2018-19

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VIVA College

INDEX

Late Shri. Vishnu Waman Thakur Charitable Trust's
Bhaskar Waman Thakur College of Science
Yashvant Keshav Patil College of Commerce
Vidhya Dayanand Patil College of Arts
(VIVA College)
NAAC Accredited 'B' Grade - 2.69 CGPA

Program Outcomes - Program Specific Outcomes – Course Outcomes

Academic Year: 2018 - 2019

SCIENCE

1. Foundation Course

Class: F.Y.B.Sc. Foundation Course

Program Outcomes:

Specific core discipline knowledge

- Students can recall and use the detail information about the Indian society, concepts of disparities amongst humans, human rights, understanding and managing stress and conflict, ecology, globalization, Indian constitution and other political processes.
- Students can develop themselves in context with values, ethics, rules and regulations, etc.

Communication skills

- Students can communicate effectively using oral and written communication skill.

Problem solving and research skills

- Students can develop Problem solving aptitude and Research aptitude in various context.

Program Specific Outcomes:

- To provide knowledge about overview of Indian society.
- To make aware about concepts of disparities relating stratification and inequalities in gender and people with physical or mental disabilities.
- To understand about other disparities relating caste and religion.
- To give information about the Indian constitution as set out in the Preamble.
- To understand duties of an Indian citizen, structure of the constitution and also about the schedules.
- To make aware about aspects of political processes like the Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics.
- To explain about the concepts of liberalization, privatization, globalization and impacts of globalization in different sectors like IT and communication, industries, agriculture, migration, etc.
- To explain about the concept of Human Rights, its origin and evolution, and its constituents with reference to fundamental rights stated in the constitution.
- To make aware about the importance of environmental studies in the developmental context, environmental degradation and sustainable development.
- To explain issues related to stress and its causes, agents of socialization, significance of values and ethics, reasons for conflicts.
- To able to understand the importance of stress and conflict management with the help of Maslow's Theory of self-actualization, methods to respond to conflicts and efforts towards building peace and harmony in society.

SEMESTER I

Course Code: USFC101	Course Title: Foundation Course- I

Course Outcomes:

The students would be able :

- To gain knowledge about diversity of the Indian society, population distribution throughout the country, and regional variations according to rural, urban and tribal characteristics.
- To understand the concept of disparity with respect to gender, especially the portrayal of women in society, inequalities faced by people with disabilities, differences created in society due to caste, religion, region, community, language, etc.
- To understand in detail about the Indian constitution, basic features of the constitution, The Preamble, duties of the Indian citizen.
- To learn various aspects in which a political party forms and processes.

SEMESTER IV

Course Code: USFC201	Course Title: Foundation Course- II

Course outcomes:

The students would be able :

- To gain knowledge about Globalization and its effects on all sectors responsible for survival and development.
- To understand the Human Rights and their origin and evolution.
- To understand Ecology and different environmental factors that have an effect on the development of the world as well as on human beings.
- To understand the meaning and causes of stress and conflict with the measures to tackle them.

Class: S.Y.B.Sc. Foundation Course

Program Outcomes:

Specific core discipline knowledge

- Students can recall and use the detail informative knowledge of Human and Citizen Right's provisions, Environment concerns and Dealing, Science & Technology and about different kind of Competitive Exams.
- Students can develop themselves in new and unique kind of personality, and they can choose good career.

Communication skills

- Students can develop an appraisal oral and written skill using effective communication skill.

Problem solving and research skills

- Students can develop Problem solving aptitude and Research aptitude in various context.

Program Specific Outcomes:

- To make knowledgeable about basic concept of Indian Constitution, Indian Political system.
- To make aware about Constitutional legal Rights, Violations and Redressal Mechanism of Scheduled Castes, Scheduled tribes, Women's, Children and People with Disabilities, Minorities, and the Elderly population.
- To realize and develop the responsibility being an Indian Citizen for Nation.
- To make knowledgeable and aware about some very important Acts like Consumer Protection Act 1986 and Right to Information 2005, Public Service Guarantee Act and Public Interest Litigation Law.

- To provide information about Environment, different kind of approaches, issues (Past, Present and predictive future issues) and legally dealing with all issues and some important Environmental Organization at National and International level.
- To make aware about Carbon foot print, Carbon Credit and Environmental impact Assessment.
- To explain about Evolution of Science such as history of science and present time of science and technology.
- To explain about principles of science and fundamental duty of each Indian citizens for development of science and our Nation.
- To explore the information about different kind of research and Advance Modern technology of science such as LASER technology, Satellite technology, Biotechnology, ICT
- To explain issues of control, Access and misuse of Science and technology.
- To able to understand the important role of Personality Development such as Self-Empowerment, Style, Leadership skill, Team work and Communication skill.
- To explain the important role of Verbal and Nonverbal Communication skill.
- To make aware about Competitive Exams at National such as CAT, UGC-CSIR NET SET (State level) different UPSC exams and different SSC CGL exams and International level such as GRE, GMAT, SAT.
- To provide information about how to qualify all exams by different kind of skills such as Self-motivation, Goal setting, Time Management and Smart Strategy etc.

SEMESTER III

Course Code: USFC301	**Course Title: Foundation Course- III**

Course Outcomes:
The students would be able :

- To gain knowledge about Constitutional Human Rights Provision, Violations and Redressal mechanism of Scheduled Castes, Scheduled tