques for identification, characterization, and quantification of drugs.
- ✓ To understand validation and its application in industry, their methodologies and application in manufacturing processes.
- ✓ To know the Pharmacopoeial assays by spectroscopical methods, calibration techniques, determination of preservatives, vitamin contents in drugs.
- ✓ To create a talent pool by involving students in research projects and to make students undertake research projects under faculty guidance for publication.
- ✓ To create knowledge with various hyphenated analytical instrumental techniques for identification, characterization, and quantification of drugs.
- ✓ To impart knowledge about extraction, separation of drugs from biological samples using different techniques and guidelines for analytical methods.

- ✓ To know the science of detection of impurities, impurities in pharmaceutical formulations, impurity profiling, stability testing of phytopharmaceuticals, and their protocol development.
- ✓ To know about quality assurance aspects of pharmaceutical industries such as cGMP, Documentations, certifications, GLP, and other regulatory affairs.

#### **(D). M.Pharm (Pharmacology) (code: MPL)**

##### **Program Specific Outcomes:**

- ✓ Demonstrate knowledge of professional and ethical responsibilities in clinical and non-clinical laboratory as required by regulatory bodies.
- ✓ Interpret data of pharmaceutical experiments in drug discovery as per the needs of pharmaceutical industries.
- ✓ Translate the high-level of understanding of drug action into key stages in preclinical and clinical research studies.
- ✓ Apply skills to do specialized research in the core and applied areas of pharmaceutical sciences.
- ✓ Evaluate current drug information in the delivery of pharmaceutical care and assure in regard to drug usage and their adverse effects
- ✓ Develop an ability to visualize and work on multidisciplinary tasks in the area pharmaceutical and its allied field.
- ✓ Appraise pharmacological model for investigation through logics and problem to solving ability.
- ✓ Relate the acquired scientific informations and principles of pharmacokinetics and pharmacodynamics in drug discovery process.

### **3. Course Outcomes:**

#### **(A). M.Pharm (Pharmaceutics) (code: MPH)**

##### **Semester - I**

##### **i) Name of the Course: Modern Pharmaceutical Analytical Techniques (code: MPH101T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to know:

- a) chemicals and excipients.
- b) the analysis of various drugs in single and combination dosage forms.
- c) theoretical and practical skills of the instruments.

##### **ii) Name of the Course: Drug Delivery Systems (code: MPH102T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the various approaches for development of novel drug delivery systems.
- b) the criteria for selection of drugs and polymers for the development of delivering system.
- c) the formulation and evaluation of Novel drug delivery systems.

##### **iii) Name of the Course: Modern Pharmaceutics (code: MPH103T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the elements of preformulation studies.
- b) the Active Pharmaceutical Ingredients and Generic drug Product development.
- c) Industrial Management and GMP Considerations.
- d) Optimization Techniques & Pilot Plant Scale Up Techniques.
- e) Stability Testing, sterilization process & packaging of dosage forms.

##### **iv) Name of the Course: Regulatory Affairs (code: MPH104T)**

###### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the concepts of innovator and generic drugs, drug development process.
- b) the Regulatory guidance's and guidelines for filing and approval process.
- c) preparation of Dossiers and their submission to regulatory agencies in different countries.

- d) Post approval regulatory requirements for actives and drug products.
- e) submission of global documents in CTD/ eCTD formats.
- f) clinical trials requirements for approvals for conducting clinical trials.
- g) Pharmacovigilance and process of monitoring in clinical trials.

## **Semester - II**

### **i) Name of the Course: Molecular Pharmaceutics (Nano Technology & Targeted DDS) (code: MPH201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the various approaches for development of novel drug delivery systems.
- b) the criteria for selection of drugs and polymers for the development of NTDS
- c) the formulation and evaluation of novel drug delivery systems.

### **ii) Name of the Course: Advanced Biopharmaceutics & Pharmacokinetics (code: MPH202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the basic concepts in biopharmaceutics and pharmacokinetics.
- b) the use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- c) the critical evaluation of biopharmaceutic studies involving drug product equivalency.
- d) the design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
- e) the potential clinical pharmacokinetic problems and application of basics of pharmacokinetic.

### **iii) Name of the Course: Computer Aided Drug Development (code: MPH203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) History of Computers in Pharmaceutical Research and Development.
- b) Computational Modeling of Drug Disposition.
- c) Computers in Preclinical Development.

- d) Optimization Techniques in Pharmaceutical Formulation.
- e) Computers in Market Analysis.
- f) Computers in Clinical Development.
- g) Artificial Intelligence (AI) and Robotics.
- h) Computational fluid dynamics (CFD).

**iv) Name of the Course: Cosmetics and Cosmeceuticals (code: MPH204T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) key ingredients used in cosmetics and cosmeceuticals.
- b) key building blocks for various formulations.
- c) current technologies in the market.
- d) various key ingredients and basic science to develop cosmetics and cosmeceuticals.
- e) scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.

## **(B). M.Pharm (Pharmaceutical Chemistry) (code: MPC)**

### **Semester - I**

**i) Name of the Course: Modern Pharmaceutical Analytical Techniques  
(code: MPC101T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to know:

- a) about chemicals and excipients.
- b) the analysis of various drugs in single and combination dosage forms.
- c) theoretical and practical skills of the instruments.

**ii) Name of the Course: Advanced Organic Chemistry - I (code: MPC102T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the principles and applications of retrosynthesis.
- b) the mechanism & applications of various named reactions.
- c) the concept of disconnection to develop synthetic routes for small target molecule.
- d) the various catalysts used in organic reactions.
- e) the chemistry of heterocyclic compounds.

**iii) Name of the Course: Advanced Medicinal Chemistry (code: MPC103T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) different stages of drug discovery.
- b) role of medicinal chemistry in drug research.
- c) different techniques for drug discovery.
- d) various strategies to design and develop new drug like molecules for biological targets.
- e) Peptidomimetics.

**iv) Name of the Course: Chemistry of Natural Products (code: MPC104T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) different types of natural compounds and their chemistry and medicinal importance.

- b) the importance of natural compounds as lead molecules for new drug discovery.
- c) the concept of rDNA technology tool for new drug discovery.
- d) general methods of structural elucidation of compounds of natural origin.
- e) Isolation, purification and characterization of simple chemical constituents from natural source

## **Semester - II**

### **i) Name of the Course: Advanced Spectral Analysis (code: MPC201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) interpretation of the NMR, Mass and IR spectra of various organic compounds.
- b) theoretical and practical skills of the hyphenated instruments.
- c) identification of organic compounds.

### **ii) Name of the Course: Advanced Organic Chemistry - II (code: MPC202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the principles and applications of Green chemistry.
- b) the concept of peptide chemistry.
- c) the various catalysts used in organic reactions.
- d) the concept of stereochemistry and asymmetric synthesis.

### **iii) Name of the Course: Computer Aided Drug Design (code: MPC203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) role of CADD in drug discovery.
- b) different CADD techniques and their applications.
- c) various strategies to design and develop new drug like molecules.
- d) working with molecular modeling softwares to design new drug molecules.
- e) the in silico virtual screening protocols.

### **iv) Name of the Course: Pharmaceutical Process Chemistry (code: MPC204T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the strategies of scale up process of APIs and intermediates.
- b) the various unit operations and various reactions in process chemistry.



## **(C). M.Pharm (Pharmaceutical Quality Assurance) (code: MQA)**

### **Semester - I**

**i) Name of the Course: Modern Pharmaceutical Analytical Techniques  
(code: MQA101T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to know:

- a) about chemicals and excipients.
- b) the analysis of various drugs in single and combination dosage forms.
- c) theoretical and practical skills of the instruments.

**ii) Name of the Course: Quality Management Systems (code: MQA102T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the importance of quality.
- b) ISO management systems.
- c) tools for quality improvement.
- d) analysis of issues in quality.
- e) quality evaluation of pharmaceuticals.
- f) Stability testing of drug and drug substances.
- g) Statistical approaches for quality.

**iii) Name of the Course: Quality Control and Quality Assurance (code: MQA103T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the cGMP aspects in a pharmaceutical industry.
- b) appreciate the importance of documentation.
- c) understand the scope of quality certifications applicable to Pharmaceutical industries.
- d) understand the responsibilities of QA & QC departments.

**iv) Name of the Course: Product Development and Technology Transfer  
(code: MQA104T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the new product development process.
- b) understand the necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R&D.
- c) elucidate necessary information to transfer technology of existing products between various manufacturing places.

## **Semester - II**

### **i) Name of the Course: Hazards and Safety Management (code: MQA201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand about environmental problems among learners.
- b) impart basic knowledge about the environment and its allied problems.
- c) develop an attitude of concern for the industry environment.
- d) ensure safety standards in pharmaceutical industry.
- e) provide comprehensive knowledge on the safety management.
- f) empower an ideas to clear mechanism and management in different kinds of hazard management system.
- g) teach the method of hazard assessment, procedure, methodology for provide safe industrial atmosphere.

### **ii) Name of the Course: Pharmaceutical Validation (code: MQA202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to understand:

- a) the concepts of calibration, qualification and validation.
- b) the qualification of various equipments and instruments.
- c) process validation of different dosage forms.
- d) validation of analytical method for estimation of drugs.
- e) cleaning validation of equipments employed in the manufacture of pharmaceuticals.

### **iii) Name of the Course: Audits and Regulatory Compliance (code: MQA203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) understand the importance of auditing.
- b) understand the methodology of auditing.
- c) carry out the audit process.
- d) prepare the auditing report.
- e) prepare the check list for auditing.

**iv) Name of the Course: Pharmaceutical Manufacturing Technology**

**(code: MQA204T)**

**Course Outcomes:**

Upon completion of the course, the student shall:

- a) be able to understand the common practice in the pharmaceutical industry developments, plant layout and production planning.
- b) be familiar with the principles and practices of aseptic process technology, non sterile manufacturing technology and packaging technology.
- c) have a better understanding of principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing.

## **(D). M.Pharm (Pharmacology) (code: MPL)**

### **Semester - I**

**i) Name of the Course: Modern Pharmaceutical Analytical Techniques (code: MPL101T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to know about:

- a) Chemicals and Excipients.
- b) the analysis of various drugs in single and combination dosage forms.
- c) theoretical and practical skills of the instruments.

**ii) Name of the Course: Advanced Pharmacology - I (code: MPL102T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) discuss the pathophysiology and pharmacotherapy of certain diseases.
- b) explain the mechanism of drug actions at cellular and molecular level.
- c) understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.

**iii) Name of the Course: Pharmacological and Toxicological Screening Methods-I (code: MPL103T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) appraise the regulations and ethical requirement for the usage of experimental animals.
- b) describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals.
- c) describe the various newer screening methods involved in the drug discovery process.
- d) appreciate and correlate the preclinical data to humans.

**iv) Name of the Course: Cellular and Molecular Pharmacology (code: MPL104T)**

**Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the receptor signal transduction processes.
- b) explain the molecular pathways affected by drugs.
- c) appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.
- d) demonstrate molecular biology techniques as applicable for pharmacology

## **Semester - II**

### **i) Name of the Course: Advanced Pharmacology - II (code: MPL201T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the mechanism of drug actions at cellular and molecular level.
- b) discuss the Pathophysiology and pharmacotherapy of certain diseases.
- c) understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.

### **ii) Name of the Course: Pharmacological and Toxicological Screening Methods-II (code: MPL202T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the various types of toxicity studies.
- b) appreciate the importance of ethical and regulatory requirements for toxicity studies.
- c) demonstrate the practical skills required to conduct the preclinical toxicity studies.

### **iii) Name of the Course: Principles of Drug Discovery (code: MPL203T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the various stages of drug discovery.
- b) appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery.
- c) explain various targets for drug discovery.
- d) explain various lead seeking method and lead optimization.
- e) appreciate the importance of the role of computer aided drug design in drug discovery.

### **iv) Name of the Course: Clinical Research and Pharmacovigilance (code: MPL204T)**

#### **Course Outcomes:**

Upon completion of the course, the student shall be able to:

- a) explain the regulatory requirements for conducting clinical trial.
- b) demonstrate the types of clinical trial designs.

- c) explain the responsibilities of key players involved in clinical trials.
- d) execute safety monitoring, reporting and close-out activities.
- e) explain the principles of Pharmacovigilance.
- f) detect new adverse drug reactions and their assessment.
- g) perform the adverse drug reaction reporting systems and communication in Pharmacovigilance.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## School of Social Sciences

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. Master of Social Work (MSW)
2. Master of Philosophy (Social Work)
3. Master of Philosophy (Sociology)
4. Ph.D (Social Work/ Sociology)

**Master of Social Work  
(MSW)**



## 1. Name of the Program: **Master of Social Work (MSW)**

### **Program Outcomes:**

**PO1.** Apply knowledge and concept of Social Welfare, Social Work in the resolving the complex issues related to social development in the welfare administration.

**PO2.** Apprising professional traits among the students to resolve complex social problems by investigating and examining the evolutionary and developmental theories of social work.

**PO3.** Analysis, evaluation and application of leadership skills among target group during counseling sessions and Case Work.

**PO4.** Understanding the concepts and issues related to Gender, Aged, Youth and Children in social construction, development and welfare.

**PO5.** Application of the tools and techniques of social work research and ICT to analyze data related to field Work.

**PO6.** Understanding principles, laws related to labor legislation, welfare policy, trade union and industrial relation to create skill based human resource planning.

**PO7.** Application skills of community organizing, resourcemobilization, advocacy and social action using participatory approaches.

**PO8.** Design solution for complex problems of deprived communities through voluntary action in association with local NGOs.

**PO9.** Creating innovative solutions for social problems assessing different successful socio-economic development models developed by NGOs.

**PO10.** Evaluating social development policies, planning and programs of development and social security.

## 2. Name of Specific Program (if any): **No**

### **3. Course Outcomes**

Semester/Year: **Semester – I**

Name of Course: **MSW 1.1 Origin and development of social work**

**Outcomes:**

After this course students would be able:

1. To understand the evolution of social work and its historical development in different countries.
2. To distinguish social welfare in different fields of specialization.
3. To build their knowledge on the professional traits of social work.
4. To acquire knowledge about various social movements and social reforms.

Name of Course: **MSW 1.2 Personality and Dynamics of Human Behavior**

**Outcomes:**

After this course students would be able:

1. To understand about various theories related to human behavior.
2. To learn about motivation, aptitude and with their communication characteristics.
3. To analyze the concept of adjustment, leadership and the behavioral problems of personality development.
4. To compare the concept of normalcy and abnormality in human behavior.

Name of Course: **MSW 1.3 Human Society and Culture**

**Outcomes:**

After this course students would be able:

1. To identify the concept of society, culture and social values.
2. To understand the concept of social system and social institutions.
3. To aware about the concept of socialization and social control.
4. To illustrate about caste system and Dalit assertion in India.

**Name of Course: MSW 1.4 Social Case Work: Theory and Practice**

**Outcomes:**

After this course students would be able:

1. To understand the individual Social Work and social individual service in the community.
2. To acquire knowledge of social process and methods of personal studies.
3. To learn their role in individual Social Work.
4. To compare the role of social case worker in different settings.

**Name of Course: MSW 1.5 Social Group Work: Theory and Practice**

**Outcomes:**

After this course students would be able:

1. To understand the concept and skills of social group work.
  2. To apply the values needed for formation of group.
  3. To compare the different models of social group work
  4. To build knowledge on how to perform documentation and supervision in groups work.

Semester/Year: **Semester – II**

Name of Course: **MSW 2.1 Social and Human Development**

**Outcomes:**

After this course students would be able:

1. To understand the key concepts of social development and the ways to achieve quality of life.
2. To execute some qualitative changes in society through specific programs of social development.
3. To understand different policies and programs related to human and social development.
4. To mobilize support from community organization, business etc. in development of society.

Name of Course: **MSW 2.2 Population and Environment**

**Outcomes:**

After this course students would be able:

1. To understand and reflect on causes, consequences and responses to high and low rates of population growth.
2. To apply knowledge, values, attitudes and skills to protect and improve the environment.
3. To understand the role and mission of family welfare program in India.
4. To explain the concept of integration of social work with ecology.

Name of Course: **MSW 2.3 Community Organization: Theory and Practice**

**Outcomes:**

After this course students would be able:

1. To understand the concept of community and the principles on which community organization works.
2. To understand the roles and skills a community organization worker should have.
3. To build the approaches needed for community organization.
4. To illustrate various strategies and models of community organization.

Name of Course: **MSW 2.4 Social Work Research**

**Outcomes:**

After this course students would be able:

1. To understand scientific approach to human inquiry.
2. To analyze value and approach in social work research in addressing problems in the field of professional practice.

3. To build attitudes and skills that are appropriate for social work research.
4. To utilize various skills for use of library and documentation in research work.

**Name of Course: MSW 2.5 Social Welfare Administration and Social Action**

**Outcomes:**

After this course students would be able:

1. To understand the concepts related to the social welfare administration.
2. To acquire knowledge of administrative and managerial aspects of Social Welfare Administration.
3. To analyze about the need of administrative structure and procedures.
4. To apply the innovative management practices for welfare organization.

Semester/Year: **Semester – III**

Name of Course: **MSW 3.1 Social Work: Themes and Perspectives**

**Outcomes:**

After this course students would be able:

1. To evaluate and apply different theories of development and social development.
2. To analyze development from a Human Development perspective.
3. To create intervention strategies for different areas of social work.
4. To reflect on various themes of Social Work.

Name of Course: **MSW 3.2 Social Policy and Planning in India**

**Outcomes:**

After this course students would be able:

1. To analyze policies related to social development.
2. To acquire skills in critical analysis of social policy formulation and planning.
3. To understand social policy in the perspective of national goals as stated in the Constitution.
4. To develop the capacity to identify linkages among social needs, problems, development issues and policies.

Name of Course: **MSW 3.3 Social Statistics and Computer application**

**Outcomes:**

After this course students would be able:

1. To apply basic statistics in social work research.
2. To understand data related to social work research. and its analysis.
3. To understand use of computer in Social Work Research.
4. To develop skill of data analysis.

Name of Course: **MSW 3.4 Trade Unions and Industrial Relations**

**Outcomes:**

After this course students would be able:

1. To apply knowledge of industrial relation in professional life.
2. To understand role of trade unions.
3. To evaluate issues of dispute and conflict in industry.
4. To apply skills of industrial communication.

**Name of Course: MSW 3.5 Labor Welfare and Social Security**

**Outcomes:**

After this course students would be able:

1. To reflect on labor welfare policy and labor welfare administration,
2. To critically assess Social Security programs of the country.
3. To understand various aspects of labor welfare such as Fair Wage, PF, Gratuity, ESI etc.
4. To analyze government provisions for welfare of labor.

**Name of Course: MSW 3.6 Women and Society in India**

**Outcomes:**

After this course students would be able:

1. To understand concept of Gender.
2. To analyze situation of women in various walks of life from socio-economic and political perspectives.
3. To assess various Women centered schemes, programs and policies of the country.
4. To design and formulate plans and projects related to women empowerment.

**Name of Course: MSW 3.7 Youth Welfare and Development**

**Outcomes:**

After this course students would be able:

1. To understand and reflect on issues related to youth.
2. To evaluate program and policies critically related to youth welfare and development.
3. To create and develop strategies for engaging youth in constructive activities.
4. To assess program of NGOs related to youth welfare and development.

Semester/Year: **Semester – IV**

Name of Course: **MSW 4.1 Counseling and Communication**

**Outcomes:**

After this course students would be able:

1. To apply various principles, theories, types, methods and techniques of counseling.
2. To assess situation of target group.
3. To identify appropriate methods and techniques of counseling.
4. To acquire skills for practice of counseling in different settings.

Name of Course: **MSW 4.2 Participatory Approaches to Development and Social Work Practice Skills**

**Outcomes:**

After this course students would be able:

1. To apply Participatory approaches and social action as methods of social work.
2. To Understand the critical elements of community organization and social action practice.
3. To enhance the understanding of the roles of the agencies and community organizer.
4. To enhance critical understanding of the models and strategies for social action.

Name of Course: **MSW 4.3 Political Economy and Development**

**Outcomes:**

After this course students would be able:

1. To analyze economic and political scenario in context of development.
2. To identify issues related to socio-economic development.
3. To assess development policies and programs.
4. To apply the information of economic growth and development in social work practice in general and individuals, groups and communities in particular.

Name of Course: **MSW 4.4 Human Resource Management**

**Outcomes:**

After this course students would be able:

1. To apply various concepts, theories and practices of Human resource management
2. To create strategies for recruitment and retainment.
3. To assess training needs of the HR.
4. To evaluate performance of employees as per job description.



**Name of Course: MSW 4.5 Labor legislation in India**

**Outcomes:**

After this course students would be able:

1. To understand various labor centered legislations such as Factories Act, Payment of Wages act etc.
2. To reflect on the legal provisions related to the labor issues.
3. To apply knowledge of various labor legislations.
4. To assess labor welfare policies of the any organization in context of labor laws of the country.

**Name of Course: MSW 4.6 Child Welfare and Development**

**Outcomes:**

1. To apply knowledge attitudes and skills in the assessment and provision of Child Protection services.
2. To create quality child development strategies.
3. To assess child related policies, programs and projects.
4. To understand children protection systems, challenges, services and issues related to child rights implementation.

**Name of Course: MSW 4.7 Welfare of the aged**

**Outcomes:**

1. To create strategies for Elderly friendly program and projects.
2. To apply skills of working with elderly people.
3. To understand various acts and provisions for aged in India.
4. To assess role of aged in different social settings.

**Master of Philosophy  
(Social Work)**

1. Name of the Program: **Master of Philosophy (M.Phil.)**

2. Name of Specific Program (if any): **Master of Philosophy (Social Work)**

**3. Course Outcomes:**

1. To understand Social Work research and methodology.
2. Analyze issues related to social work in scientific manner.
3. To identify and apply appropriate social research methods to solve problems and issues related to the field of social work.

Semester/Year: **Semester – I**

Name of Course: **MPHSW 101 Theoretical and Conceptual Issues in Social Work**

**Outcomes:**

Upon completion of this course students would be able to:

1. To understand theories, principles and concepts of Social Work.
2. To reflect on issues related to Social work.
3. To analyze Social Work problems and issues.

Name of Course: **MPHSW 102 Social Work Research**

**Outcomes:**

Upon completion of this course students would be able to:

1. To understand social work research and methodologies.
2. To identify and apply appropriate research methods, tools and techniques.
3. To analyze Social Work problems through scientific investigation.

Name of Course: **MPSW 103 Social Work in Industry**

**Outcomes:**

Upon completion of this course students would be able to:

1. To apply knowledge of social work in industrial setting as a welfare officer/ HR manager.
2. To assess and reflect on issues related to industrial social work.
3. To understand policies and legislation related to industry.

Name of Course: **MPSW 106 Field Work and Viva -Voice**

**Outcomes:**

Upon completion of this course students would be able to:

1. To apply social work research tools to solve social issues.
2. To assess issues related to social work in a systematic way.
3. To understand and apply data collection methods.
4. To analyze data related to social work research.

**Master of Philosophy**  
**(Sociology)**

1. Name of the Program: **Master of Philosophy (M.Phil.)**

2. Name of Specific Program (if any): **Master of Philosophy (Sociology)**

**3. Course Outcomes:**

1. To understand Philosophical theories & concept related to origin, evolution of modern society.
2. To diagnose, analyze social issues, social problem of social system in scientific manner.
3. To identify and apply appropriate social research methods to solve problems and issues related to the fields of sociology.

Semester/Year: **Semester – I**

Name of Course: **MPHS 102 Theoretical Orientation Of Sociology**

**Outcomes:**

Upon completion of this course students would be able to:

1. To understand theories, principles and concepts of Sociology.
2. To reflect theoretical concepts on issues related to development of modern society .
3. To research, analyze the current social problems and formulate the mechanism of rehabilitation.

Name of Course: **MPHS 103 Research Methodology**

**Outcomes:**

Upon completion of this course students would be able to:

1. To understand qualitative and quantitative research methodologies.
2. To identify and apply appropriate research methods, tools and techniques.
3. To analyze and implement the research outcome and synthesis of social justice.

Name of Course: **MPHS 104 Rural and Urban Community Development**

**Outcomes:**

Upon completion of this course students would be able to:

1. To apply knowledge of social work in industrial setting as a welfare officer/ HR manager.
2. To assess and reflect on issues related to industrial social work.
3. To understand polices and legislation related to industry.

Name of Course: **MPSW 105 Field Work and Viva -Voice**

**Outcomes:**

Upon completion of this course students would be able to:

1. To apply research tools to solve social issues.
2. To assess issues related to social system in different cultural settings.
3. To analyse, classify and interpret the and formulation of principal.
4. To synthesis of new principal and scope of application.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## Seedling Institute of Media Studies

### **Programme Outcome, Programme Specific Outcome and Course Outcome**

1. BJMC
2. MJMC
3. Diploma in Videography and Photography
4. Ph.D (Journalism & Mass Communication)



**BJMC**

**Programme Name: Bachelor's of Journalism and Mass Communication  
(BJMC)**

**Program Outcomes (POs)**

- BJMC course help the candidate to acquire theoretical and application information on various area related to journalism and mass communication.
- The course acts as a basis for higher study option, such as master and doctorate level programme in mass communication.
- This helps the candidate to build up a challenging career in media sector with lucrative salary packages. The same allow a opportunity to travel and make contact with a lot of admired personalities.
- Developed improved skills and new skills to enhance the state of their practice, work effectively and conduct themselves ethically in their professional environment.
- This helps the candidate to build up a challenging career in media sector with lucrative salary packages. The same allow opportunity to travel and make contacts with a lot of admired personality.
- Apply written, oral and graphical communication and an ability to identify and use appropriate knowledge.
- Demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity.
- Demonstrate a commitment to quality, timeliness and continuous improvement.

**Programme Specific Outcomes (PSOs): NIL**

## **Course Outcome (COs)**

### **BJMC-1<sup>st</sup> Semester**

#### **Introduction to Communication**

##### **Course outcome**

- ✓ To enable the students to understand the ways through which one can communicate his ideas among masses. know the principles of communication & its different types, process & impact of communication.
- ✓ It will enable the students to know the principles of communication & its different types, process & impact of communication.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news dailies, radio, television, journals etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism, advertising, and communication.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as public relation officer, content research and creation, media planning and so on.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will be able to build up a challenging career in media sector with lucrative salary packages.

#### **Media Reporting**

##### **Course outcome**

- ✓ To enable the students to understand the ways through which one understands the power of media and how it is reported in today's era. One will learn know the complete information about media.
- ✓ It will enable the students to know the media industry and what is the need of media industry.
- ✓ The course includes live projects by which the students get the exposure to various professional domains such as news reporting television reporting etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of Media reporting and how media departments function.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as TV reporting.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will be industry ready and to make their career in media sector with higher salary packages.

## **Communicative English**

### **Course outcome**

- ✓ To know the skills of communication, Verbal and non-verbal modes of communication, Function and Role of effective communication.
- ✓ It will enable the students to know the Letter Writing, Report Writing etc.
- ✓ To Understand the Grammar for effective speaking.
- ✓ The course study helps students to know the structure and working environment of a news organization.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to news organization.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will able to to build up a challenging career in media sector with lucrative salary packages.

## **History of Press**

### **Course outcome**

On completion of the course students should be able to:

- ✓ Develop understanding of development of media during pre independence and post independence era.
- ✓ The course will focus on the rise of the print and early newspaper and its relationship with colonialism and nationalism
- ✓ Contribute positively towards the historical evolution of the communication media as responsible mass communicators.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism, advertising, and communication. -After completion of course the students will able to to build up a challenging career in media sector with lucrative salary packages.
- ✓ The students will be familiar with the nature, role and scope of print media on the changing in the milieu of growing viewership of new media in past few years in the national and global context.

## **BJMC-2<sup>nd</sup> Semester**

### **Theoretical Perspectives on Media**

#### **Course outcome**

- ✓ To enable the students to understand the ways through which one understands the power of communication research and methods will be helpful for the students of mass media. One will learn know the complete information about communication research and methods.
- ✓ It will enable the students to know the media industry and what is the need of research.
- ✓ The course includes live projects by which the students get the exposure to various professional domains researching for news stories etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of research and how the methods will be used for research.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as researching for news stories etc.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications. After completion of course the students will be industry ready and to make their career in media sector with higher salary packages.

### **Creative Writing (Hindi & English)**

#### **Course outcome**

- ✓ Creative writing helps students to present their ideas creatively
- ✓ It engages students to boost their imagination power.
- ✓ It helps students for expressing their feelings in writing format.
- ✓ To know the skills of communication.
- ✓ After completion of course the students will be industry ready and to make their career in various sectors of mass communication.

### **Radio Production**

#### **Course outcome**

- ✓ To enable the students to understand the ways through which one will understand the area of New Media and their phases and how Radio Industry is booming. One will learn know the complete details about radio.
- ✓ It will enable the students to know the Radio industry a future of today's and tomorrow's era and what are the basic needs of today's Radio Industry one should possess.
- ✓ The course includes live projects and live demonstration on Radio like news anchoring, RJs and Voice over artist and how one can use Radio as a medium of public broadcasting.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of Radio Industry.
- ✓ The course study helps one to get either in to the profession of how the Radio sector is helpful in the field of journalism.

- ✓ The course helps the candidate to acquire theoretical as well as practical knowledge of New Media and the different tools of various areas related to Radio journalism.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications and journalism.
- ✓ After completion of course the students will be industry ready and to make their career in Radio sector with higher salary packages.

### **TV Production**

#### **Course outcome**

- ✓ The course includes live projects by which the students get the exposure to various professional domains researching for news stories etc..
- ✓ The main objective of this paper is to introduce the different types of television programme & how the television programme are made, what are the basics of television programme production.
- ✓ Besides this the students will know about the production, post production instruments and its uses, promotion / marketing technique of television programme.

## **BJMC3<sup>rd</sup> Semester**

### **Communication Research and Methods**

#### **Course outcome**

- ✓ To enable the students to understand the ways through which one understands the power of communication research and methods will be helpful for the students of mass media. One will learn know the complete information about communication research and methods.
- ✓ It will enable the students to know the media industry and what is the need of research.
- ✓ The course includes live projects by which the students get the exposure to various professional domains researching for news stories etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of research and how the methods will be used for research.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as researching for news stories etc.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will be industry ready and to make their career in media sector with higher salary packages.

### **Media Ethics and Laws**

#### **Course outcome**

- ✓ To enable the students to understand the Media laws and ethics through which one can work in media industry. The nature of ethics and moral discourse in Media Industry. Demonstrate an understanding of a range of specific ethical issues, perspectives and debates relevant to their chosen major within the Communication.
- ✓ It will enable the students to know where laws and ethics are applicable, of the legal issues relevant to their chosen major within the Communication in Media. Critically appraise and discuss the relevant literature in written and oral forms.
- ✓ The course includes projects and workshops such as case studies by which the students develop a broad understanding of the dynamics of media law, looking across professions and institutions, from media to law, and from schools and neighborhoods to the global communications industry.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects Media Law and Ethics and its application in various field of Journalism of journalism such as advertising, Public Relation, News paper Industry, broadcasting sector etc.
- ✓ Students learn to make professional decisions about media production, taking into consideration a variety of social, legal, and ethical factors.

### **Media and Politics**

#### **Course outcome**

- ✓ To enable the students to understand the ways through which one understands the power of media and politics will be helpful for the students of mass media. One will learn know the complete information about media and politics.

- ✓ It will enable the students to know the media industry and what is the need of media and politics.
- ✓ The course includes live projects by which the students get the exposure to various professional domains of hoe media and politics relates to each other.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of media and politics go hand in hand and how the media reports politics.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as researching and reporting politics.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will industry ready and to make their career in media sector with higher salary packages.

### **Film Appreciation**

#### **Course outcome**

- ✓ It helps the students to write the reviews of the films.
- ✓ The course engages to students in critical thinking about cinema.
- ✓ To gain knowledge about scripting, cinematography etc.
- ✓ To understand the shots, angles, lighting, sound etc.
- ✓ Students will produce a film as their project work which enhances their skills.



## BJMC4<sup>th</sup> Semester

### Broadcast Journalism

#### Course outcome

- ✓ To enable the students to understand of the effects of mass media on culture and society in order to make responsible personal and professional decisions. History of radio and television broadcast .
- ✓ It will enable the students to know the technical aspects of Radio and Television Broadcasting. Students know about the organizational structure of radio, television and MCR.
- ✓ The course includes Field visits, projects and workshop on broadcast, various genre of television, radio by which the students get the exposure to various professional domains such as news dailies, radio, television, MCR etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse Technical and creative aspects of Broadcast journalism.
- ✓ The course study helps one to get in to the profession of Broadcast journalism.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to radio and television.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in Broadcast communications.
- ✓ After completion of course the students will able to to build up a challenging career in media sector with lucrative salary packages.

### Basics of Editing

#### Course outcome

On completion of the course students should be able to:

- ✓ Understand the need of Editing.
- ✓ Learn Video editing and its techniques.
- ✓ will help the students to explore the different dimensions and aspect of production done in television and film.
- ✓ The course helps the candidate to expertise with theoretical as well as practical knowledge of Editing of On line and Off line of videos areas related to mass communication

### Media Economics

#### Course outcome

- ✓ This paper will give in depth idea about the media and its close relation with economics. Students will learn why it is termed as ‘media industry’ and how this industry works. Besides,
- ✓ student will get preliminary idea about popular business terms and its importance as far as media industry is concerned.
- ✓ This course deal with media economics, through this course students understand about economic role in Media sector.
- ✓ As a researcher he can research and survey for market understanding for media organization.
- ✓ As a **Brand Analyst** can work for media organization to study how brands perform in a heavily competitive market.
- ✓ As a **Cost Analyst** to study and design costeffective strategies for various media markets.

## **Media Management**

### **Course outcome**

- ✓ To enable the students to understand the ways through which one will understand the area of media market. One will learn know the complete details about the area of media management.
- ✓ It will enable the students to know the media industry.
- ✓ The course includes live projects and live demonstration of media management and how media agencies work.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of media industry.
- ✓ The course study helps one to get either in to the profession of journalism or other media's professions such as Aaj tak ,NDTV etc.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of media market and how it regulates and rule in today's era.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will be industry ready and to make their career in the filed of media with higher salary packages.

## **BJMC5<sup>th</sup> Semester**

### **Development Communication**

#### **Course outcome**

- ✓ To enable the students to understand Development communication techniques include information dissemination and education, behavior change, social marketing, social mobilization, media advocacy, communication for social change, and community participation.
- ✓ It will enable the students to know how the discipline and practice of development communication began. Who were the founders and how were the first experiments implemented? And the components of development communication.
- ✓ The course includes external projects by which the students get the exposure to various domains of Development. This study then specifies the components of development communication and, having done so, proceeds to evaluate the various approaches to this conceptual formulation.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture the extension and community development approach, the ideological and mass mobilization method, the centralized mass media method, the localized mass media method, and the integrated approach.
- ✓ The course study helps one to get either in to the profession of developmental journalism, civic journalism .

### **Photo Journalism**

#### **Course outcome**

- ✓ To enable the students to understand how we can do better photography for news and other types of photography requirements. We know the rules of photography, types, process.
- ✓ The course includes external projects like nature photographs, artistic photographs, outdoor shoots , indoor shoots by which the students get the exposure to various professional domains such as news dailies, television, social media , film making etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism photography, advertising shoots and other any kind of visual and photo shoots.
- ✓ The course study helps one to get either in to the professions of, film making, photojournalist, TV Production or other media photo professions such as camera man, photographer, and photojournalist media manger.
- ✓ The course helps the candidate to acquire practical knowledge and information on various areas related to shooting and photography and Production.
- ✓ It will enable the students to higher education such as master in mass and doctorate level programs in mass communications.
- ✓ After completion of course the students will able to build up a challenging career in film and tv production and a news production sector with lucrative salary packages.

### **Advertising**

#### **Course outcome**

- ✓ Advertising gets them job in advertising agencies.
- ✓ To create commercial advertising film.
- ✓ To create advertising copy writing
- ✓ To develop advertising skills.

- ✓ The course helps the candidate to acquire theoretical and practical knowledge of PR and the different tools of various areas related to advertising and mass communication.

## **Public Relations**

### **Course outcome**

- ✓ To enable the students to understand the ways through which one will understand the area of Public relations .One will learn know the complete details about PR and the PR industry.
- ✓ It will enable the students to know the PR industry and what are the basics tools of PRO.
- ✓ The course includes live projects and live demonstration of PR industry and how PR is helpful in media industry.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of Public relation industry.
- ✓ The course study helps one to get either in to the profession of journalism or other medias professions such as Public relations and corporate communication.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of PR and the different tools of various areas related to journalism and mass communication and PR.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will industry ready and to make their career in PR sector with higher salary packages.

## **BJMC - 6<sup>th</sup> Semester**

### **Environmental Communication**

#### **Course outcome**

- ✓ To know the Environmental issues and media.
- ✓ To Understand the Impact of Climate change, assessing impact of global warming on local level.
- ✓ The course study helps students to know the structure and working environment of a news organization.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to news organization.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will able to to build up a challenging career in media sector with lucrative salary packages.

### **Basics of Camera Light & Sound**

#### **Course outcome**

- ✓ To enable the students to Understand, interpret and enjoy photography from past to present within a local as well as global context, to identify ideas and issues, and develop and use a basic vocabulary when participating in critical dialogue about photography with others, to understanding that any photographic image is created and interpreted through the lens of both the artist and the viewer's own personal, social and cultural filters.
- ✓ It will enable the students to know the principles of Photography & its different types, process & impact of Pictures.also enable to learn the various technique and rules related to photography.
- ✓ The course includes external projects, regular photographic assignments and inclass photo shoots. Students are expected to complete the following assignments: a depth of field/ shutter speed shoot, an overlapping panoramic, dream pictures, selfportraits, portraits, an advertising stilllife, night photography shoot, landscapes, photo stories and an oral presentation in order to pass the class, by which the students get the exposure to various professional domains such as Fashion photography, wedding photography, candid photography, photojournalism.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of photojournalism.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions, photo editing or enable them to establish their own photo studio .
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to photojournalism and photo editing .

## **New Media**

### **Course outcome**

- ✓ To enable the students to understand the ways through which one will understand the area of New Media and their phases and how New Media is growing leaps and bounds. One will learn know the complete details about New Media.
- ✓ It will enable the students to know the New media industry a future of today's and tomorrow's era and what are the basics need of today's New Media one should possess.
- ✓ The course includes live projects and live demonstration on New Media.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of New Media.
- ✓ The course study helps one to get either in to the profession of how the Media sector is helpful in the field of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical knowledge of New Media and the different tools of various areas related to New Media.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications and journalism.
- ✓ After completion of course the students will be industry ready and to make their career in New media and IT sector with higher salary packages.

## **Project Work**

### **Course outcome**

- ✓ Developed improved skills and new skills to enhance the state of their practice, work effectively and conduct themselves ethically in their professional environment.
- ✓ This helps the candidate to build up a challenging career in media sector with lucrative salary packages. The same allow opportunity to travel and make contacts with a lot of admired personality.
- ✓ Apply written, oral and graphical communication and an ability to identify and use appropriate knowledge.
- ✓ Demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity.
- ✓ Demonstrate a commitment to quality, timeliness and continuous improvement.

**MJMC**

## **Programme Name: Master's of Journalism and Mass Communication (MJMC)**

### **Program Outcomes**

- ✓ The course is the foundation for higher study option like doctoral program in journalism and mass communication.
- ✓ The course incorporates external project which helps the candidate to gain exposure to various media fields such as news dailies, radio, television journal, Broadcast Journalism, Public Relation, and Advertisement etc.
- ✓ By pursuing this course, the candidate get a through idea about how to efficiently communication his idea among the masses.
- ✓ This course helps the candidate to build up challenging career in media sector with lucrative salary package. The same allow opportunity to travel and make contact with lot of admire personalities.
- ✓ Develop and improve skill to enhance the state of their practice, work effectively and conduct themselves ethically in their professional environment.
- ✓ The main employment area for those who completed masters of journalism and mass communication are reporting, editing, advertising, public relations, corporate communications, media management, television and film production.
- ✓ Acquire new knowledge by being a member or part of professional organisations and keeping themselves up to date of the new advance in the journalism and mass communication field.

**Program Specific Outcomes (PSOs): N.A.**



## MJMC – 1<sup>st</sup> Semester

### **Theoretical Perspectives of Communication**

#### **Outcomes**

- ✓ The course includes live projects and live demonstration of communication theories.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of communication industry.
- ✓ The course study helps one to get either in to the profession of journalism or other media's professions such as communication theories and practices.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of communication theories.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will industry ready and to make their career in the field of media with higher salary packages.
- ✓ To enable the students to understand the ways though which one will understand the area of communication. One will learn know the complete details about theories of communication. It will enable the students to know the theories of communication.

### **Information Technology and Web World**

#### **Outcomes:**

- ✓ To enable the students to understand the ways though which one will understand the area of web world .One will learn know the complete details about IT and the web industry. It will enable the students to know the IT industry and what are the basics of Web world and Information Technology.
- ✓ -The course includes live projects and live demonstration on IT sector like new information technology and what are the new global scenario of media through Internet.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of IT and web industry.
- ✓ The course study helps one to get either in to the profession of how the IT sector is helpful in the field of journalism or other media's professions.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of IT and web world and the different tools of various areas related to journalism and mass communication.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications and journalism.
- ✓ After completion of course the students will industry ready and to make their career in IT and web world sector with higher salary packages.

## **History of Media in India**

### **Outcomes:**

- ✓ On completion of the course students should be able to: Develop understanding of development of media during pre independence and post independence era.
- ✓ To understand the importance of credibility and accuracy in Journalism. It will enable the students to know the Press laws during British rule.
- ✓ The course study helps students to know about Watchdog journalism, Alternative journalism, Advocacy journalism and citizen journalism.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ -It will enable the students to opt doctorate level programs in mass communications.
- ✓ After completion of course the students will able to build up a challenging career in media sector with lucrative salary packages.

## **Meaning and Making of News**

### **Outcomes:**

- ✓ To know the skills of gathering news and art of writing the news. It will enable the students to know the elements of news, principles of interview, role & responsibilities of a reporter.
- ✓ To understand the importance of credibility and accuracy in writing of news.
- ✓ The course study helps students to know the structure and working environment of a news organization.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to news organization.
- ✓ It will enable the students to opt doctorate level programs in mass communications.
- ✓ After completion of course the students will able to build up a challenging career in media sector with lucrative salary packages.

## MJMC – 2<sup>nd</sup> Semester

### **Radio Production**

#### **Outcomes:**

- ✓ To enable the students to understand the ways through which one will understand the area of New Media and their phases and how Radio Industry is booming .One will learn know the complete details about radio.
- ✓ It will enable the students to know the Radio industry a future of today's and tomorrow's era and what are the basics need of today's Radio Industry one should possess.
- ✓ The course includes live projects and live demonstration on Radio like news anchoring, RJs and Voice over artist and how one can use Radio as a medium of public broadcasting.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of Radio Industry.
- ✓ The course study helps one to get either in to the profession of how the Radio sector is helpful in the field of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical knowledge of New Media and the different tools of various areas related to Radio journalism.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications and journalism.
- ✓ After completion of course the students will be industry ready and to make their career in Radio sector with higher salary packages.

### **Development Communication**

#### **Outcomes:**

- ✓ To enable the students to understand Development communication techniques include information dissemination and education, behavior change, social marketing, social mobilization, media advocacy, communication for social change, and community participation.
- ✓ It will enable the students to know how the discipline and practice of development communication began. Who were the founders and how were the first experiments implemented? And the components of development communication.
- ✓ The course includes external projects by which the students get the exposure to various domains of Development. This study then specifies the components of development communication and, having done so, proceeds to evaluate the various approaches to this conceptual formulation.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture the extension and community development approach, the ideological and mass mobilization method, the centralized mass media method, the localized mass media method, and the integrated approach.
- ✓ The course study helps one to get either in to the profession of developmental journalism, civic journalism . It concludes that since development communication is not simply concerned with the mere provision of information on development activities, it should not stop with conventional mass media. Rather, it must involve strong

components of social organization and interpersonal and traditional modes and media if it is to succeed.

- ✓ The course helps the candidate to acquire theoretical and application information on various areas developmental Journalism.

### **Media Ethics & Laws**

#### **Outcomes:**

- ✓ To enable the students to understand the Media laws and ethics through which one can work in media industry .The nature of ethics and moral discourse in Media Industry. Demonstrate an understanding of a range of specific ethical issues, perspectives and debates relevant to their chosen major within the Communication.
- ✓ It will enable the students to know where laws and ethics are applicable, of the legal issues relevant to their chosen major within the Communication in Media. Critically appraise and discuss the relevant literature in written and oral forms.
- ✓ The course includes projects and workshops such as case studies by which the students develop a broad understanding of the dynamics of media law, looking across professions and institutions, from media to law, and from schools and neighborhoods to the global communications industry.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects Media Law and Ethics and its application in various field of Journalism of journalism such as advertising, Public Relation, News paper Industry, broadcasting sector etc.
- ✓ Students learn to make professional decisions about media production, taking into consideration a variety of social, legal, and ethical factors.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications.
- ✓ After completion of course the students will able to to build up a challenging career in media, equipped with legal knowledge about media sector with lucrative salary packages.

### **Meaning & Making of News**

#### **Outcomes:**

- ✓ To know the skills of gathering news and art of writing the news. It will enable the students to know the elements of news, principles of interview, role & responsibilities of a reporter.
- ✓ To understand the importance of credibility and accuracy in writing of news.
- ✓ The course study helps students to know the structure and working environment of a news organization.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to news organization.
- ✓ It will enable the students to opt doctorate level programs in mass communications.
- ✓ After completion of course the students will able to build up a challenging career in media sector with lucrative salary packages.

## MJMC – 3<sup>rd</sup> Semester

### **Media and Communication Research**

#### **Outcomes:**

- ✓ To enable the students to understand the ways through which one understands the power of communication research and methods will be helpful for the students of mass media. One will learn know the complete information about communication research and methods.
- ✓ It will enable the students to know the media industry and what is the need of research.
- ✓ The course includes live projects by which the students get the exposure to various professional domains researching for news stories etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of research and how the methods will be used for research.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as researching for news stories etc.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.
- ✓ After completion of course the students will be industry ready and to make their career in media sector with higher salary packages.

### **Media and Democracy**

#### **Outcomes:**

- ✓ On completion of the course students should be able to: Develop understanding of media and democracy issues.
- ✓ Students will know why democracy is an integral part of discussion as far as media study is concerned.
- ✓ Contribute positively towards the area where the Indian Media can act as a mass communicators.
- ✓ After completion of course the students will be industry ready and to make their career in political reporting with higher salary packages.

### **TV Production**

#### **Outcomes:**

- ✓ To enable the students to understand the ways through which one will understand the area of TV production and their phases and how TV industry is booming. One will learn know the complete details about TV industry.
- ✓ It will enable the students to know the TV industry a future of today's and tomorrow's era and what are the basic needs of today's TV industry one should possess.
- ✓ The course includes live projects and live demonstration on TV like news anchoring, VJs and Actor and how one can use TV as a medium of public broadcasting.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of TV industry.

- ✓ The course study helps one to get either in to the profession of how the TV sector is helpful in the field of journalism.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of TV industry and the different tools of various areas related to TV journalism.
- ✓ After completion of course the students will industry ready and to make their career in TV sector with higher salary packages.

## **Corporate Communication and Advertising**

### **Outcomes:**

- ✓ To enable the students to understand an overview of Prerequisites to Business Communication, outline to effective Organizational Communication, the correct practices of the strategies of Effective Business writing.
- ✓ It will enable the students to draft effective business correspondence with brevity and clarity, to stimulate their Critical thinking by designing and developing clean and lucid writing skills, to demonstrate his verbal and non-verbal communication ability through presentations.
- ✓ The course includes external projects, workshops such as press conference by which the students get the exposure to various professional domains Public Relation, advertisement, Media coordination and Media monitoring.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of Public Relation and Advertisement.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as public relation officer, Advertisement industry, content research and creation, media planning. MNC and so on.
- ✓ The course helps the candidate to acquire theoretical and application information on various areas related to Public Relation and Advertisement.
- ✓ After completion of course the students will able to build up a challenging career in media sector with lucrative salary packages.

## MJMC – 4<sup>th</sup> Semester

### **Media & Globalization**

#### **Outcomes:**

- ✓ To enable the students to understand the ways through which one will understand the area of how media is globalized acclaimed.
- ✓ It will enable the students to know that how media is globalized known and how it is spread over.
- ✓ The course includes live projects and live demonstration on TV.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of global media.
- ✓ The course study helps one to get either in to the profession of how the media is globally recognized.
- ✓ The course helps the candidate to acquire theoretical and practical knowledge of Global media industry.
- ✓ It will enable the students to opt higher education such as master and doctorate level programs in mass communications and journalism.
- ✓ After completion of course the students will industry ready and to make their career in media sector with higher salary packages.

### **Media Movement & Justice**

#### **Outcomes:**

- ✓ To understand the role of the non-party political- social movements & Freedom of expression.
- ✓ The course study helps students to know the concept of alternative media and its importance in our society.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news dailies, radio, television, journals.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of media movements & digital divide.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to journalism and mass communication.
- ✓ It will enable the students to opt doctorate level programs in mass communications.
- ✓ After completion of course the students will able to build up a challenging career in media sector with lucrative salary packages.

### **Specialized Media Reporting**

#### **Outcomes:**

- ✓ To Understand the Indian democracy, politics and legislature, Crime and Judiciary.
- ✓ To know the skills of gathering news and art of Reporting. To know about Human Right Issues, International Humanitarian Laws and Finance etc.

- ✓ The course study helps students to know the specialized area of reporting like Business, sports, rural, court assembly, parliament & autonomous bodies.
- ✓ To improve the in depth knowledge of the particular specialized area of reporting.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news papers & channels etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism.
- ✓ The course helps the candidate to acquire theoretical as well as practical information on various areas related to news organization.



## **Specialization (Project work)**

### **Outcomes:**

- ✓ The main objective of the course is to make the participant understand the ways through which one can communicate his ideas among masses.
- ✓ The course includes external projects by which the students get the exposure to various professional domains such as news dailies, radio, television, journals etc.
- ✓ Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of journalism, advertising, Public Relation, communication.
- ✓ The course study helps one to get either in to the profession of journalism or other media professions such as public relation officer, content research, Broadcast Journalism, media planning, Media Management and so on. MJMC course helps the candidate to acquire theoretical and application information on various areas related to journalism and mass communication.

**Diploma in**  
**Videography and Photography**

## **Programme Name – Diploma in Videography and Photography.**

### **Program Outcomes (POs)-**

- ✓ The course is the foundation for making career option in videography and photography and take handful knowledge of all the aspects of media line.
- ✓ The course incorporates external project which helps the candidate to gain exposure to various media fields of film making video shootings, set designing and indoor and outdoor productions. Etc.
- ✓ By pursuing this course, the candidate get a through idea about how to efficiently communication his idea among the masses.
- ✓ These courses help the candidate to build up challenging career in media as well as in bollywood sector with lucrative salary package. The same allow opportunity to travel and make contact with lot of admire personalities.
- ✓ Develop and improve skill to enhance the state of their practice, work effectively and conduct themselves ethically in their professional environment.
- ✓ The main employment area for those who completed this diploma course they can step in film making, reporting, editing, advertising, television and film production.
- ✓ Acquire new knowledge by being a member or part of professional organizations and keeping themselves up to date of the new advance in the journalism and mass communication field.

## Course Outcomes (COs)

### SMS-DIPV 101 – Basics of Camera

#### Course outcome

-To enable the students to Understand, interpret and enjoy photography from past to present within a local as well as global context, to identify ideas and issues, and develop and use a basic vocabulary when participating in critical dialogue about photography with others, to understanding that any photographic image is created and interpreted through the lens of both the artist and the viewer's own personal, social and cultural filters.

-It will enable the students to know the function of camera & it's different types, process, that will guide them to understand basic to advance level functioning of camera .

-The course includes external projects by which the students get the exposure to various professional domains such as use of camera in print media and electronic media, photography, fashion show and life style etc.

-Upon completion of the course, the candidate gets a concise and clear idea about the use of camera in various fields of media such as journalism, advertising, and communication.

### Paper DV 102: Functions and Control of Video Camera

#### Course outcome

- On completion of the course students should be able to:  
To enable the students to make them understand about the video production skills including writing, producing, directing and digital editing.
- It will enable the students to get knowledge of establish field video genres and technique.
- The course includes external projects by which the students get the exposure to various production (pre production, production) and direction.
- Upon completion of the course, the candidate gets a concise and clear idea about the use of video camera, digital editing and multiple video elements together( images, sound, archive footages) to convey a message, tell a story and achieve communicating goals in various fields of media.

### Paper DV103: Film Appreciation

- On completion of the course students should be able to:  
To enable the students to make them understand about the video production skills including writing, producing, directing and digital editing.
- It will enable the students to get knowledge of establish field video genres and technique.
- The course includes external projects by which the students get the exposure to various production (pre production, production) and direction.
- Upon completion of the course, the candidate gets a concise and clear idea about the use of video camera, digital editing and multiple video elements together( images, sound,

archive footages) to convey a message, tell a story and achieve communicating goals in various fields of media.

### **Paper DV 104: Indoor- outdoor Production**

On completion of the course students should be able to:

To enable the students to make them understand about the video production skills including writing, producing, directing and digital editing.

- It will enable the students to get knowledge of establish field video genres and technique.
- The course includes external projects by which the students get the exposure to various production (pre production, production) and direction.
- Upon completion of the course, the candidate gets a concise and clear idea about the use of video camera, digital editing and multiple video elements together( images, sound, archive footages) to convey a message, tell a story and achieve communicating goals in various fields of media.

## **DV -2nd Semester**

### **SIMS- DV 201 - Television Production Techniques**

#### **Course outcome**

On completion of the course students should be able to:

- Understand, interpret and enjoy television Production from past to present within a local as well as global context,
- to identify ideas and issues, in tv production. And to understanding that any production is created and interpreted through the lens of both the artist and the viewer's own personal, social and cultural filters.
- It will enable the students to know the principles of tv production & its different types, process & impact of production also enable to learn the various technique and rules related to television production.
- -The course includes external projects, regular assignments and indoor production. . Students are expected to complete the following assignments: a depth of field/ shutter speed shoot, an overlapping panoramic, dream pictures, advertising, documentary and an oral presentation in order to pass the class, by which the students get the exposure to various professional domains such as Fashion, wedding,
- -Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of tv prduction.

- -The course study helps one to get either in to the profession of journalism or other media professions, Production House photo or enable them to establish their own production house .
- -The course helps the candidate to acquire theoretical and application information on various areas related to indoor and Outdoor production .

## **SIMS- DV 201 - Lighting and Camera Techniques**

### **Course outcome**

On completion of the course students should be able to:

-To enable the students to Understand, interpret and enjoy photography from past to present within a local as well as global context, to identify ideas and issues, and develop and use a basic vocabulary when participating in critical dialogue about photography with others, to understanding that any photographic image is created and interpreted through the lens of both the artist and the viewer's own personal, social and cultural filters.

-It will enable the students to know the principles of Photography & it's different types, process & impact of Pictures. Also enable to learn the various technique and rules related to photography and Lighting.

-The course includes external projects, regular photographic assignments and indoor photo shoots. Students are expected to complete the following assignments: a depth of field/ shutter speed shoot, an overlapping panoramic, dream pictures, self-portraits, portraits, an advertising still-life, night photography shoot, landscapes, photo stories and an oral presentation in order to pass the class, by which the students get the exposure to various professional domains such as Fashion photography, wedding photography, candid photography with lighting techniques.

-Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of camera and lighting.

-The course study helps one to get either in to the profession of journalism or other media professions, photo editing or enable them to establish their own photo studio.

-The course helps the candidate to acquire theoretical and application information on various areas related to photojournalism and photo editing.

## **DV 203 - Basics of Editing & Techniques**

### **Course outcome**

On completion of the course students should be able to:

-To enable the students to Understand, interpret the basic of Editing, to understanding the use of editing, to understand the video editing and its different aspects.

-To enable the students to understand the ways through which one can communicate his ideas among masses know the principles of editing & its different types, process & impact of video editing

-The course includes indoor and outdoor projects by which the students get the exposure to various professional domains such as television, news channels and production house etc.

Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of techniques of editing.

--After completion of course the students will be able to build up a challenging career in media sector with lucrative salary packages.

### **SIMS- DV 204 - Capturing & Video editing Basic**

#### **Course outcome**

On completion of the course students should be able to:

To enable the students to Understand, interpret the basic of capturing and video Editing basics, to understanding the use of editing, to understand the video editing and its different aspects.

-To enable the students to understand the ways through which one can communicate his ideas among masses know the principles of video capturing and editing & its different types, process & impact of video editing.

-The course includes indoor and outdoor projects by which the students get the exposure to various professional domains such as television, news channels and production house etc.

Upon completion of the course, the candidate gets a concise and clear picture on diverse aspects of techniques of production and editing.

--After completion of course the students will be able to build up a challenging career in media sector with lucrative salary packages.

-The course helps the candidate to acquire theoretical and application information on various areas related to photojournalism and photo editing .

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## Seedling School of Law & Governance

### Programme Outcome, Programme Specific Outcome and Course Outcome

1. BA, LL.B (Hons.)
2. BBA, LL.B (Hons.)
3. LL.B (Three Years)
4. LL.M
5. PGDLL



**BA, LL.B (Hons.)**

## **Name of Program: BA, LL.B (Hons.)**

### **Program Outcomes:**

Conferment of Honours in integrated Bachelor degree “**Bachelor of Arts and Bachelor of Laws**”, **BA, LL.B.**, (Hons.) This provides an integral understanding of the inter linkages of Studies of Art subjects and Law in their entirety than in specified areas.

1. The course covers a vast domain of the contemporary areas of relevance of art subjects and provides students with an opportunity to focus on social, legal and political issues, with a strong emphasis on the impact of technology on commerce, corporate governance and management of the emerging market issues in globalizing human and institutional relations.
2. This programme enables the students to develop a competitive edge over their counterparts in other institutions and help in taking them to the zenith of their career.
3. It aims at providing apprenticeship with the eminent lawyers, leading law Firms, NGOs, Government Organizations, leading LPOs and taking up job of Clerkship under Supreme Court and High Court Judges.
4. This programme prepares graduates to practice in Courts of Law, render services in Judiciary and take up a career in Banks, Academics and other areas where expertise in law is desirous.
5. This aims at developing legal skills of students through legal aid training. It is committed to provide suitable environment to develop leaders in Professional Education and Research.
6. The programme further aims at providing quality education by innovating continuously and improving upon various fields of Law, Management and Computer applications through advanced training, meaningful research and intimate relations with law courts, institutions, industry and other institutions in the country and abroad.
7. This programme emphasizes on providing an integrated understanding of law in the area of Economics, Forensic Science, Administration, Mass Media Communication, IPR and Cybernetics. It also provides necessary knowledge which is a pre-requisite to obtain certificate of registration in Bar Council of India, and undertake any law-related practice.
8. The courses are delivered through lectures and seminar series involving both professor and student presentations. Students prepare for classroom participation through reading and analysis of cases, and their own research.

## **2. Name of the Specific Programme: BA LLB (Hons.)**

**Program Specific Outcomes:** This programme strengthens the knowledge base of students, their thinking and analytical skills, the practical application of theories, and significantly contributes to the development of general skills in preparation for life and work. This Programme equips the students with a sound understanding of the foundations of legal knowledge.

1. Offers students the opportunity to study law from an extensive catalogue of optional subjects, covering the entire range of legal knowledge.
2. Develops students' analytical and research skills, equipping them with the logical skills they will need in their future careers.
3. Exposes students to a wide range of disciplinary approaches to legal study, encouraging them to reflect on the complexity of legal practice.
4. Deepens the understanding of law in a variety of contexts.
5. Instills in students confidence and ability to deal with different types of legal issues.
6. Makes students apply critical and contextual approaches across a wide variety of subject matter.
7. Provides necessary knowledge which is a pre-requisite for rendering Clinical Legal Services.
8. Makes students analyze and understand changes in regard to law, economic reforms, human rights, women's rights, rights of children, elderly, sick and disadvantaged segments of the population.

This programme provides a law graduate, plethora of opportunities. One can practice as an advocate in a court of law or work with corporate /law firms. By clearing exams conducted by Public Service Commissions, a law graduate can become a judge. After gaining experience, a law graduate can become Solicitor General, a Public Prosecutor or can offer services to government departments, ministries and private sectors. One can also work as a legal adviser for various organizations. Teaching in colleges, working with NGOs and working as a reporter for newspapers and television channels are other attractive options besides taking up administrative services, judicial services or services in Armed Forces.

## **Course Outcomes:**

### **Semester/ Year: 1<sup>st</sup> year / 1<sup>st</sup> Semester**

#### **Name of the Course: Legal English-I (Grammar, Legal Terms & Latin Maxims)**

**Course Outcomes:** By end of this course the students will be able to -  
Describe the facts and circumstances of a case conveniently using exact legal terms.

- I. Advance the arguments using legal maxims correctly.
- II. Know the correct usage of English terms.
- III. Learn correct pronunciation of difficult words.

#### **Name of the Course: Political Governance: Concepts and Organisations**

**Course Outcomes-** By the end of this course the students shall be able to:

- I. Understand the basic concepts of political theory and the evolution of the state.
- II. Know the history of ideas such as democracy, representation, participation etc
- III. Develop the basic knowledge about their rights and obligations.
- IV. Understand the different organs of government, their powers and functions as provided in the Indian Constitution.
- V. Know the different aspects of Indian political system like political parties, NGO's, pressure groups etc.

#### **Name of the Course: COMPUTER APPLICATION**

**Course Outcomes:** After completing the course the student will be able to-

- I. Use the computer for basic purposes of preparing documents,
- II. View information on internet (the web),
- III. Send mails, prepare presentations etc.
- IV. Search legal material for study and research.

#### **Name of the Course: Legal and Constitutional History of India**

**Course Outcomes:** Students will be able to-

- I. Understand the idea of Hindu and Muslim Laws and trace their origins through the ancient legal literature.

- II. Understand the evolution and status of Hindu and Muslim laws during the British rule.
- III. Understand the significant landmarks relating to judicial administration and reforms in the period of British East India Company.
- IV. Take notice of the changes in the judicial system in Calcutta, Bombay and Madras and the conflicts between the executive and the judiciary.
- V. Visualize the major steps taken to establish a uniform judicial system since 1858 (after the 1857 revolt)
- VI. Understand the evolution, existence and need of Indian Civil Procedure Code.
- VII. Know about the establishment of Supreme Court of India in 1950.

**Name of the Course: Legal Methods**

**Course Outcomes:** The students will be able to-

- I. Understand the concept of law and its origin in different legal systems.
- II. Know the thoughts of different schools of law and the basis of classification of law.
- III. Understand the functioning of different legal systems of the world.
- IV. Undertake legal research work and writing of research papers for publication in legal journals & E- resources as law student.

**Name of the Course: Law of Tort (Motor Vehicle Accident and Consumer Protection Law)**

**Course Outcomes:** The students will be able to-

- I. Evaluate & apply key concepts including strict & absolute liability, negligence, Defamation, Trespass etc.
- II. To assess the role of concepts taught in practice as well as in daily lives in respecting and protecting the rights of others.
- III. The practical implementation of Torts, Consumer protection, Motor vehicles act in solving the cases.
- IV. Create strategies & awareness of products & services by studying Consumer Protection Act.
- V. Reflect on the practical implementation of Motor Vehicles Act.
- VI. Plan and compose tactical decisions to meet the needs of a client brief after studying wide concepts in Torts.

## **Semester/ Year: 1<sup>st</sup> year / 2<sup>nd</sup> Semester**

### **Name of the Course: Legal English-II (Communication & Writing Skills)**

**Course Outcomes:** After completion of this course the student will be able to-

- I. Write letters to different organizations.
- II. Face Interviews and communicate well.
- III. Make oral presentations.
- IV. Overcome the communication barriers.
- V. Develop skills of good communicator.

### **Name of the Course: Law of Contract – I**

**Course Outcomes:** After completion of the course, students would be able to-

- I. Trace the evolution of law of contract with the passage of times and the role of equity in law.
- II. Understand the differences between the law of torts and the law of contract in terms of liabilities.
- III. Understand the essentials of a valid contract.
- IV. Know the contractual obligations arising out of breach of contract.
- V. Distinguish the enforceable and unenforceable contracts.
- VI. Safeguard the interests of parties while drafting the terms of a contract.
- VII. Understand the role of a contract in growth of commercial activities.

### **Name of the Course: Economics-I**

**Course Outcomes:** By the end of the course students will be able to-

- I. Understand that law governing exchange of goods and services is crucial for a market economy.
- II. Know the application of economic principles to legal instruments, questions, and procedures while drafting of laws, or in assessing the amount of damages.
- III. Find out that legal procedure wherein he may have to work for contingent fees on a “no-win, no-fee” basis.
- IV. Work in corporate environment with a good knowledge of economic know-how.

### **Name of the Course: Indian History**

**Course Outcomes:** By the end of the course students will be able to-

- I. Develop critical thinking to identify myths and stereotypes, embedded meanings and discourses.

- II. Understand the socio, economic and political context in which legal system emerge and evolve.
- III. Analyze the nature of the state and administrative apparatus required for proper understanding of the legal systems in ancient and medieval India.
- IV. Take up a close study of select themes, focusing specifically on the intersections in history and law.

**Name of the Course: Jurisprudence**

**Course Outcomes:** By the end of the course students will be able to-

- I. Knowledge of the basic framework of Jurisprudence in the background of philosophers and their thoughts regarding the law and the knowledge of the law.
- II. Understand the thoughts of different schools of jurisprudence to understand the development of the law in different society.
- III. Know different sources of the law and their contribution to the development of the law.
- IV. Understand the concept, applicability and the obligations of the law.
- V. Know the role of the state and concept of sovereignty to provide Justice to the society.
- VI. Conceive the idea of law propounded by different schools of law. Analyze the various legal philosophies and thoughts put forth by various thinkers including western thinkers in respect of the idea of law and its development.

**Name of the Course: Political Theories and Debates**

**Outcomes:** By the end of this course the students shall be able to:

- I. Understand the basic concepts of political theory and role of state towards its citizens.
- II. How the international convention, agreement or treaties guarantee basic human rights.
- III. Develop the knowledge about linkage between caste, politics & religion in Indian context.
- IV. Contribution made by various Indian political reformers in eradication of inequalities present in the society.
- V. Know the problems rampant in Indian society.

**Semester/ Year: 2<sup>nd</sup> year / 3<sup>rd</sup> Semester**

**Name of the Course: Economics -II**

**Course Outcomes:** By the end of the course students will be able to-

- I. Understand as to how economic offences are done and their legislations to control them.
- II. Know the new economic policies that would shape the future economy.
- III. Know the role of law in running a business, company or carrying out activities in field of marine, oil and gas or certain other fields of interest.
- IV. Know that law deters offenders from committing economic crimes.
- V. Know that countries with low crime rate attract investors which are directly related with the macro economics.

**Name of the Course: International Relations**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Understand the evolution of the concept of international relations and the basic ingredients needed to develop better relations with other nations
- II. Know how India contributed to the cause of world peace and its relations with United Nations.
- III. Know the turbulent times to world peace and the dangers which still persist.
- IV. Understand the new world order and recent developments in it
- V. Get knowledge about the India's regional & bilateral relations with its neighbors and its role in regional and international organizations.

**Name of the Course: World History**

**Course Outcomes:** By the end of this course the students shall be able to-

- I. Know about the background of Roman Empire and Byzantium Empire and importance of Constantinople as New Rome.
- II. Know the purpose of invasion of Eastern Europe by the Ottoman Turks and also the use of technology (gunpowder and cannons by the Turks)
- III. Identify the causes and effects of the Renaissance, Reformation, Counter Reformation and the influence of major earlier societies on Italian Renaissance workers
- IV. Differentiate between Renaissance movements in Italy and that of Northern Europe.
- V. Understand the main events of the Russian Revolution and French Revolution (1789) and their significance



- VI. Assess and appraise the developments in art, literature, and society during the Renaissance by major artisans such as Leonardo da Vinci, Michelangelo, and Shakespeare.
- VII. Understand the Reformation and Counter Reformation and the evolution of Christianity in Europe and abroad.
- VIII. Know the causes, significance and after effects of two world wars (Rise of Bipolar Politics,. The United Nations, Rise of Nationalism and Decolonization, Rise of Human Rights, Challenge of Nuclear Weapons, Military Alliances – NATO and Warsaw Pact, Crisis and Escalation:, Space Race, Cuban Revolution and Bay of Pigs Invasion, Berlin Crisis of 1961, Cuban Missile Crisis, Détente, Non-Aligned Movement – demand for democratization of international relations and international distributive justice, Challenges of Disarmament, Gorbachev – Glasnost and Perestroika, End of the Cold War and the world after the end of Cold War (The New World Order of a single super power)

### **Name of the Course: Constitutional Law- I**

**Course Outcomes:** After completion of this course the students will be able to-

- I. Know the very purpose of Constitution of India.
- II. Know the fundamental rights available to citizens and non citizens.
- III. Understand the way social, political and economic justice could be realized.
- IV. Know and practice the speedy way of getting the rights enforced by the state.
- V. Know as to how different organs of state are governed by the provisions of Constitution.
- VI. Know the duties of citizens and directives for state to legislate for people.

### **Name of the Course: Law of Crimes –I (Penal Code)**

**Course Outcomes:** After completion of this course the student would be able to-

- I. Understand the basic principles of criminal law that determine criminal liability.
- II. Understand that all acts or omissions are not punishable per se but they need to be declared and expressly made punishable by law.
- III. Know the kinds of punishments provided for convicts under Indian Penal Code.

- IV. Know the way solitary confinement is administered to a convict.
- V. Know that all crimes are to be read subject to the general exceptions.
- VI. Know that special criminal law will prevail over the provisions of Indian Penal Code.
- VII. Know that an act or omission made punishable today may not be so tomorrow.

**Name of the Course: Law of Contract-II**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the context and rationale of specific contracts of Indemnity, Guarantee, Bailment, Pledge and Agency.
- II. Appreciate the relationship of general principles of contract with the special contracts.
- III. Understand as to how law allocates for the economic risks involved in commercial transactions.
- IV. Understand the growing importance of new forms of special contracts and e-contracts such as agreements for technology transfer, software licensing, infrastructural contracts, government contracts, contract for public private partnerships etc.
- V. Know the relation of specific contracts for our day to day commercial activities and their impact on the social and economic front.
- VI. Know the obligations arising out of breach of such contracts.
- VII. Know the circumstances under which performance of such contracts is enforceable or excusable.

## **Semester/ Year: 2<sup>nd</sup> year / 4<sup>th</sup> Semester**

### **Name of the Course: Economics-III**

**Course Outcomes:** By the end of the course students will be able to-

- I. Understand as to how International Organizations help in enhancing economic conditions of a country and how legal advisors contribute in this direction.
- II. Know as to how law governs international trade between countries.
- III. Understand the legal procedure involved in carrying out international trade.
- IV. Know the legal ways to enter into the foreign market for trade and commerce.

### **Name of the Course: HINDI**

**Course Outcomes:** By the end of the course students will be able to-

- I. Know the legal terminology of Urdu, Hindi and Farsi used in Lower court.
- II. Express the legal opinion in Hindi using terms prevalent in lower courts of some of the states in the country.
- III. Write judgments in Hindi.
- IV. Contribute in administration of justice where litigants are from Hindi speaking belt of the country.
- V. Work as link between the court and client for dispensing justice.

### **Name of the Course: India's Foreign Policy**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Understand the evolution of India's foreign policy and relations before & after India's Independence.
- II. Know how India contributed to the cause of the developing nations.
- III. Discover India's relations with rest of the world and its dynamic character.
- IV. Understand the security challenges and issues concerning India's growth as a superpower.
- V. Get knowledge about the India's regional & bilateral relations with its neighbors and other countries.

### **Name of the Course: Law of Crimes–II (Criminal Procedure Code,1973)**

**Course outcomes-** After having studied this course the students will be able to-

- I. Put the adversarial system of criminal justice in motion for administration of Criminal justice.
- II. Know the procedure of fair trial provided in Code of Criminal Procedure, 1973 for a just society.
- III. Understand the formation of criminal courts, courts of judicial as well as executive magistrates involved in dispensing criminal justice.

- IV. Know the duties of citizens in maintaining law and order in society.
- V. Know the power of police to arrest a person, discretion of courts to grant bail and rights of an arrestee and under trials.
- VI. Know the substantive provisions in respect of juveniles laid down in Juvenile Justice Act.
- VII. Know the reformatory provisions laid down under Probation of Offenders Act.
- VIII. Institute case for providing maintenance to persons entitled under section 125 of Cr.P.C1973.

**Name of the Course: Constitutional Law-II**

**Course Outcomes:** After having studied this course the students will be able to-

- I. Know the process of election of the President of India and his executive powers, legislative power of issuing ordinances and power to grant pardon to convicts.
- II. Understand the procedure of introducing and passing of different types of Bills in parliament.
- III. Know and understand the establishment, function and powers of union and state judiciary.
- IV. Know the circumstances under which different types of emergencies could be imposed in the states and the country.
- V. Know the power, procedure and the extent to which the parliament may amend the provisions of the Constitution of India.

**Name of the Course: Sociology and Law**

**Course Outcomes:** After having studied this course the students will be able to-

- I. Understand as to how society shapes law and how law shapes society.
- II. Know the views of theorists including Marx, Weber, Durkheim and others and the role of law in societal transformation.
- III. Analyze the sociological theories with the current legal issues and policies.
- IV. Adopt an approach to the studying of law through emphasis on the social, political, cultural and historical aspects of the law, rather than studying the law through legal doctrines, statutes or judicial opinions.
- V. Examine and understand as to how the law influences and is influenced by social change, social reproduction and inequality in relation to race, class, gender, and sexuality.

**Semester/ Year: 3<sup>rd</sup> year / 5<sup>th</sup> Semester**

**Name of the Course: Public Administration**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Develop the understanding that how the public administration as a discipline evolved and also how it is different from private administration.
- II. Know how the administrative theories developed in the west with industrial revolution and its implications all over the world.
- III. Understand how government developed the administration of newly independent nations for the efficient working of its democratic institutions.
- IV. Understand how new developments in management had affected the field of public administration.
- V. Get information about the initiatives taken by the government in power and challenges faced to implement them.

**Name of the Course: Criminology, Penology and Victimology**

**Course Outcomes:** By the end of this course the students shall be able to-

- I. Know the changing concept of crime and causation of crime.
- II. Know the views of various philosophers, criminologist, professionals and jurists regarding the concepts of crime, criminal and causation of crime.
- III. Know the opinion and theories propounded by various penologists regarding kinds of punishments, treatment meted to criminal and their effect on commission of crime and the society.
- IV. Know the considerate approach of state towards various kinds of victims and provisions made for compensation to such victims.
- V. Know the views of some victimologists that how victims contribute towards commission of crimes.

**Name of the Course: Administrative Law**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Understand the structure, power and functions of the organs of administration, the limits of their powers, the methods and procedures followed in exercise of powers.
- II. Know that powers of administrative bodies are not unfettered but controllable.

- III. Identify, explain and plead for observation of the principles- discretion, rule of law and fair hearing.
- IV. Identify and analyze some of the current controversies and trends in the area of administrative law
- V. Access, use, interpret and apply complex statutory material to solve administrative problems.
- VI. Select and apply a range of approaches to written and oral communication, and apply the critical thinking required to bring about solutions to complex administrative law problems.
- VII. Analyze and predict as to how unresolved or ambiguous administrative questions could be resolved by the courts through analysis of a case law and the judicial methods.

**Name of the Course: Family Law- I**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Know the sources, evolution and application of personal laws of Hindus and Muslims and also impact on them of the modern scenario.
- II. Understand the personal laws of Hindu and Muslim and the provisions regarding marriage and divorce under these laws.
- III. Understand the circumstances in which the spouse is entitled to get maintenance under various provisions of the personal laws and also other enactments.
- IV. Know the provisions relating to the adoption of children under personal laws and also the requirements for inter country adoptions in present scenario.
- V. Understand the duties and liabilities of the guardians towards the child and also the types of guardians under personal laws.

**Name of the Course: Civil Procedure and Limitation Act**

**Course Outcomes:** After completing this course, students will be able to:

- I. Know and understand the procedure to file a civil pleading for adjudication of a civil dispute in India.
- II. Draft plaints, written statements, interlocutory applications and other documents needed by Court in accordance with the applicable Court rules, for definitive determination of any dispute.
- III. Get the final order of court executed against a judgment debtor and advise a client on the effects of enforcement of said order.
- IV. Know the time limitation for filing an appeal against the judgment and order passed by a lower court.

- V. Know the circumstances under which an interim order or relief could be obtained from the court in interest of plaintiff.

**Name of the Course: Law of Evidence**

**Course Outcomes:** After completing this course, students will be able to-

- I. Know the meaning of terms-facts, facts in issue and relevant facts essential to prove or disprove for success in a case brought before a court of law.
- II. Sift out the reliable and admissible evidences for defending the pleadings made before the court.
- III. Distinguish facts in issue from relevant facts and facts connected there with.
- IV. Know things or questions to be asked during examination in chief or cross examination.
- V. Understand rule of estoppels and importance of confessions made and its admissibility.
- VI. Know the evidentiary value of “expert opinion” and ‘dying declaration’ in a case.

**Semester/ Year: 3<sup>rd</sup> year / 6<sup>th</sup> Semester**

**Name of the Course: Forensic Science and Law**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Understand, explain and apply the knowledge of basic sciences like Biology, Chemistry and Physics and of other branches of science, technology and literature in detection of crimes.
- II. Critically analyze complex problems and methodologies involved in analyzing forensic samples.
- III. Use the concepts of forensic science and forensic psychology for interrogation of suspects.
- IV. Extract information and data from computer storage media in cybercrimes.
- V. Know the techno-crimes and how new and emerging techniques are used in crime detection.
- VI. Know the role and functioning of national and international forensic science organizations as well as the investigating organizations in the field of detection of crimes.
- VII. Resolve complex problems related to ‘crime scene investigation’ and analyze physical evidences.

- VIII. Make a career in the field related to Forensic Science and think of starting their own private detective agencies in future.

**Name of the Course: Law of Insurance**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the general principles of laws of Insurance viz- The Life Insurance Corporation Act, 1956, Marine Insurance Act, 1906, Motor Vehicle Insurance and Public Liability Insurance Act, 1991.
- II. Know the fundamental principles of insurance law that govern the business viz- duty of utmost good faith, the duty of disclosure, double insurance, contribution, subrogation and reinsurance.
- III. Know the practical application of the fundamental principles while purchasing a policy and realization of the benefits of policy.
- IV. Examine the provisions of insurance law and dispute resolution mechanisms for resolution of insurance disputes, and insurance litigation.

**Name of the Course: Family Law-II**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Know and understand the concept of Joint Hindu Family and partition in joint Hindu family.
- II. Understand the way as to how ownership of ancestral property devolves on decedents by succession and by inheritance both under Hindu as well as Muslim Laws.
- III. Know the purpose of creation and the role of charitable endowments under Hindu law and Muslim law.
- IV. Know the making and execution of Will under Hindu as well as under Muslim law.
- V. Understand the right of Pre-emption to the title of property under Muslim law.

**Name of the Course: Company Law**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Know the process of formation and registration of one Man Company, private or public company.
- II. Understand the effects of registration of the companies and principles that govern the functioning of company.
- III. Know the role and importance of appointment of independent Directors in companies.



- IV. Understand the ways by which disputes of companies are settled by Tribunal.
- V. Know the various modes of winding up and the powers of the court to intervene in voluntary winding up.
- VI. Take up the matter connected with the interests of share holders or investors, before competent authority.

**Name of the Course: Media Law and Ethics**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Learn to gather fairly publish information without imputing the reputation and invading in to the privacy of an individual.
- II. Examine and navigate the digital space of contemporary journalism, focusing on Fair Use of laws, policies, best practices, photographs, trademarks, film clips and other copyrighted works.
- III. Recognize best contemporary ethical and professional practices in the digital space, as dictated by legal standards.
- IV. Know the basic rules and principles and ethics of journalism articulated by professional associations within journalism.
- V. Explain the relationship between media law and ethics.
- VI. Know the relevant history of censorship and repression; and relate that history to current controversies related to freedom of press and other rights.

**Name of the Course: Public Policy and Local Administration in India**

**Course Outcomes:** By the end of this course the students shall be able to:

- I- Develop the understanding that how the public policies are made by the government in the interest of the larger society.
- II- Know how the people are involved in the governmental decision making at the grass root level..
- III- Understand how government generates finance for the efficient working of its institutions.
- IV- Understand how government decisions and policies empower people helps in proper administration of the country.

Get information about basic infrastructure needs of the country.

**Semester/ Year: 4<sup>th</sup> year / 7<sup>th</sup> Semester**

**Name of the Course: Interpretation of Statutes**

**Course Outcomes:** On completion of this course, the students will be able to-Know the very purpose of interpretations of a statute.

- I. Know and use the various rules of interpreting a statute and find the intention of legislature.
- II. Know various aids that help in interpreting a provision of law.
- III. Demonstrate their proficiency in their communication skills.
- IV. Explain, distinguish and apply the principles and process of interpreting a statute.
- V. Compare, contrast and reflect on the theoretical concepts impacting on the approaches to statutory interpretation and their application in professional practice.

**Name of the Course: Law of Transfer of Property**

**Course Outcomes:** On completion of this course students will be able to-

- I. Know different modes of transferring immovable property between two living persons such as- Sale, Gift, Lease, Exchange, and Mortgage.
- II. Know and apply the concepts such as Doctrine of Election, Part Performance and transfer of property to Unborn Person.
- III. Know and practice as to who are competent either to transfer or receive the property.
- IV. Ensure that the essentials of any deed are included in the instrument of conveying title to a property.
- V. Explain the rights and duties of parties to a transfer of property be they seller and buyer, Mortgagor and mortgagee, Lessor and lessee or donor and donee.

**Name of the Course: Principles of Taxation Law**

**Course Outcomes:** By the end of this course students will be able to:

- I. Learn the procedure of Tax Assessment in India.
- II. Compute total income and define tax complications and structure.
- III. Understand the recently introduced GST model in India.
- IV. Differentiate between direct and indirect assessment.
- V. Differentiate the product-based tax on the internationally harmonized system of nomenclature.
- VI. Understand the various amendments made from time to time in Finance as well as Taxations Laws.

**Name of the Course: Intellectual Property Rights**

**Course Outcomes:** By the end of this course students will be able to-

- I. Know and understand the concept of Intellectual Property and rights related to such intangible property.
- II. Know and protect the rights of person whose mental efforts created such property.
- III. Know the provisions of law related to the protection and transfer of intellectual properties such as-Patent, Copyright, Design, Trademark and Geographical Indication.
- IV. Know the process and procedure of getting such rights recognized registered.

**Name of the Course: Public International Law**

**Course Outcomes:** By the end of this course students will be able to:

- I. Distinguish and identify the nature of International Law from that of Municipal Law.
- II. Understand the structure of the international legal system and explain the basic elements of Public International Law.
- III. Know the practical application of international law in relation to the settlement of international disputes, exploitation of space and protection of human rights.
- IV. Understand the relationship between public international law and the politics of the international community.
- V. Understanding the significance of notions of justice, sovereignty and rights within the international legal framework.
- VI. Prepare and present cogent arguments, orally and in writing, and make productive contributions to legal community in dealing with International affairs.

**Name of the Course: Human Rights**

**Course Outcomes:** By the end of this course students will be able to:

- I. Understand Human Rights Act, 1993 The Child Labour (Prohibition and Regulation) Act, 1986, Maintenance and Welfare of Senior Citizens Act, 2007 etc
- II. Strengthen the respect for human rights and fundamental freedoms.
- III. Know the right to development of the human personality and the sense of its dignity;
- IV. Promote the understanding, respect, gender equality, and friendship among all nations, indigenous peoples and racial, national, ethnic, religious and linguistic groups;
- V. Enable all persons to participate effectively in a free society;

**Semester/ Year: 4<sup>th</sup> year / 8<sup>th</sup> Semester**

**Name of the Course: Banking Law**

**Course Outcomes:** By the end of this course students will be able to:

- I. Understand the Banking system prevailing in the country.
- II. Demonstrate competence in advising the clients on some of the common ways to finance commercial transactions,
- III. Draft loan agreements and associated security documents required in banking industry,
- IV. Synthesize and explain the complex theoretical knowledge of legal and ethical principles, issues, implications and risks connected with the banking system.
- V. Understand the powers and functions of the Apex Bank of the Country,
- VI. Understand the procedure of recovery of debt determined by Tribunals.
- VII. Understand the reasons for commission of banking frauds.

**Name of the Course: Labour Law-I**

**Course Outcomes:** By the end of this course, students shall be able to-

- I. Know and analyze various laws related to labour and trade unions.
- II. Understand as to how these laws benefit and compensate the employees in case of strike, lay- off or retrenchment.
- III. Know and analyze important industrial adjudication machinery for settlement of industrial disputes.
- IV. Know the process of fixing and revising the minimum wages and the method of payment of wages.
- V. Know the process of appointment of Labour Inspector, Labour welfare officer and their function related to labour disputes and labour welfare.

**Name of the Course: Private International Law**

**Course Outcomes:** By the end of this course, students shall be able to-

- I. Set out the conditions under which a court is competent to hear an action (the question of
  - a. jurisdiction)
- II. Determine by what law the rights of the parties are to be ascertained (the question of choice of law)
- III. Specify the circumstances in which the foreign judgment can be recognised and enforced by action in England (the question of recognition and enforcement of foreign judgments)

- IV. Demonstrate a fundamental knowledge and understanding of the purpose and sources and the main elements of conflict of laws
- V. Demonstrate knowledge of a substantial range of major concepts, values, principles and rules of conflict of laws and explain the relationship between them in a number of areas Demonstrate study in depth and in context of a number of substantive areas of conflict of laws
- VI. Demonstrate the knowledge and understanding of the social, economic, moral and ethical context of conflict of laws
- VII. Demonstrate an understanding of solutions to legal challenges arising from conflict of laws

**Name of the Course: Environmental Law**

**Course Outcomes:** By the end of this course, students shall be able to-

- I. Understand the basic framework of environment laws in the background of international development and compulsions.
- II. Know the need of protecting the environment and emerging laws, rules, orders, notification related to the environment.
- III. Develop the necessary skills and insight into the pollution and protection of environment.
- IV. Know the role of state, the citizen and the community.
- V. Know the role of the state and non-state actors to the common objective of environment protection.
- VI. Know the protection of natural and living resources under major legal framework in the Indian law.

**Name of the Course: SPECIAL CRIMES**

**Course Outcomes:** By the end of this course, students shall be able to-

- I. Evaluate and apply key concepts of special law providing safeguards to women.  
Like: Domestic Violence Act in terms of protections, monetary orders etc.
- II. Assess and take up the step regarding implementation of SC & ST Act providing protection of SC/ST members of the society,
- III. Understand the conditions of keeping arms, getting licence and penalties under
  - i. Arms Act.
- IV. Create awareness about Dowry Prohibition Act aimed to prevent and prohibit giving and taking of dowry and the penalties prescribed

- V. Assess the stringent provisions of the POCSO Act which protects children from heinous crimes and provides severe punishments to the accused persons.

**Name of the Course: Law of Land and Real Estate**

**Course Outcomes:** - By the end of these specific course students will be able to:

- I. Understand the intention of legislature to pass the Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement Act, 2013.
- II. Analyze how government acquires a land and how provide compensation to the affected families.
- III. Understand the Real Estate sector as well as how to control the sector by the real estate
  - a. regulatory authority.
- IV. Know the schemes of rehabilitation and resettlement on compulsory land acquisition.
- V. Know as to how the activities in real estate sector are regulated and promoted
- VI. Know the efficient and transparent manner of sale of plot, apartment or building and protection of the interest of consumers.

**Semester/ Year: 5<sup>th</sup> year / 9<sup>th</sup> Semester**

**Name of the Course: LABOUR LAW-II**

**Course Outcomes:** By the end of these specific course students will be able to:

- I. Understand the laws the relevance of social justice in Labour Laws.
- II. Know the salient features of Welfare Legislations.
- III. Know the Labour laws relating to Social Security
- IV. Understand the laws relating to working conditions in any Factory.
- V. Understand the employer's liability and employee's rights during the course of
- VI. employment.
- VII. Apply the legal rules which regulate Indian work relationships with initiative and judgment to problem questions.
- VIII. Critically analyse and examine the legal rules and institutions which regulate Indian work relationships.

**Name of the Course: Public Interest Litigation and Legal Aid**

**Outcomes:** By the end of these specific course students will be able to:

- I. Know about the speedy mode of obtaining relief from the courts.
- II. Understand as to where the interest of the public is involved the principle of locus standi becomes irrelevant.
- III. Know the utility of writ jurisdiction for public good.
- IV. Learn to distinguish writ jurisdiction for enforcement of Fundamental rights and for interest of public at large.

**Name of the Course: Drafting, Pleading and Conveyancing**

**Outcomes:** By the end of these specific course students will be able to:

- I. Learn and understand the basic rules of drafting.
- II. Draft various types of applications and petitions like plaints, written statements, suits etc. needed for filing cases in the court.
- III. Draft various deeds like will, promissory notes, lease deeds.
- IV. Learn the rules of pleading.

**Name of the Course: Alternate Dispute Resolution**

**Outcomes:** By the end of these specific course students will be able to:

- I. Appreciate the social and historical relevance of ADR models of dispensing justice.
- II. Develop capacity to identify and analyse the complex drivers of dispute in the community.

- III. Understand the theoretical models of dispute resolution and capacity to analyse their operation in both legal and social contexts.
- IV. Develop the basic mediation skills, including communication, analysis, and issue identification.
- V. Engage himself in simple dispute resolution systems.
- VI. Adaptively apply ADR theory in varied practical contexts, including international, industrial, and socio political field.
- VII. Understand the ethical and legal ethical issues surrounding Dispute Resolution models and practice.
- VIII. Prepare and present an informative presentation on a chosen area of ADR that expands upon the core themes of the course.

**Name of the Course: Competition Law**

**Outcomes:** By the end of the course students will be able to:

- I. Know the application of competition law in a rapidly growing area of free market economy.
- II. Advise business houses regarding fair competition.
- III. Know the basics of Competition Law in India.
- IV. Examine and compare the application of competition law to business agreements and exercise of dominant position.

**Name of the Course: Corporate Governance**

**Outcomes:** After completion of the course the student will be able to -

- I. Compare the responsibilities of companies to different stakeholder groups and explain the role of stakeholders in corporate governance.
- II. Contrast regulatory systems guiding approaches to corporate governance emphasizing the advantages and disadvantages of each system from various theoretical perspectives.
- III. Evaluate corporate governance practices and regulatory schemes from an ethical perspective.
- IV. Know the division of profit sharing and various forms of employee's ownership and equity ownership among insiders.

**Semester/ Year: 5<sup>th</sup> year / 10<sup>th</sup> Semester**

**Name of the Course: Internship and Diary**



**Course Outcomes-** After completing the Internship with Judiciary /Legislatures/Legal Functionaries/Law firms/ Companies/Local Self Government/Legal Regulatory Authorities, the student will be able to-

- I- Apply for job in the above establishments.
- II- Start his/her own law firms
- III- Start practicing law in law court with confidence.

**Name of the Course: Professional Ethics and Professional**

**Accounting System Course Outcomes:** By the end of this course student will be able to:

- I. Understand the historical background and importance of legal profession in India.
- II. Be familiar with the general approaches to the study of law and legal reasoning;
- III. Have the ability to draft a competent legal analysis
- IV. Be familiar with the general approaches towards court, client, opponents and colleagues.
- V. Demonstrate communication skills, including oral advocacy
- VI. Develop the ability to write a competent legal analysis.
- VII. Demonstrate professionalism consistent with the legal profession's values and standards.

**Name of the Course: Law of the Sea**

**Course Outcomes:** Upon successful completion, students would be able to:

- I- Explain, distinguish and apply advanced knowledge of the key concepts and principles that are applicable in the law of the sea and apply this knowledge in the context of the specific workings of international law, especially other relevant treaties, customary international law and methods of dispute resolution.
- II- Demonstrate extensive practical and theoretical familiarity with the provisions of the 1982 United Nations Convention on the Law of the Sea.
- III- Analyze and show advanced understanding of some of the key issues of law of the sea confronting contemporary world situations.

- IV-Identify how the law of the sea interacts with related areas of international law such as maritime security and concepts of state sovereignty.
- V- Plan and compose an advanced-level research paper which critically examines one or more contemporary law of the sea issues.
- VI-Analyze and critically evaluate some of the strengths and weaknesses of the law of the sea as a system for ensuring maritime security, for resource allocation and management, and for the resolution of disputes over maritime resources.

**Name of the Course: Cyber Law / International Criminal Law**

**Course Outcomes:** Upon successful completion, students would be able to:

- I. Develop the understanding of the virtual world and different terminology defining cyber operation.
- II. Know the need of the cyber space as well as growing need of digitalization.
- III. Develop own technology- legislation and counter various dimension of cyber related crime.
- IV. Understand how information technology (E- records & E- signature) can be used in smooth functioning of the governance.
- V. Interpret the various provisions of cyber laws with growing demands of public.
- VI. Know as to how various International technologies, conventions & laws have influenced the socio – economic structure of India.

**Name of the Course: International Criminal Law**

**Outcomes:** Upon successful completion, students would be able to:

- I. Understand and explain problematic issues of international criminal law in particular concerning the international criminal justice and the individual criminal responsibility for genocide, crimes against humanity, war crimes and the crime of aggression.

- II. Critically analyze the tension between the rights of victims, the rights of defendants and the multiple aspirations of the international criminal justice system
- III. Demonstrate an advanced, specialized understanding of international law in the area of international criminal law and its basic principles, concepts and methodologies.
- IV. Demonstrate an understanding of the evolution of the concept of international crime, from piracy *juris gentium* to the drafting of the Statute of the International Criminal Court, as well as the law and procedure regulating the activities of the International Criminal Court;
- V. Demonstrate an ability to examine the role played by the United Nations and its subsidiary bodies in the development of international criminal law;
- VI. Analyze and assess the contribution made to the development of international criminal law by the Nuremberg and Tokyo International Military Tribunals, the International Criminal Tribunals for the former Yugoslavia and Rwanda, as well as national tribunals and so-called "mixed tribunals", considering the legal and political questions to which those proceedings give rise.
  
- VII. Develop and apply effective skills, both orally and in writing, in the construction of legal argument and analysis on various issues of International Criminal Law.

**Name of the Course: International Humanitarian Law**

**Course Outcomes:** Upon successful completion of the course, students would be able:

- I. Apply advanced knowledge on the substantive law of armed conflict to complex factual problems which arise between actors during the conduct of hostilities.

- II. Critically identify the conditions where the framework for the law of belligerent occupation is applicable
- III. Understand the application of principles and rules to contemporary issues, including humanitarian intervention, pre-emption and prevention; non-state armed groups; international justice mechanisms, and terrorism and counterterrorism.
- IV. Understand and analyze the interplay between International Humanitarian Law, international human rights law and domestic law on matters of targeting, detention, detainee treatment and trial.
- V. Display holistic insight into the interrelationship of human rights, treaty law, general public international law and international humanitarian law
- VI. Plan and execute complex legal research in order to construct an in-depth, critical analysis of contemporary issues which have arisen in the application and interpretation of international humanitarian law.

**BBA, LL.B (Hons.)**

## **Name of Program: BBA, LL.B (Hons.)**

Program Outcomes:

Conferment of Honours in integrated bachelor degree “**Bachelor of Business Administration and Bachelor Laws**”, **BBA, LL.B., (Hons.)**.

This program helps in developing a foundation by providing dexterity and core knowledge to:

- I. Develop a background in fundamental areas of business law in consonance with legal practices.
- II. Provide students required, expertise and a foundation for legal practice.
- III. Offer several value-added courses and skills that will enhance over all legal knowledge and also it will provide an edge to the students so that they can keep pace with fast evolving global environment.
- IV. Develop a deep understanding of law in a variety of contexts. Critically engage with the role of law in managerial practice.
- V. Display the ability to deal with different types of legal issues and laws. Apply critical and contextual approaches across a wide variety of subject
- VI. matter of Law and business administration.
- VII. Develop the ability to analyze, articulate and write on the subject Law and Management.

## **Name of the Specific Programme: BBA LLB (Hons.)**

**Program Specific Outcomes:** The BBA. LLB (Hons.) learning goals specify the intellectual and behavioral competencies a management graduate should possess and that provide a foundation for their future professional and personal development and success. Learning goals are general statements, so a number of measurable learning objectives are also established for each goal. The specific programme aims:

- I. To enable students to study courses related to the market requirements and enhance their market value amongst other institutions of repute.
- II. To equip the students with the requisite knowledge of the diverse subject portfolios and enable them to handle situations efficiently.
- III. To develop a background in fundamental areas of business law
- IV. To offer several value-added courses and skills that for managing business in a fast evolving global environment.
- V. To provide students expertise and a foundation for professional practice. To acquire excellent analytical skills, so in order to understand the market strategies in an amicable manner which is highly demanded by leading corporate firms.

## **Course Outcomes**

**Semester/ Year: 1<sup>st</sup> year / 1<sup>st</sup> Semester**

### **Name of the Course: Legal English**

**Outcomes:** By end of this course the students will be able to -

- I. Describe the facts and circumstances of a case conveniently using exact legal terms.
- II. Advance the arguments using legal maxims correctly.
- III. Know the correct usage of English terms.
- IV. Learn correct pronunciation of difficult words.

### **Name of the Course: PRINCIPLES OF MANAGEMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Will be able to understand of the applications of principles and practices of management.
- II. Practice the process of management's four functions: planning, organizing, leading, and controlling.
- III. Will be able to create such management policies that will motivate employees to work efficiently.
- IV. Execute various functions (plan, organize, directing & control) and policies of management.
- V. Will be able to articulate one's own position on a specific management issue and communicate effectively with varied audiences.

### **Name of the Course: Computer Application**

**Outcomes:** After completing the course the student will be able to-

- I. Use the computer for basic purposes of preparing documents,
- II. View information on internet (the web),
- III. Send mails, prepare presentations etc.
- IV. Search legal material for study and research.

### **Name of the Course: LEGAL AND CONSTITUTIONAL HISTORY OF INDIA**

**Outcomes:** Students will be able to-

- I. Understand the idea of Hindu and Muslim Laws and trace their origins through the ancient legal literature.



- II. Understand the evolution and status of Hindu and Muslim laws during the British rule.
- III. Understand the significant landmarks relating to judicial administration and reforms in the period of British East India Company.
- IV. Take notice of the changes in the judicial system in Calcutta, Bombay and Madras and the conflicts between the executive and the judiciary.
- V. Visualize the major steps taken to establish a uniform judicial system since 1858 (after the 1857 revolt)
- VI. Understand the evolution, existence and need of Indian Civil Procedure Code.
- VII. Know about the establishment of Supreme Court of India in 1950.

**Name of the Course: LEGAL METHODS**

**Outcomes:** The students will be able to-

- I. Understand the concept of law and its origin in different legal systems.
- II. Know the thoughts of different schools of law and the basis of classification of law.
- III. Understand the functioning of different legal systems of the world.
- IV. Undertake legal research work and writing of research papers for publication in legal journals & E- resources as law student.

**Name of the Course: Law of Tort (Motor Vehicle Accident and Consumer Protection Law)**

**Outcomes:** The students will be able to

- I. Evaluate & apply key concepts including strict & absolute liability, negligence, Defamation, Trespass etc.
- II. To assess the role of concepts taught in practice as well as in daily lives in respecting and protecting the rights of others.
- III. The practical implementation of Torts, Consumer protection, Motor vehicles act in solving the cases.
- IV. Create strategies & awareness of products & services by studying Consumer Protection Act.

- V. Reflect on the practical implementation of Motor Vehicles Act.
- VI. Plan and compose tactical decisions to meet the needs of a client brief after studying wide concepts in Torts.

**Semester/ Year: 1<sup>st</sup> year / 2<sup>nd</sup> Semester**

**Name of the Course: Business Communication**

**Outcomes:** By the end of this course students will be able to:

- I. Gain a general understanding of communication and its components.
- II. Will be able to determine effective channel of communication in different situations.
- III. Will be able to eliminate different sort of barrier which leads to disturbance in communication.
- IV. Produce letters, memos, emails, and written reports.
- V. Conduct productive meetings for effective group discussion and presentations.

**Name of the Course: Law of Contract – I**

**Outcomes:** After completion of the course, students would be able to-

- I. Trace the evolution of law of contract with the passage of times and the role of equity in law.
- II. Understand the differences between the law of torts and the law of contract in terms of liabilities.
- III. Understand the essentials of a valid contract.
- IV. Know the contractual obligations arising out of breach of contract.
- V. Distinguish the enforceable and unenforceable contracts.
- VI. Safeguard the interests of parties while drafting the terms of a contract.
- VII. Understand the role of a contract in growth of commercial activities.

**Name of the Course: Economics-I**

**Outcomes:** By the end of the course students will be able to-

- I. Understand that law governing exchange of goods and services is crucial for a market economy.

- II. Know the application of economic principles to legal instruments, questions, and procedures while drafting of laws, or in assessing the amount of damages.
- III. Find out that legal procedure wherein he may have to work for contingent fees on a “no-win, no-fee” basis.
- IV. Work in corporate environment with a good knowledge of economic know-how.

**Name of the Course: BUSINESS ENVIRONMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Familiarize with the nature of business environment and its components.
- II. The students will be able to demonstrate and develop conceptual framework of business environment and generate interest in international business.
- III. Construct and present scenarios that synthesize business environment information.

**Name of the Course: JURISPRUDENCE**

**Outcomes:** By the end of the course students will be able to-

- I. Knowledge of the basic framework of Jurisprudence in the background of philosophers and their thoughts regarding the law and the knowledge of the law.
- II. Understand the thoughts of different schools of jurisprudence to understand the development of the law in different society.
- III. Know different sources of the law and their contribution to the development of the law.
- IV. Understand the concept, applicability and the obligations of the law.
- V. Know the role of the state and concept of sovereignty to provide Justice to the society.
- VI. Conceive the idea of law propounded by different schools of law.

**Name of the Course: MANAGEMENT ACCOUNTING**

**Outcomes:** By the end of this course students will be able to:

- I. Analyze, interpret and present accounting information
- II. Assess managerial accounting decision-making techniques.

III. Evaluate managerial accounting performance using different techniques like: ratio analysis, budgetary control, profit and loss account analysis and other financial statements evaluation.

**Semester/ Year: 2<sup>nd</sup> year / 3<sup>rd</sup> Semester**

**Name of the Course: ECONOMICS -II**

**Outcomes:** By the end of the course students will be able to-

- I. Understand as to how economic offences are done and their legislations to control them
- II. Know the new economic policies that would shape the future economy.
- III. Know the role of law in running a business, company or carrying out activities in field of marine, oil and gas or certain other fields of interest.
- IV. Know that law deters offenders from committing economic crimes.
- V. Know that countries with low crime rate attract investors which are directly related with the macro economics.

**Name of the Course: STRATEGIC MANAGEMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Employ strategic concepts to analyze a chosen industry.
- II. Analyze the strategic effectiveness of an organization.
- III. Evaluate the implications of strategic decisions made by one business discipline on others and on the business as a whole.

**Name of the Course: FINANCIAL MANAGEMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Evaluates the relationship between company use of debt and equity financing and the value of the firm.
- II. Able to understand different sources of finances available for instance Equity shares, Debentures, Trade credit, and others.
- III. Will learn to evaluate future profitability of major projects and investments.
- IV. Will be able to determine the best level of production which can help in attaining maximum profitability.
- V. Will be able to apply general management principles to financial resources of the enterprise and will be able to procure and utilize funds of the enterprise.

**Name of the Course: CONSTITUTIONAL LAW- I**

**Outcomes** After completion of this course the students will be able to-

- I. Know the very purpose of Constitution of India.
- II. Know the fundamental rights available to citizens and non citizens.
- III. Understand the way social, political and economic justice could be realized.
- IV. Know and practice the speedy way of getting the rights enforced by the state.
- V. Know as to how different organs of state are governed by the provisions of Constitution.
- VI. Know the duties of citizens and directives for state to legislate for people.

**Name of the Course: LAW OF CRIMES –I (Penal Code)**

**Outcomes:** After completion of this course the student would be able to-

- I. Understand the basic principles of criminal law that determine criminal liability.
- II. Understand that all acts or omissions are not punishable per se but they need to be declared and expressly made punishable by law.
- III. Know the kinds of punishments provided for convicts under Indian Penal Code.
- IV. Know the way solitary confinement is administered to a convict.
- V. Know that all crimes are to be read subject to the general exceptions.
- VI. Know that special criminal law will prevail over the provisions of Indian
- VII. Penal Code.
- VIII. Know that an act or omission made punishable today may not be so tomorrow.

**Name of the Course: LAW OF CONTRACT-II**

**Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the context and rationale of specific contracts of Indemnity, Guarantee, Bailment, Pledge and Agency.
- II. Appreciate the relationship of general principles of contract with the special contracts.
- III. Understand as to how law allocates for the economic risks involved in commercial transactions.
- IV. Understand the growing importance of new forms of special contracts and e-contracts such as agreements for technology transfer, software licensing, infrastructural contracts, government contracts, contract for public private partnerships etc.
- V. Know the relation of specific contracts for our day to day commercial activities and their impact on the social and economic front.
- VI. Know the obligations arising out of breach of such contracts.
- VII. Know the circumstances under which performance of such contracts is enforceable or excusable.

**Semester/ Year: 2<sup>nd</sup> year / 4<sup>th</sup> Semester**

**Name of the Course: ECONOMICS-III**

**Outcomes:** By the end of the course students will be able to-

- I. Understand as to how International Organizations help in enhancing economic conditions of a country and how legal advisors contribute in this direction.
- II. Know as to how law governs international trade between countries.
- III. Understand the legal procedure involved in carrying out international trade.
- V. Know about the General Agreement on Tariffs and Trade.
- IV. Know the legal ways to enter into the foreign market for trade and commerce

**Name of the Course: HINDI**

**Outcomes:** By the end of the course students will be able to-

- I. Know the legal terminology of Urdu, Hindi and Farsi used in Lower court.
- II. Express the legal opinion in Hindi using terms prevalent in lower courts of some of the states in the country.
- III. Write judgments in Hindi.
- IV. Translate the legal terms from Hindi to English and vice versa.
- V. Contribute in administration of justice where litigants are from Hindi speaking belt of the country.
- VI. Work as link between the court and client for dispensing justice.

**Name of the Course: HUMAN RESOURCE MANAGEMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Describe methods for enhancing human capital and employee motivation to ensure organizational success.
- II. Analyze the primary functions within Human Resources and how they interact within the organization.
- III. Evaluate different strategies of Human Resources to attract, develop, sustain and retain employees in a competitive marketplace.

**Name of the Course: LAW OF CRIMES–II (CRIMINAL PROCEDURE CODE)**

**Outcomes:** After having studied this course the students will be able to-

- I. Put the adversarial system of criminal justice in motion for administration of Criminal justice.
- II. Know the procedure of fair trial provided in Code of Criminal Procedure, 1973 for a just society.
- III. Understand the formation of criminal courts, courts of judicial as well as executive magistrates involved in dispensing criminal justice.
- IV. Know the duties of citizens in maintaining law and order in society.
- V. Know the power of police to arrest a person, discretion of courts to grant bail and rights of an arrestee and under trials.



- VI. Know the substantive provisions in respect of juveniles laid down in Juvenile Justice Act.
- VII. Know the reformatory provisions laid down under Probation of Offenders Act.
- VIII. Institute case for providing maintenance to persons entitled under section 125 of Cr.P.C1973.

**Name of the Course: CONSTITUTIONAL LAW-II**

**Outcomes:** After having studied this course the students will be able to-

- I. Know the process of election of the President of India and his executive powers, legislative power of issuing ordinances and power to grant pardon to convicts.
- II. Understand the procedure of introducing and passing of different types of Bills in parliament.
- III. Know and understand the establishment, function and powers of union and state judiciary.
- IV. Know the circumstances under which different types of emergencies could be imposed in the states and the country.
- V. Know the power, procedure and the extent to which the parliament may amend the provisions of the Constitution of India.

**Name of the Course: MARKETNG MANAGEMENT**

**Outcomes:** By the end of this course students will be able to:

- I. Analyze marketing opportunities relative to competition and the environment using information gathering, measurement, and analysis by segmenting market into different groups and targeting or tapping the suitable market.
- II. Develop and create marketing strategies in support of a product innovation introduction plan: product design, channel of distribution, alteration in existing product or services to boost sales of the product, and advertising strategies.
- III. Formulate overall marketing strategy within the context of the organization's business, mission, and goals to enhance the product availability into the market by promoting product or services through suitable mode of advertisement.

**Semester/ Year: 3<sup>rd</sup> year / 5<sup>th</sup> Semester**

**Name of the Course: ORGANIZATIONAL BEHAVIOUR**

**Outcomes:** By the end of this course students will be able to:

- I. Evaluate and apply key concepts related to Organisational Behaviour including organisational change, perspective, group dynamics, and conflicts.
- II. Will be able to understand different types of personality, attitude, motivating factors & causes which can lead to conflicts among individuals in an organization.
- III. Will be able to differentiate between individuals objective and the factor motivating them to work in an organization.
- IV. Assessing individual behavior students will be able to reduce employee's conflicts within an organization and be able to increase the job satisfaction.
- V. Will be able to create and implement organisational policies and strategies so that employee's loyalty increases towards the organization.

**Name of the Course: CRIMINOLOGY, PENOLOGY AND VICTIMOLOGY**

**Outcomes:** By the end of this course the students shall be able to-

- I. Know the changing concept of crime and causation of crime.
- II. Know the views of various philosophers, criminologist, professionals and jurists regarding the concepts of crime, criminal and causation of crime.
- III. Know the opinion and theories propounded by various penologists regarding kinds of punishments, treatment meted to criminal and their effect on commission of crime and the society.
- IV. Know the considerate approach of state towards various kinds of victims and provisions made for compensation to such victims.
- V. Know the views of some victimologists that how victims contribute towards commission of crimes.

**Name of the Course: ADMINISTRATIVE LAW**

**Outcomes:** Upon successful completion of the course, students would be able to-

- I- Understand the structure, power and functions of the organs of administration, the limits of their powers, the methods and procedures followed in exercise of powers.
- II- Know that powers of administrative bodies are not unfettered but controllable.
- III- Identify, explain and plead for observation of the principles- discretion, rule of law and fair hearing.
- IV- Identify and analyze some of the current controversies and trends in the area of administrative law
- V- Access, use, interpret and apply complex statutory material to solve administrative problems.
- VI- Select and apply a range of approaches to written and oral communication, and apply the critical thinking required to bring about solutions to complex administrative law problems.
- VII- Analyze and predict as to how unresolved or ambiguous administrative questions could be resolved by the courts through analysis of a case law and the judicial methods.

**Name of the Course: FAMILY LAW- I**

**Outcomes:** By the end of this course the students shall be able to:

- I. Know the sources, evolution and application of personal laws of Hindus and Muslims and also impact on them of the modern scenario.
- II. Understand the personal laws of Hindu and Muslim and the provisions regarding marriage and divorce under these laws.
- III. Understand the circumstances in which the spouse is entitled to get maintenance under various provisions of the personal laws and also other enactments.
- IV. Know the provisions relating to the adoption of children under personal laws and also the requirements for inter country adoptions in present scenario.
- V. Understand the duties and liabilities of the guardians towards the child and also the types of guardians under personal laws.

**Name of the Course: CIVIL PROCEDURE AND LIMITATION ACT**

**Outcomes:** After completing this course, students will be able to:

- I. Know and understand the procedure to file a civil pleading for adjudication of a civil dispute in India.
- II. Draft complaints, written statements, interlocutory applications and other documents needed by Court in accordance with the applicable Court rules, for definitive determination of any dispute.
- III. Get the final order of court executed against a judgment debtor and advise a client on the effects of enforcement of said order.
- IV. Know the time limitation for filing an appeal against the judgment and order passed by a lower court.
- V. Know the circumstances under which an interim order or relief could be obtained from the court in interest of plaintiff.

**Name of the Course: LAW OF EVIDENCE**

**Outcomes:** After completing this course, students will be able to-

- I. Know the meaning of terms-facts, facts in issue and relevant facts essential to prove or disprove for success in a case brought before a court of law.
- II. Sift out the reliable and admissible evidences for defending the pleadings made before the court.
- III. Distinguish facts in issue from relevant facts and facts connected there with.
- IV. Know things or questions to be asked during examination in chief or cross examination.
- V. Understand rule of estoppels and importance of confessions made and its admissibility.
- VI. Know the evidentiary value of “expert opinion” and ‘dying declaration’ in a case.

**Semester/ Year: 3<sup>rd</sup> year / 6<sup>th</sup> Semester**

**Name of the Course: FORENSIC SCIENCE AND LAW**

**Outcomes:** Upon successful completion of the course, students would be able to-

- I. Understand, explain and apply the knowledge of basic sciences like Biology, Chemistry and Physics and of other branches of science, technology and literature in detection of crimes.
- II. Critically analyze complex problems and methodologies involved in analyzing forensic samples.
- III. Use the concepts of forensic science and forensic psychology for interrogation of suspects.
- IV. Extract information and data from computer storage media in cybercrimes.
- V. Know the techno-crimes and how new and emerging techniques are used in crime detection.
- VI. Know the role and functioning of national and international forensic science organizations as well as the investigating organizations in the field of detection of crimes.
- VII. Resolve complex problems related to 'crime scene investigation' and analyze physical evidences.
- VIII. Make a career in the field related to Forensic Science and think of starting their own private detective agencies in future.

**Name of the Course: LAW OF INSURANCE**

**Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the general principles of laws of Insurance viz- The Life Insurance Corporation Act, 1956, Marine Insurance Act, 1906, Motor Vehicle Insurance and Public Liability Insurance Act, 1991.
- II. Know the fundamental principles of insurance law that govern the business viz- duty of utmost good faith, the duty of disclosure, double insurance, contribution, subrogation and reinsurance.
- III. Know the practical application of the fundamental principles while purchasing a policy and realization of the benefits of policy.

- IV. Examine the provisions of insurance law and dispute resolution mechanisms for resolution of insurance disputes, and insurance litigation.

**Name of the Course: FAMILY LAW-II**

**Outcomes:** By the end of this course the students shall be able to:

- I. Know and understand the concept of Joint Hindu Family and partition in joint Hindu family.
- II. Understand the way as to how ownership of ancestral property devolves on decedents by succession and by inheritance both under Hindu as well as Muslim Laws.
- III. Know the purpose of creation and the role of charitable endowments under Hindu law and Muslim law.
- IV. Know the making and execution of Will under Hindu as well as under Muslim law.
- V. Understand the right of Pre-emption to the title of property under Muslim law.

**Name of the Course: COMPANY LAW**

**Outcomes:** By the end of this course the students shall be able to:

- I. Know the process of formation and registration of one Man Company, private or public company.
- II. Understand the effects of registration of the companies and principles that govern the functioning of company.
- III. Know the role and importance of appointment of independent Directors in companies.
- IV. Understand the ways by which disputes of companies are settled by Tribunal.
- V. Know the various modes of winding up and the powers of the court to intervene in voluntary winding up.
- VI. Take up the matter connected with the interests of share holders or investors, before competent authority.

**Name of the Course: MEDIA LAW AND ETHICS**

**Outcomes:** By the end of this course the students shall be able to:

- I. Learn to gather fairly publish information without imputing the reputation and invading in to the privacy of an individual.
- II. Examine and navigate the digital space of contemporary journalism, focusing on Fair Use of laws, policies, best practices, photographs, trademarks, film clips and other copyrighted works.
- III. Recognize best contemporary ethical and professional practices in the digital space, as dictated by legal standards.
- IV. Know the basic rules and principles and ethics of journalism articulated by professional associations within journalism.
- V. Explain the relationship between media law and ethics.
- VI. Know the relevant history of censorship and repression; and relate that history to current controversies related to freedom of press and other rights.

**Name of the Course: Public Policy And Local Administration In India**

**Outcomes:** By the end of this course the students shall be able to:

- I. Develop the understanding that how the public policies are made by the government in the interest of the larger society.
- II. Know how the people are involved in the governmental decision making at the grass root level..
- III. Understand how government generates finance for the efficient working of its institutions.
- IV. Understand how government decisions and policies empower people helps in proper administration of the country.
- V. Get information about basic infrastructure needs of the country.

**Semester/ Year: 4<sup>th</sup> year / 7<sup>th</sup> Semester**

**Name of the Course: Interpretation of Statutes**

**Outcomes:** On completion of this course, the students will be able to:

- I. Know the very purpose of interpretations of a statute.
- II. Know and use the various rules of interpreting a statute and find the intention of legislature.

- III. Know various aids that help in interpreting a provision of law.
- IV. Demonstrate their proficiency in their communication skills.
- V. Explain, distinguish and apply the principles and process of interpreting a statute.
- VI. Compare, contrast and reflect on the theoretical concepts impacting on the approaches to statutory interpretation and their application in professional practice.

**Name of the Course: Law of Transfer of Property**

**Outcomes:** On completion of this course students will be able to-

- I. Know different modes of transferring immovable property between two living persons such as- Sale, Gift, Lease, Exchange, and Mortgage.
- II. Know and apply the concepts such as Doctrine of Election, Part Performance and transfer of property to Unborn Person.
- III. Know and practice as to who are competent either to transfer or receive the property.
- IV. Ensure that the essentials of any deed are included in the instrument of conveying title to a property.
- V. Explain the rights and duties of parties to a transfer of property be they seller and buyer, Mortgagor and mortgagee, Lessor and lessee or donor and donee.

**Name of the Course: PRINCIPLES OF TAXATION LAW**

**Outcomes:** By the end of this course students will be able to:

- I. Learn the procedure of Tax Assessment in India.
- II. Commute total income and define tax complications and structure.
- III. Understand the recently introduced GST model in India.
- IV. Differentiate between direct and indirect assessment.
- V. Differentiate the product-based tax on the internationally harmonized system of nomenclature.
- VI. Understand the various amendments made from time to time in Finance as well as Taxations Laws.

**Name of the Course: FAMILY LAW-II**

**Outcomes:** By the end of this course the students shall be able to:



- I. Know and understand the concept of Joint Hindu Family and partition in joint Hindu family.
- II. Understand the way as to how ownership of ancestral property devolves on decedents by succession and by inheritance both under Hindu as well as Muslim Laws.
- III. Know the purpose of creation and the role of charitable endowments under Hindu law and Muslim law.
- IV. Know the making and execution of Will under Hindu as well as under Muslim law.
- V. Understand the right of Pre-emption to the title of property under Muslim law.

**Name of the Course: PUBLIC INTERNATIONAL LAW**

**Outcomes:** By the end of this course students will be able to:

- I. Distinguish and identify the nature of International Law from that of Municipal Law.
- II. Understand the structure of the international legal system and explain the basic elements of Public International Law.
- III. Know the practical application of international law in relation to the settlement of international disputes, exploitation of space and protection of human rights.
- IV. Understand the relationship between public international law and the politics of the international community.
- V. Understanding the significance of notions of justice, sovereignty and rights within the international legal framework.
- VI. Prepare and present cogent arguments, orally and in writing, and make productive contributions to legal community in dealing with International affairs.

**Name of the Course: HUMAN RIGHTS**

**Outcomes:** By the end of this course students will be able to:

- I. Understand Human Rights Act, 1993 The Child Labour (Prohibition and Regulation) Act, 1986, Maintenance and Welfare of Senior Citizens Act, 2007 etc
- II. Strengthen the respect for human rights and fundamental freedoms.
- III. Know the right to development of the human personality and the sense of its dignity;
- IV. Promote the understanding, respect, gender equality, and friendship among all nations, indigenous peoples and racial, national, ethnic, religious and linguistic groups;
- V. Enable all persons to participate effectively in a free society;

**Semester/ Year: 4<sup>th</sup> year / 8<sup>th</sup> Semester**

**Name of the Course: BANKING LAW**

**Outcomes:** By the end of this course students will be able to:

- I. Understand the Banking system prevailing in the country.
- II. Demonstrate competence in advising the clients on some of the common ways to finance commercial transactions,
- III. Draft loan agreements and associated security documents required in banking industry,
- IV. Synthesize and explain the complex theoretical knowledge of legal and ethical principles, issues, implications and risks connected with the banking system.
- V. Understand the powers and functions of the Apex Bank of the Country,
- VI. Understand the procedure of recovery of debt determined by Tribunals.
- VII. Understand the reasons for commission of banking frauds.

**Name of the Course: LABOUR LAW-I**

**Outcomes:** By the end of this course, students shall be able to-

- I. Know and analyze various laws related to labour and trade unions.
- II. Understand as to how these laws benefit and compensate the employees in case of strike, lay-off or retrenchment.
- III. Know and analyze important industrial adjudication machinery for settlement of industrial disputes.
- IV. Know the process of fixing and revising the minimum wages and the method of payment of wages.
- V. Know the process of appointment of Labour Inspector, Labour welfare officer and their function related to labour disputes and labour welfare.

**Name of the Course: PRIVATE INTERNATIONAL LAW**

**Outcomes:** By the end of this course, students shall be able to-

- I. Set out the conditions under which a court is competent to hear an action (the question of jurisdiction)

- II. Determine by what law the rights of the parties are to be ascertained (the question of choice of law)
- III. Specify the circumstances in which the foreign judgment can be recognised and enforced by action in England (the question of recognition and enforcement of foreign judgments)
- IV. Demonstrate a fundamental knowledge and understanding of the purpose and sources and the main elements of conflict of laws
- V. Demonstrate knowledge of a substantial range of major concepts, values, principles and rules of conflict of laws and explain the relationship between them in a number of areas
- VI. Demonstrate study in depth and in context of a number of substantive areas of conflict of laws
- VII. Demonstrate the knowledge and understanding of the social, economic, moral and ethical context of conflict of laws
- VIII. Demonstrate an understanding of solutions to legal challenges arising from conflict of laws.

**Name of the Course: ENVIRONMENTAL LAW**

**Outcomes:** By the end of this course, students shall be able to-

- I. Understand the basic framework of environment laws in the background of international development and compulsions.
- II. Know the need of protecting the environment and emerging laws, rules, orders, notification related to the environment.
- III. Develop the necessary skills and insight into the pollution and protection of environment.
- IV. Know the role of state, the citizen and the community.
- V. Know the role of the state and non-state actors to the common objective of environment protection.
- VI. Know the protection of natural and living resources under major legal framework in the Indian law.

**Name of the Course: SPECIAL CRIMES**

**Outcomes:** By the end of this course, students shall be able to-

- I. Evaluate and apply key concepts of special law providing safeguards to women. Like: Domestic Violence Act in terms of protections, monetary orders etc.

- II. Assess and take up the step regarding implementation of SC & ST Act providing protection of SC/ST members of the society,
- III. Understand the conditions of keeping arms, getting licence and penalties under Arms Act.
- IV. Create awareness about Dowry Prohibition Act aimed to prevent and prohibit giving and taking of dowry and the penalties prescribed.
- V. Assess the stringent provisions of the POCSO Act which protects children from heinous crimes and provides severe punishments to the accused persons.

**Name of the Course: LAW OF LAND AND REAL ESTATE**

**Outcomes:** By the end of these specific course students will be able to:

- I. Understand the intention of legislature to pass the Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement Act, 2013.
- II. Analyze how government acquires a land and how provide compensation to the affected families.
- III. Understand the Real Estate sector as well as how to control the sector by the real estate regulatory authority.
- IV. Know the schemes of rehabilitation and resettlement on compulsory land acquisition.
- V. Know as to how the activities in real estate sector are regulated and promoted
- VI. Know the efficient and transparent manner of sale of plot, apartment or building and protection of the interest of consumers.

**Semester/ Year: 5<sup>th</sup> year / 9<sup>th</sup> Semester**

**Name of the Course: LABOUR LAW-II**

**Outcomes:** By the end of these specific course students will be able to:

- I. Understand the laws the relevance of social justice in Labour Laws.

- II. Know the salient features of Welfare Legislations.
- III. Know the Labour laws relating to Social Security
- IV. Understand the laws relating to working conditions in any Factory.
- V. Understand the employer's liability and employee's rights during the course of
- VI. employment.
- VII. Apply the legal rules which regulate Indian work relationships with initiative and judgment to problem questions.
- VIII. Critically analyse and examine the legal rules and institutions which regulate Indian work relationships.

**Name of the Course: PUBLIC INTEREST LITIGATION AND LEGAL AID**

**Outcomes:** By the end of these specific course students will be able to:

- I. Know about the speedy mode of obtaining relief from the courts.
- II. Understand as to where the interest of the public is involved the principle of locus standi becomes irrelevant.
- III. Know the utility of writ jurisdiction for public good.
- IV. Learn to distinguish writ jurisdiction for enforcement of Fundamental rights and for interest of public at large.

**Name of the Course: DRAFTING, PLEADING AND CONVEYANCING**

**Outcomes:** By the end of these specific course students will be able to:

- I. Learn and understand the basic rules of drafting.
- II. Draft various types of applications and petitions like plaints, written statements, suits etc. needed for filing cases in the court.
- III. Draft various deeds like will, promissory notes, lease deeds.
- IV. Learn the rules of pleading.

**Name of the Course: ALTERNATE DISPUTE RESOLUTION**

**Outcomes:** By the end of these specific course students will be able to:

- I. Appreciate the social and historical relevance of ADR models of dispensing justice.
- II. Develop capacity to identify and analyse the complex drivers of dispute in the community.

- III. Understand the theoretical models of dispute resolution and capacity to analyse their operation in both legal and social contexts.
- IV. Develop the basic mediation skills, including communication, analysis, and issue identification.
- V. Engage himself in simple dispute resolution systems.
- VI. Adaptively apply ADR theory in varied practical contexts, including international, industrial, and socio political field.
- VII. Understand the ethical and legal ethical issues surrounding Dispute Resolution models and practice.
- VIII. Prepare and present an informative presentation on a chosen area of ADR that expands upon the core themes of the course.

**Name of the Course: COMPETITION LAW**

**Outcomes:** By the end of the course students will be able to:

- I. Know the application of competition law in a rapidly growing area of free market economy.
- II. Advise business houses regarding fair competition.
- III. Know the basics of Competition Law in India.
- IV. Examine and compare the application of competition law to business agreements and exercise of dominant position.

**Name of the Course: CORPORATE GOVERNANCE**

**Outcomes:** After completion of the course the student will be able to -

- I. Compare the responsibilities of companies to different stakeholder groups and explain the role of stakeholders in corporate governance.
- II. Contrast regulatory systems guiding approaches to corporate governance emphasizing the advantages and disadvantages of each system from various theoretical perspectives.
- III. Evaluate corporate governance practices and regulatory schemes from an ethical perspective.

Know the division of profit sharing and various forms of employee's ownership and equity ownership among insiders.

**Semester/ Year: 5<sup>th</sup> year / 10<sup>th</sup> Semester**

**Name of the Course: INTERSHIP AND DIARY**

**Outcomes:** After completing the Internship with Judiciary /Legislatures/Legal Functionaries/Law firms/ Companies/Local Self Government/Legal Regulatory Authorities, the student will be able to-

- I. Apply for job in the above establishments.
- II. Start his/her own law firms
- III. Start practicing law in law court with confidence.

**Name of the Course: PROFESSIONAL ETHICS AND PROFESSIONAL ACCOUNTING SYSTEM**

**Outcomes:** By the end of this course student will be able to:

- I. Understand the historical background and importance of legal profession in India.
- II. Be familiar with the general approaches to the study of law and legal reasoning;
- III. Have the ability to draft a competent legal analysis
- IV. Be familiar with the general approaches towards court, client, opponents and colleagues.
- V. Demonstrate communication skills, including oral advocacy
- VI. Develop the ability to write a competent legal analysis.
- VII. Demonstrate professionalism consistent with the legal profession's values and standards.

**Name of the Course: LAW OF THE SEA**

**Outcomes:** Upon successful completion, students would be able to:

- I. Explain, distinguish and apply advanced knowledge of the key concepts and principles that are applicable in the law of the sea and apply this knowledge in the context of the specific workings of international law, especially other relevant treaties, customary international law and methods of dispute resolution.
- II. Demonstrate extensive practical and theoretical familiarity with the provisions of the 1982 United Nations Convention on the Law of the Sea.



- III. Analyze and show advanced understanding of some of the key issues of law of the sea confronting contemporary world situations.
- IV. Identify how the law of the sea interacts with related areas of international law such as maritime security and concepts of state sovereignty.
- V. Plan and compose an advanced-level research paper which critically examines one or more contemporary law of the sea issues.
- VI. Analyze and critically evaluate some of the strengths and weaknesses of the law of the sea as a system for ensuring maritime security, for resource allocation and management, and for the resolution of disputes over maritime resources.

**Name of the Course: CYBER LAW / INTERNATIONAL CRIMINAL LAW**

**Outcomes:** Upon successful completion, students would be able to:

- I. Develop the understanding of the virtual world and different terminology defining cyber operation.
- II. Know the need of the cyber space as well as growing need of digitalization.
- IV. Develop own technology- legislation and counter various dimension of cyber related crime.
- V. Understand how information technology (E- records & E-signature) can be used in smooth functioning of the governance.
- VI. Interpret the various provisions of cyber laws with growing demands of public.
- VII. Know as to how various International technologies, conventions & laws have influenced the socio – economic structure of India.

**Name of the Course: INTERNATIONAL CRIMINAL LAW**

**Outcomes:** Upon successful completion, students would be able to:

- I. Understand and explain problematic issues of international criminal law in particular concerning the international criminal justice and the individual criminal responsibility for genocide, crimes against humanity, war crimes and the crime of aggression.

- II. Critically analyze the tension between the rights of victims, the rights of defendants and the multiple aspirations of the international criminal justice system
- III. Demonstrate an advanced, specialized understanding of international law in the area of international criminal law and its basic principles, concepts and methodologies.
- IV. Demonstrate an understanding of the evolution of the concept of international crime, from piracy *juris gentium* to the drafting of the Statute of the International Criminal Court, as well as the law and procedure regulating the activities of the International Criminal Court;
- V. Demonstrate an ability to examine the role played by the United Nations and its subsidiary bodies in the development of international criminal law;
- VI. Analyze and assess the contribution made to the development of international criminal law by the Nuremberg and Tokyo International Military Tribunals, the International Criminal Tribunals for the former Yugoslavia and Rwanda, as well as national tribunals and so-called "mixed tribunals", considering the legal and political questions to which those proceedings give rise.
- VII. Develop and apply effective skills, both orally and in writing, in the construction of legal argument and analysis on various issues of International Criminal Law.

**Name of the Course: INTERNATIONAL HUMANITARIAN LAW**

**Outcomes:** Upon successful completion of the course, students would be able:

- I. Apply advanced knowledge on the substantive law of armed conflict to complex factual problems which arise between actors during the conduct of hostilities.
- II. Critically identify the conditions where the framework for the law of belligerent occupation is applicable

- III. Understand the application of principles and rules to contemporary issues, including humanitarian intervention, pre-emption and prevention; non-state armed groups; international justice mechanisms, and terrorism and counterterrorism.
- IV. Understand and analyze the interplay between International Humanitarian Law, international human rights law and domestic law on matters of targeting, detention, detainee treatment and trial.
- V. Display holistic insight into the interrelationship of human rights, treaty law, general public international law and international humanitarian law
- VI. Plan and execute complex legal research in order to construct an in-depth, critical analysis of contemporary issues which have arisen in the application and interpretation of international humanitarian law.

**LL.B (3 Years)**

## **I- Name of the Program: LL.B 3 years Degree Course**

### **Program Outcomes:**

#### **Conferment of Professional Degree of Bachelor of Laws.**

1. This professional degree programme is designed with a view to spreading legal knowledge among graduates from other disciplines in this society.
2. Its objectives are to impart legal education to the students from various backgrounds and equip them to perform various roles of professional lawyers beyond the traditional role of litigation.
3. The students will gain knowledge and develop skill of advocacy which will help them in achieving their goals and objectives and serve the society.
4. This programme gives confidence to the students to argue in the court and present their case effectively.
5. After completion of this programme, students would acquire and apply legal knowledge to the complex socio legal problems. Also the students would become eligible to practice in court, industries, and companies as a legal practitioner and possess a professional skill required for a legal practice such as argument, pleading, drafting and conveyancing.
6. Programme enables students to explore the possibilities of self-employability by developing professional skills in legal industry, fields of social transformations, clinical legal services and areas of their interest.

## **II- Name of the Specific Program --LLB Three years Professional Degree**

### **Program Specific Outcomes:**

1. This programme makes students eligible to get enrolled as an advocate and take up competitive exams to become judicial officer.
2. After Completion of this programme students become eligible to go for Higher Studies like LL.M. in India or abroad.
3. This programme also provides an opportunity to take up a career in Armed forces as Judge Advocate General (JAG).

### **3. Course Outcomes**

#### **Semester-1/Year: 1 / First year**

##### **Name of the Course-1: Legal English (Grammar, Legal Terms & Latin Maxims)**

**Outcomes:** By end of this course the students will be able to -

- I. Describe the facts and circumstances of a case conveniently using exact legal terms.
- II. Advance the arguments using legal maxims correctly.
- III. Know the correct usage of English terms.
- IV. Learn correct pronunciation of difficult words.

##### **Name of the Course-2: Human Rights**

**Outcomes:** By the end of this course students will be able to:

- I. Understand Human Rights Act, 1993 The Child Labour (Prohibition and Regulation) Act, 1986, Maintenance and Welfare of Senior Citizens Act, 2007 etc
- II. Strengthen the respect for human rights and fundamental freedoms.
- III. Know the right to development of the human personality and the sense of its dignity;
- IV. Promote the understanding, respect, gender equality, and friendship among all nations, indigenous peoples and racial, national, ethnic, religious and linguistic groups;
- V. Enable all persons to participate effectively in a free society;

##### **Name of the Course-3: Constitutional Law-I**

**Outcomes:** After completion of this course the students will be able to-

- I. Know the very purpose of Constitution of India.
- II. Know the fundamental rights available to citizens and non citizens.
- III. Understand the way social, political and economic justice could be realized.
- IV. Know and practice the speedy way of getting the rights enforced by the state.
- V. Know as to how different organs of state are governed by the provisions of Constitution.
- VI. Know the duties of citizens and directives for state to legislate for people.

#### **Name of the Course-4: Legal & Constitutional History of India**

##### **Outcomes-**

Students will be able to-

- I. Understand the idea of Hindu and Muslim Laws and trace their origins through the ancient legal literature.
- II. Understand the evolution and status of Hindu and Muslim laws during the British rule.
- III. Understand the significant landmarks relating to judicial administration and reforms in the period of British East India Company.
- IV. Take notice of the changes in the judicial system in Calcutta, Bombay and Madras and the conflicts between the executive and the judiciary.
- V. Visualize the major steps taken to establish a uniform judicial system since 1858 (after the 1857 revolt)
- VI. Understand the evolution, existence and need of Indian Civil Procedure Code.
- VII. Know about the establishment of Supreme Court of India in 1950.

#### **Name of the Course-5: LEGAL METHODS**

**Outcomes:** The students will be able to

- I- Understand the concept of law and its origin in different legal systems.
- II- Know the thoughts of different schools of law and the basis of classification of law.
- III- Understand the functioning of different legal systems of the world.
- IV- Undertake legal research work and writing of research papers for publication in legal journals & E- resources as law student.

#### **Name of the Course-6: LAW OF TORT (MOTOR VEHICLE ACCIDENT AND CONSUMER PROTECTION LAW)**

**Outcomes:** The students will be able to-

- I. Evaluate & apply key concepts including strict & absolute liability, negligence, Defamation, Trespass etc.
- II. To assess the role of concepts taught in practice as well as in daily lives in respecting and protecting the rights of others.

- III. The practical implementation of Torts, Consumer protection, Motor vehicles act in solving the cases.
- IV. Create strategies & awareness of products & services by studying Consumer Protection Act.
- V. Reflect on the practical implementation of Motor Vehicles Act.
- VI. Plan and compose tactical decisions to meet the needs of a client brief after studying wide concepts in Torts.



## **Semester -2 / Year-1/Course-1**

### **Name of the Course-1: BANKING LAW**

**Outcomes:** By the end of this course students will be able to:

- I. Understand the Banking system prevailing in the country.
- II. Demonstrate competence in advising the clients on some of the common ways to finance commercial transactions,
- III. Draft loan agreements and associated security documents required in banking industry,
- IV. Synthesize and explain the complex theoretical knowledge of legal and ethical principles, issues, implications and risks connected with the banking system.
- V. Understand the powers and functions of the Apex Bank of the Country,
- VI. Understand the procedure of recovery of debt determined by Tribunals.
- VII. Understand the reasons for commission of banking frauds.

### **Name of the Course-2: LAW OF CONTRACT – I**

**Outcomes:** After completion of the course, students would be able to-

- I. Trace the evolution of law of contract with the passage of times and the role of equity in law.
- II. Understand the differences between the law of torts and the law of contract in terms of liabilities.
- III. Understand the essentials of a valid contract.
- IV. Know the contractual obligations arising out of breach of contract.
- V. Distinguish the enforceable and unenforceable contracts.
- VI. Safeguard the interests of parties while drafting the terms of a contract.
- VII. Understand the role of a contract in growth of commercial activities

### **Name of the Course-3: CONSTITUTIONAL LAW-II**

**Outcomes:** After having studied this course the students will be able to-

- I. Know the process of election of the President of India and his executive powers, legislative power of issuing ordinances and power to grant pardon to convicts.
- II. Understand the procedure of introducing and passing of different types of Bills in parliament.

- III. Know and understand the establishment, function and powers of union and state judiciary.
- IV. Know the circumstances under which different types of emergencies could be imposed in the states and the country.
- V. Know the power, procedure and the extent to which the parliament may amend the provisions of the Constitution of India.

**Name of the Course-4: ENVIRONMENTAL LAW**

**Outcomes:** By the end of this course, students shall be able to-

- I. Understand the basic framework of environment laws in the background of international development and compulsions.
- II. Know the need of protecting the environment and emerging laws, rules, orders, notification related to the environment.
- III. Develop the necessary skills and insight into the pollution and protection of
  - i. environment.
- IV. Know the role of state, the citizen and the community.
- V. Know the role of the state and non-state actors to the common objective of environment protection.
- VI. Know the protection of natural and living resources under major legal framework in the Indian law.

**Name of the Course-5: LABOUR LAW-I**

**Outcomes:** By the end of this course, students shall be able to-

- I. Know and analyze various laws related to labour and trade unions.
- II. Understand as to how these laws benefit and compensate the employees in case of strike, lay- off or retrenchment.
- III. Know and analyze important industrial adjudication machinery for settlement of industrial disputes.
- IV. Know the process of fixing and revising the minimum wages and the method of payment of wages.
- V. Know the process of appointment of Labour Inspector, Labour welfare officer and their function related to labour disputes and labour welfare.

**Name of the Course-6: MEDIA LAW AND ETHICS**

**Outcomes:** By the end of this course the students shall be able to:

- I. Learn to gather fairly publish information without imputing the reputation and invading in to the privacy of an individual.
- II. Examine and navigate the digital space of contemporary journalism, focusing on Fair Use of laws, policies, best practices, photographs, trademarks, film clips and other copyrighted works.
- III. Recognize best contemporary ethical and professional practices in the digital space, as dictated by legal standards.
- IV. Know the basic rules and principles and ethics of journalism articulated by professional associations within journalism.
- V. Explain the relationship between media law and ethics.
- VI. Know the relevant history of censorship and repression; and relate that history to current controversies related to freedom of press and other rights.

### **Semester-3/year -2, course- 1**

#### **Name of the Course: FAMILY LAW- I**

**Outcomes:** By the end of this course the students shall be able to:

- I. Know the sources, evolution and application of personal laws of Hindus and Muslims and also impact on them of the modern scenario.
- II. Understand the personal laws of Hindu and Muslim and the provisions regarding marriage and divorce under these laws.
- III. Understand the circumstances in which the spouse is entitled to get maintenance under various provisions of the personal laws and also other enactments.
- IV. Know the provisions relating to the adoption of children under personal laws and also the requirements for inter country adoptions in present scenario.
- V. Understand the duties and liabilities of the guardians towards the child and also the types of guardians under personal laws.

#### **Name of the Course-2: LAW OF TRANSFER OF PROPERTY**

**Outcomes:** On completion of this course students will be able to-

- I. Know different modes of transferring immovable property between two living persons such as- Sale, Gift, Lease, Exchange, and Mortgage.
- II. Know and apply the concepts such as Doctrine of Election, Part Performance and transfer of property to Unborn Person.
- III. Know and practice as to who are competent either to transfer or receive the property.
- IV. Ensure that the essentials of any deed are included in the instrument of conveying title to a property.
- V. Explain the rights and duties of parties to a transfer of property be they seller and buyer, Mortgagor and mortgagee, Lessor and lessee or donor and donee.

**Name of the Course-3: ALTERNATE DISPUTE RESOLUTION**

**Outcomes:** By the end of these specific course students will be able to:

- I. Appreciate the social and historical relevance of ADR models of dispensing justice.
- II. Develop capacity to identify and analyse the complex drivers of dispute in the community.
- III. Understand the theoretical models of dispute resolution and capacity to analyse their operation in both legal and social contexts.
- IV. Develop the basic mediation skills, including communication, analysis, and issue identification.
- V. Engage himself in simple dispute resolution systems.
- VI. Adaptively apply ADR theory in varied practical contexts, including international, industrial, and socio political field.
- VII. Understand the ethical and legal ethical issues surrounding Dispute Resolution models and practice.
- VIII. Prepare and present an informative presentation on a chosen area of ADR that expands upon the core themes of the course.

#### **Name of the Course-4: LABOUR LAW-II**

**Outcomes:** By the end of these specific course students will be able to:

- I. Understand the laws the relevance of social justice in Labour Laws.
- II. Know the salient features of Welfare Legislations.
- III. Know the Labour laws relating to Social Security
- IV. Understand the laws relating to working conditions in any Factory.
- V. Understand the employer's liability and employee's rights during the course of
- VI. employment.
- VII. Apply the legal rules which regulate Indian work relationships with initiative and judgment to problem questions.
- VIII. Critically analyse and examine the legal rules and institutions which regulate Indian work relationships.

#### **Name of the Course-5: LAW OF CRIMES –I (Penal Code)**

**Outcomes:** After completion of this course the student would be able to-

- i. Understand the basic principles of criminal law that determine criminal liability.
- ii. Understand that all acts or omissions are not punishable per se but they need to be declared and expressly made punishable by law.
- iii. Know the kinds of punishments provided for convicts under Indian Penal Code.
- iv. Know the way solitary confinement is administered to a convict.
- v. Know that all crimes are to be read subject to the general exceptions.
- vi- Know that special criminal law will prevail over the provisions of Indian Penal Code.
- vi. Know that an act or omission made punishable today may not be so tomorrow.

### **Name of the Course-6: LAW OF CONTRACT-II**

**Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the context and rationale of specific contracts of Indemnity, Guarantee, Bailment, Pledge and Agency.
- II. Appreciate the relationship of general principles of contract with the special contracts.
- III. Understand as to how law allocates for the economic risks involved in commercial transactions.
- IV. Understand the growing importance of new forms of special contracts and e-contracts such as agreements for technology transfer, software licensing, infrastructural contracts, government contracts, contract for public private partnerships etc.
- V. Know the relation of specific contracts for our day to day commercial
- VI. activities and their impact on the social and economic front.
- VII. Know the obligations arising out of breach of such contracts.
- VIII. Know the circumstances under which performance of such contracts is enforceable or excusable.

### **Semester IV/ year- 2/Course -1**

#### **Name of the Course: FAMILY LAW-II**

**Outcomes:** By the end of this course the students shall be able to:

- I. Know and understand the concept of Joint Hindu Family and partition in joint Hindu family.
- II. Understand the way as to how ownership of ancestral property devolves on decedents by succession and by inheritance both under Hindu as well as Muslim Laws.
- III. Know the purpose of creation and the role of charitable endowments under Hindu law and Muslim law.
- IV. Know the making and execution of Will under Hindu as well as under Muslim law.
- V. Understand the right of Pre-emption to the title of property under Muslim law.

**Name of the Course: Intellectual Property Rights**

**Course Outcomes:** By the end of this course students will be able to-

- I. Know and understand the concept of Intellectual Property and rights related to such intangible property.
- II. Know and protect the rights of person whose mental efforts created such property.
- III. Know the provisions of law related to the protection and transfer of intellectual properties such as-Patent, Copyright, Design, Trademark and Geographical Indication.
- IV. Know the process and procedure of getting such rights recognized registered.

**Name of the Course: Law of Insurance**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Know the general principles of laws of Insurance viz- The Life Insurance Corporation Act, 1956, Marine Insurance Act, 1906, Motor Vehicle Insurance and Public Liability Insurance Act, 1991.
- II. Know the fundamental principles of insurance law that govern the business viz- duty of utmost good faith, the duty of disclosure, double insurance, contribution, subrogation and reinsurance.
- III. Know the practical application of the fundamental principles while purchasing a policy and realization of the benefits of policy.
- IV. Examine the provisions of insurance law and dispute resolution mechanisms for resolution of insurance disputes, and insurance litigation.

**Name of the Course: Jurisprudence**

**Course Outcomes:** By the end of the course students will be able to-

- I. Knowledge of the basic framework of Jurisprudence in the background of philosophers and their thoughts regarding the law and the knowledge of the law.

- II. Understand the thoughts of different schools of jurisprudence to understand the development of the law in different society.
- III. Know different sources of the law and their contribution to the development of the law.
- IV. Understand the concept, applicability and the obligations of the law.
- V. Know the role of the state and concept of sovereignty to provide Justice to the society.
- VI. Conceive the idea of law propounded by different schools of law.

**Name of the Course: Company Law**

**Course Outcomes:** By the end of this course the students shall be able to:

- I. Know the process of formation and registration of one Man Company, private or public company.
- II. Understand the effects of registration of the companies and principles that govern the functioning of company.
- III. Know the role and importance of appointment of independent Directors in companies.
- IV. Understand the ways by which disputes of companies are settled by Tribunal.
- V. Know the various modes of winding up and the powers of the court to intervene in voluntary winding up.
- VI. Take up the matter connected with the interests of share holders or investors, before competent authority.

**Semester 5/Course-1**

**Name of the Course: Principles of Taxation Law**

**Course Outcomes:** By the end of this course students will be able to:

- I. Learn the procedure of Tax Assessment in India.
- II. Commute total income and define tax complicacies and structure.
- III. Understand the recently introduced GST model in India.
- IV. Differentiate between direct and indirect assessment.
- V. Differentiate the product-based tax on the internationally harmonized system of nomenclature.



- VI. Understand the various amendments made from time to time in Finance as well as Taxations Laws.

**Name of the Course: Drafting, Pleading and Conveyancing**

**Outcomes:** By the end of these specific course students will be able to:

- a. Learn and understand the basic rules of drafting.
- II. Draft various types of applications and petitions like plaints, written statements, suits etc. needed for filing cases in the court.
- III. Draft various deeds like will, promissory notes, lease deeds.
- IV. Learn the rules of pleading.

**Name of the Course: Administrative Law**

**Course Outcomes:** Upon successful completion of the course, students would be able to-

- I. Understand the structure, power and functions of the organs of administration, the limits of their powers, the methods and procedures followed in exercise of powers.
- II. Know that powers of administrative bodies are not unfettered but controllable.
- III. Identify, explain and plead for observation of the principles- discretion, rule of law and fair hearing.
- IV. Identify and analyze some of the current controversies and trends in the area of administrative law
- V. Access, use, interpret and apply complex statutory material to solve administrative problems.

**Name of the Course: Public Interest Litigation and Legal Aid**

**Outcomes:** By the end of these specific course students will be able to:

- I. Know about the speedy mode of obtaining relief from the courts.
- II. Understand as to where the interest of the public is involved the principle of locus standi becomes irrelevant.
- III. Know the utility of writ jurisdiction for public good.
- IV. Learn to distinguish writ jurisdiction for enforcement of Fundamental rights and for interest of public at large.

**Name of the Course: Civil Procedure and Limitation Act**

**Course Outcomes:** After completing this course, students will be able to:

- I. Know and understand the procedure to file a civil pleading for adjudication of a civil dispute in India.
- II. Draft plaints, written statements, interlocutory applications and other documents needed by Court in accordance with the applicable Court rules, for definitive determination of any dispute.
- III. Get the final order of court executed against a judgment debtor and advice a client on the effects of enforcement of said order.
- IV. Know the alternative mode of getting civil justice.
- V. Know the time limitation for filing an appeal against the judgment and order passed by a lower court.
- VI. Know the circumstances under which an interim order or relief could be obtained from the court in interest of plaintiff.

**Name of the Course: Law of Evidence**

**Course Outcomes:** After completing this course, students will be able to-

- I. Know the meaning of terms-facts, facts in issue and relevant facts essential to prove or disprove for success in a case brought before a court of law.
- II. Sift out the reliable and admissible evidences for defending the pleadings made before the court.
- III. Distinguish facts in issue from relevant facts and facts connected there with.
- IV. Know things or questions to be asked during examination in chief or cross examination.
- V. Understand rule of estoppels and importance of confessions made and its admissibility.
- VI. Know the evidentiary value of “expert opinion” and ‘dying declaration’ in a case.

**Name of the Course: Internship and Diary**

**Course Outcomes-** After completing the Internship with Judiciary /Legislatures/Legal Functionaries/Law firms/ Companies/Local Self Government/Legal Regulatory Authorities, the student will be able to-

- I. Apply for job in the above establishments.
- II. Start his/her own law firms
- III. Start practicing law in law court with confidence.

**Name of the Course: Professional Ethics and Professional Accounting System**

**Course Outcomes** By the end of this course student will be able to:

- I. Understand the historical background and importance of legal profession in India.
- II. Be familiar with the general approaches to the study of law and legal reasoning;
- III. Have the ability to draft a competent legal analysis
- IV. Be familiar with the general approaches towards court, client, opponents and colleagues.
- V. Demonstrate communication skills, including oral advocacy
- VI. Develop the ability to write a competent legal analysis.
- VII. Demonstrate professionalism consistent with the legal profession's values and standards.

**Name of the Course: Law of the Sea**

**Course Outcomes:** Upon successful completion, students would be able to:

- I. Explain, distinguish and apply advanced knowledge of the key concepts and principles that are applicable in the law of the sea and apply this knowledge in the context of the specific workings of international law, especially other relevant treaties, customary international law and methods of dispute resolution.
- II. Demonstrate extensive practical and theoretical familiarity with the provisions of the 1982 United Nations Convention on the Law of the Sea.

- III. Analyze and show advanced understanding of some of the key issues of law of the sea confronting contemporary world situations.
- IV. Identify how the law of the sea interacts with related areas of international law such as maritime security and concepts of state sovereignty.
- V. Plan and compose an advanced-level research paper which critically examines one or more contemporary law of the sea issues.
- VI. Analyze and critically evaluate some of the strengths and weaknesses of the law of the sea as a system for ensuring maritime security, for resource allocation and management, and for the resolution of disputes over maritime resources.

**Name of the Course: Cyber Law / International Criminal Law**

**Course Outcomes:** Upon successful completion, students would be able to:

- I. Develop the understanding of the virtual world and different terminology defining cyber operation.
- II. Know the need of the cyber space as well as growing need of digitalization.
- III. Develop own technology- legislation and counter various dimension of cyber related crime.
- IV. Understand how information technology (E- records & E-signature) can be used in smooth functioning of the governance.
- V. Interpret the various provisions of cyber laws with growing demands of public.
- VI. Know as to how various International technologies, conventions & laws have influenced the socio – economic structure of India

**LL.M**

**Name of Program: LL.M (One Year Course)**

**Program Outcomes:**

1. The outcome of the programme is conferment of Master's Degree in Law and the name of the degree would be "Master of Laws".
2. Student would develop the conceptual approach towards understanding a particular law in respect of its purpose, enforcement and relevance. This change in approach would make the learner a good research scholar and inspire to undertake various research projects to find out solutions to legal problems.
3. The completion of this programme entitles the learner to appear for the teachers eligibility test i.e. UGC NET and the clearance of UGC NET makes the person eligible to chose teaching as a career.
4. The student would be able to pursue his studies further and get him/her enrolled for achieving the Highest Academic Degree a University offers i.e. Ph.D.

## **2-Outcomes of courses--**

### **Semester/Year: 1/1**

- I. **Name of the course 1-: Research Methods and Legal Writing**  
**Course Outcomes** - By the end of the Course student will be able to-
- II. Know the concept of research its meaning and importance,
- III. Understand the views of various schools of thoughts regarding Law and its development.
- IV. Hypothesize a specific problem worth generalization, investigation and finding out a solution.
- V. Prepare a research proposal to proceed with the research work.
- VI. Select proper methods and tools for carrying out a research work.
- VII. Write a research thesis or report using unambiguous language.

### **Name of the course: Law and Justice in a Globalizing World**

**Course Outcomes** – By the end of the Course student will be able to-

- I. Understand the impact of globalization on law.
- II. Know the different views regarding Globalization, Justice and the changing meaning of justice.
- III. Understand as to how law and legal institutions have to change in order to align with the global rules.
- IV. Understand as to how the policy making space at national level is shrinking.

### **Name of the course 3- Comparative Constitutional Law**

**Outcomes of courses-** By the end of the Course student will be able to-

- I. Understand the making of constitution of U.S., Australia and Canada.
- II. Know the provisions regarding Fundamental Right and Freedoms in the constitution of U.S., Australia and Canada.
- III. Analyze the Presidential and Parliamentary forms of Government provided in various constitutions.
- IV. Know the provisions made in constitution to maintain separation of powers between three organs of a state.
- V. Know the situations demanding for imposing state of different types of emergencies in the state.
- VI. Know the judicial set up and appointment of judges in USA, Canada and Australia.

### **a) Criminal Law Branch**

#### **Name of the course 4- Criminology and Penology**

**Course Outcomes -** After the completion of the course, the students will be able to:-

- I. Know the varying nature of definition of crime from place to place and society to society.
- II. Understand the reasons propounded by different school of criminology for commission of crimes.
- III. Know as to how the punishment for a particular type of crime is decided.
- IV. Know about different objects of punishing a criminal.



- V. Know the system of prison and provisions related to prisoners in open jail system.

**Name of the course -Criminal Justice and Human Rights**

**Course Outcomes 5-** After the completion of the course, the students will be able to:-

- I. Gain systematic knowledge and understanding of criminal justice and human rights in relation with the development and environment.
- II. Understand the roles of various functionaries in Criminal Justice System,
- III. Understand the importance of cross-national professional collaboration and the exchange of information.
- IV. Know the execution of war, war crimes and trial of war crimes.
- V. Understand the laws of warfare, rights and duties of neutrals.

**Name of the course 6- Victimology & Juvenile Justice**

**Course Outcome** – After the completion of the course, the students will be able to:-

- i- Know and distinguish various kinds of victims
- ii- Know the provisions regarding rehabilitation of victims and their families.
  - I- Know the causes of juvenile delinquency.
  - II- Understand the composition of Juvenile justice Board, Child welfare Committee and Juvenile courts in the Juvenile Justice System.
  - III- Know and evaluate the systems for rehabilitation, after-care of juvenile delinquents and children in need of care and protection of laws.

**Semester/Year: 2/1**

**Name of the course 7- General Principles of Criminal Law**

**Course Outcome** - After the completion of the course, the students will be able to:-

- I- Know the general principles of criminal law.
- II- Understand the varying nature of definition of crime.
- III- Know the degree of culpability of crime and inchoate crime.
- IV- Understand the purpose providing “General Defences’ under criminal law.
- V- Know principles of defining criminal liability.

### **Name of the course 8- General Principles of Torts**

**Course Outcome** - After the completion of the course, the students will be able to:-

- I. Know the Principles of tortuous liability.
- II. Understand as to why a person should be held vicariously liable for tort of other.
- III. Know why some persons cannot sue for damages and some cannot be sued.
- IV. Learn the general defences against tortuous liability.
- V. Know the remedies available against tort committed.
- VI. Know the principles of strict and absolute liability.

### **Name of the course 9- Socio -Economic Crimes**

**Course Outcome** - After the completion of the course, the students will be able to:-

- I- Know the purpose of enacting Domestic Violence (Prevention of Atrocities) Act, 1989.
- II- Understand that SC/ST law has been enacted to provide special safeguards to certain unprivileged member of the Society.
- III- Distinguish conventional crime from crime affecting social and economic conditions of country.
- IV- Learn the very purpose of enacting such laws.

## **B) Business Law Branch**

### **Name of the course 4- Company Law**

**Course Outcomes** - After the completion of the course, the students will be able to:-

- I. Understand the very purpose of creation of a body corporate.
- II. Know the working and funding of the incorporation.
- III. Understand the object of holding different kinds of meetings in a corporation.
- IV. Understand the need for making provision of Corporate Social Responsibility.
- V. Know the mechanism for resolving company disputes.
- VI. Know about formation and function of Company Law Tribunals.

### **Name of the course 5- Security and Investment Law**

**Course Outcomes** - After the completion of the course, the students will be able to:-

- I. Know that an investor assesses the financial health of issuer of securities before investment.
- II. Know that in the financial market laws relating to investment and security is necessary.
- III. Know that on the global level there is a trend towards unification of controls of securities and investments.
- IV. Know as to how the new Indian laws and regulations seek to respond to the challenges of the Indian market conditions.

## **Name of the course 6- Intellectual Property Rights**

**Course outcomes** - After the completion of the course, the students will be able to:-

- I. General Regime of Intellectual Property Rights
- II. International Perspective of Intellectual Property
- III. Patent Law
- IV. Copyright and Industrial Design
- V. Industrial Designs ns

**Semester/Year: 2/1**

## **Name of the course 7 – Consumer Protection Law**

**Course Outcome** - After the completion of the course, the students will be able to:-

- I. Consumer and Consumer Rights
- II. Consumer of Goods-
- III. Consumer of Services
- IV. Enforcement of Consumer Rights:
- V. Consumer Advocacy

## **Name of the course 8- Banking Laws**

**Course Outcome** - After the completion of the course, the students will be able to-

- I. In this paper the students will be taught different kinds of banks, their functions, and relationship with customers and the banking frauds, law relating to recovery of debts due to banks recovery of debts.
- II. Overview of Banking System In Indian
- III. Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002
- IV. Negotiable Instruments Act, 1881 iv- Recovery of Debts Due to Banks and Financial Institutions Act, 1993

V. Modern Banking

**Name of the course 9 -Insurance Laws**

**Course Outcome** - After the completion of the course, the students will be able to:-

- I. Know as to how to protect the public as insurance consumers and policyholders.
- II. Understand that although business of insurance is private contract yet it is subject to governmental regulation to protect the public's interests.
- III. Understand the Social Insurance and Social Assurance in India.
- IV. Understand that the fundamental purpose of insurance regulatory law is to protect and prevent unfair trade practices and regulate other aspects of the insurance industry.

# **PGDLL**

**(Post Graduate Diploma in Labour Laws)**

**1-Name of Program:** Post Graduate Diploma in Labour Laws

**Program Outcomes:**

1. The outcome of the programme is conferment of Post Graduate Diploma in Labour Laws.
2. Students would develop the conceptual approach towards understanding laws that deal with the labours, their welfare, and social security and work conditions.
3. The programme would encourage the learner towards labour industry and prompt them to develop research skill and recognize the new needs of labours and make the provisions concerning labours up to date.
4. Learner would know the industrial psychology and management. This knowledge would help him train himself to manage industrial workers.

**2-Outcomes of courses-**

Semester/Year: 1/1

**Name of the course - Labour Jurisprudence and Industrial Relations**

Course Outcomes - By the end of the Course student will be able to-

- I. Understand the term labour and its relation with the industry.
- II. Know the Role of labour union in the management of affairs of labourers.
- III. Know the importance of collective bargaining.
- IV. Understand the need of participation of workers in the management of industry.
- V. Know the process of getting justice to the labours.
- VI. Know the emerging trend in labour industry in India.

**Name of the course- 2 - Labour Welfare Legislation and Industrial Sociology**

**Course Outcome** – By the end of the Course student will be able to-

- I. Know the role of labour welfare officer.
- II. Understand the constitution and role of Trade union.
- III. Know the law regulating the employment of inter-state migrant workers.
- IV. Understand the conditions regarding employment of children.
- V. Understand the concept of industrial development

VI. Know about the Factory Act, 1948 and Trade Union Act, 1926

**Name of the course 3- Wages and Social Security Legislation**

Outcomes of courses- By the end of the Course student will be able to-

- I. Understand that there are different kinds of wages depending upon the level of skill of workers.
- II. Know that various factors are considered for determining the wages for workers.
- III. Know that payment of bonus, gratuity and provident fund to employees is governed by different Acts.
- IV. Understand that there are various Acts that ensure the welfare of workers and provide for their social Security.
- V. Know that maternity benefits are provided to the female employees.

**Name of the course 4- Personnel Management and Industrial Psychology**

**Course Outcome** - After the completion of the course, the students will be able to-

- I. i-Understand the recruitment and training of workers.
- II. ii-Analyze and evaluate the performance of workers.
- III. iii-Know the role of personnel Manager and redressing the grievances in industry.
- IV. iv-Understand the different kinds of behavior of workers in the organization.
- V. Semester/Year: 2/1

**Name of the course 5- International labour Organisation,**

**Course Outcome** - After the completion of the course, the students will be able to-

- I. i-Know the purpose and function of International Labour Organisation.
- II. ii- Know about various labour legislations in India and the ILO conventions in this regard.
- III. iii- Know various labour standards recommended by ILO.
- IV. iv- Know the ILO recommendations to uphold the human rights of labours.



**Name of the course 6-** Labour Economics and Organised and unorganized Labour Organisations

**course outcome** - After the completion of the course, the students will be able to-

- I. Know the composition of organized and unorganized labour force in different sectors,
- II. Understand different employment schemes and public policies on unorganized labour,
- III. Understand about different Labour plans in five year scheme,
- IV. Know about different industrial policies and development in public and private sectors.

# **Ph. D in Law & Governance**

**1-Name of Program:** Doctor of Philosophy in Law and Governance

**Program Outcome:**

1. The highest academic degree provided by the university establishes the credibility of the degree holder for writing anything authentic and supported by the facts in the field of law.
2. It paves way for an aspirator to discover new facts or interpret facts or law that provides solution to the social problems.
3. It enables legislature to convert the legal philosophy in to law. It gives respect to the degree holders in the society, and amongst their colleagues.
4. It accomplishes the desire of researcher to put before the academia and society some useful solution to the social and legal problems.
5. Also it enables the person to reach to higher position in academic career i.e. to become associate professor and professor.

**Course Outcome:**

**Name of the Course:** COMPUTER APPLICATION

**Course Outcomes:** After completing the course the aspirant will be able to-

- I. Have working knowledge of the computers.
- II. Know about the different ways to search and research any information on a computer and on internet.
- III. Will become aware of the ways in which they can check plagiarism and grammatical errors of research work.
- IV. Explore topic in connection with the subject matter.
- V. Find out the latest information regarding topic of research and latest law.

**Name of the course --Research Methods and Legal Writing**

**Course Course outcome -** By the end of the Course candidate will be able to-

- I. Know the concept of research, its meaning and importance,

- II. Understand the views of various schools of thoughts regarding Law and its development.
- III. Hypothesize a specific problem worth generalization, investigation and finding out a solution.
- IV. Prepare a research proposal to proceed with the research work.
- V. Select proper methods and tools for carrying out a research work.
- VI. Write a research thesis or report using unambiguous language.

**Name of the course: Principles of Legislation and Interpretation**

**Course Outcome:** By the end of the course candidate will be able to

- I. Know the very purpose of interpretations of a statute.
- II. Know and use the various rules of interpreting a statute and find the intention of legislature.
- III. Know various aids that help in interpreting a provision of law.
- IV. Demonstrate their proficiency in their communication skills.
- V. Explain, distinguish and apply the principles and process of interpreting a statute.

# JAIPUR NATIONAL UNIVERSITY, JAIPUR



## Seedling School of Nursing

**Programme Outcome, Programme Specific Outcome  
and Course Outcome**

### **1. B.Sc. Nursing**

# **B.Sc. Nursing**

## **Name of the Program: B. Sc. Nursing**

### **Program Outcomes:**

1. Prepare graduates to assume responsibilities as Professional, Competent Nurses and midwives in providing promotive, preventive, curative and rehabilitative services.
2. Prepare nurses who can make independent decisions in nursing situations, protect the rights of and facilitate individuals and groups in pursuit of health, function in the hospital, community nursing services and conduct research studies in the areas of nursing practice. They are also expected to assume the role of teacher, supervisor and manager in clinical/public health setting.

## **Course Outcomes**

**Year: I year**

**Name of the Course:** Anatomy and Physiology

**Outcomes:**

After the completion of the course, students would be able:

- Acquire knowledge of the normal structure of various human body systems.
- Understand the alterations in anatomical structures in disease and practice of nursing.
- Acquire knowledge of the normal physiology of various human body systems,
- Understand the alterations in physiology in diseases and practice of nursing.

**Name of the Course:** Nutrition and Biochemistry

**Outcomes:**

After the completion of the course, students would be able:

- Acquire knowledge of nutrition for maintenance of optimum health at different stages of life and its application for practice of nursing.
- Acquire knowledge of the normal biochemical composition and functioning of human body and understand the alterations in biochemistry in diseases for practice of nursing.

**Name of the Course:** Nutrition and Biochemistry

**Outcomes:** Nursing Foundations

After the completion of the course, students would be able:

- Develop and understanding of the philosophy, objective, theories and process of nursing in various supervised settings.
- Acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised Clinical settings.

**Name of the Course:** Psychology

**Outcomes:**

After the completion of the course, students would be able:

- Acquire knowledge of fundamentals of psychology and develop an insight into behaviour of self and others.
- Helping them to practice the principles of mental hygiene for promoting mental health in nursing practice



**Name of the Course:** Microbiology

**Outcomes:**

After the completion of the course, students would be able:

- Acquire understanding of fundamentals of Microbiology and identification of various microorganisms.
- It also provides opportunities for practicing infection control measures in hospital and community settings.

**Name of the Course:** English

**Outcomes:**

After the completion of the course, students would be able:

- Enhance ability to comprehend spoken and written English (and use English) required for effective communication in their professional work.
- Able practice their skills in verbal and written English during clinical and classroom experiences.

**Name of the Course:** Hindi

**Outcomes:**

After the completion of the course, students would be able:

- Enable students to enhance ability to comprehend spoken and written Hindi (and use Hindi) required for effective communication in their professional work.

**Name of the Course:** Nursing Foundation (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Develop an understanding of the philosophy, objectives, theories and process of nursing in various clinical settings.
- Acquire knowledge, understanding and skills in techniques of nursing and practice them in clinical settings.

**Year: II year**

**Name of the Course:** Sociology

**Outcomes:**

After the completion of the course, students would be able:

- Introduce the concepts of sociology related to community and social institutions in India and its relationship with health, illness and nursing.

**Name of the Course:** Medical Surgical Nursing-I

**Outcomes:**

After the completion of the course, students would be able:

- Acquire knowledge and develop proficiency in caring for patients with medical and surgical disorders in varieties of health care setting and at home.

**Name of the Course:** Pharmacology, Pathology, Genetics

**Outcomes:**

After the completion of the course, students would be able:

- Acquire understanding of pharmacokinetics, principles of therapeutics and nursing implication.
- Acquire knowledge of pathology of various disease conditions and apply this knowledge in practice of nursing.
- Acquire understanding of Genetics, its role in causation and management of defects and diseases.

**Name of the Course:** Community Health Nursing - I

**Outcomes:**

After the completion of the course, students would be able:

- Understand & apply principles of promotion and maintenance of health.

**Name of the Course:** Communication Education Technology

**Outcomes:**

After the completion of the course, students would be able:

- Acquire and understanding of the principles and methods of communication and teaching.

- Develop skill in communicating effectively maintaining effective interpersonal relations, teaching individuals and groups in clinical, community health and educational settings.

**Name of the Course:** Medical Surgical Nursing-I (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Provide nursing care to adult patients with medical disorders, Counsel and educate patients and families, Provide pre and post operative nursing care to adult patients with surgical disorders, Counsel and educate patients and families.
- Provide nursing care to patients with cardiac disorders, Counsel and educate patients and families, Identify skin problems, Provide nursing care to patients with Skin disorders & Communicable diseases, Counsel and educate patients and families, Provide nursing care to patients with musculo skeletal disorders.,
- Counsel and educate patients and families, Identify instruments used in common operations, Participate in Infection Control practices in the Operation Theatre, Set-up the table/trolleys for common operative procedures.
- Assist in giving anesthesia, Assist in the operative procedures, Provide peri operative nursing care.

**Year: III year**

**Name of the Course:** Medical Surgical Nursing - II

**Outcomes:**

After the completion of the course, students would be able:

- Acquire knowledge and develop proficiency in caring for patients with medical and surgical disorders in varieties of health care settings and at home.

**Name of the Course:** Child Health Nursing

**Outcomes:**

After the completion of the course, students would be able:

- Developing an understanding of the modern approach to child-care, identification, prevention and nursing management of common health problems of neonates and children

**Name of the Course:** Mental Health Nursing

**Outcomes:**

After the completion of the course, students would be able:

- Develop the understanding of the modern approach to mental health, identification, prevention and nursing management of common mental health problems with special emphasis on therapeutic interventions for individuals, family and community.

**Name of the Course:** Medical Surgical Nursing-II (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Provide care to patients with ENT disorders, Counsel and educate patient and families, Provide care to patients with Eye disorders, Counsel and educate patient and families, Provide care to patients with neurological disorders, Counsel and educate patient and families.
- Provide care to patients with gynecological disorders. Counsel and educate patient and families, Provide care to patients with Burns, Counsel and educate patient and families, Provide care to patients with cancer.

**Name of the Course:** Child Health Nursing (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Provide nursing care to children with various medical disorders, Counsel and educate parents, Recognize different pediatric surgical conditions/ malformations,
- Provide pre and post operative care to children with common paediatric surgical conditions malformation, Counsel and educate parents.
- Perform assessment of children: Health, Developmental and Anthropometric, Perform Immunization, Give Health Education/Nutritional Education, Provide nursing care to critically ill children.

**Name of the Course:** Mental Health Nursing (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Assess patients with mental health problems, Observe and assist in therapies, Counsel and educate patient, and families, Assessment of children with various mental health problems.
- Counsel and educate children, families and significant others, Assess patients with mental health problems,.
- To provide nursing care for patients with various mental health problems.
- Assist in various therapies, Counsel and educate patients, families and significant others, to identify patients with various mental disorders.
- To motivate patients for early treatment and follow up, To assist in follow up clinic.

**Year: IV year**

**Name of the Course:** Midwifery and Obstetrical Nursing

**Outcomes:**

After the completion of the course, students would be able:

- Understand concepts and principles of midwifery and obstetrical nursing.
- Acquire knowledge and skills in rendering nursing care to normal and high risk pregnant woman during antenatal, natal and post natal periods in hospitals and community settings.
- Develop skills in managing normal and high risk neonates and participate in family welfare programmes.

**Name of the Course:** Community Health Nursing-II

**Outcomes:**

After the completion of the course, students would be able:

- Practice community health nursing for the individual, family and group at urban and rural settings by using concept and principles of health and community health nursing.

**Name of the Course:** Nursing Research and Statistics

**Outcomes:**

After the completion of the course, students would be able:

- Develop understanding of basic concepts of Research, research process and statistics.
- Participate in need based research studies in various settings and utilize the research findings to provide quality nursing care.

**Name of the Course:** Management of Nursing Services and Education

**Outcomes:**

After the completion of the course, students would be able:

- Acquire understanding of management of clinical and community health nursing services, nursing educational programmes.
- Acquire understanding of the professional responsibilities, prospects and contribution to the growth of the profession.

**Name of the Course:** Environmental Science

**Outcomes:**

After the completion of the course, students would be able:

- Develop the knowledge regarding environmental changes and provide a knowledge regarding various type of pollution and its harmful effect on human and surrounding environment.

**Name of the Course:** Midwifery and obstetrical Nursing (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Able to work in various area like antenatal clinical, labour room, Post natal ward, new born nursery and family planning clinics.

**Name of the Course:** Community Health Nursing-II (Practical)

**Outcomes:**

After the completion of the course, students would be able:

- Able to work in primary health center (PHC), community health center (CHC) and various rural area clinics and school for assess the health needs of student and community peoples.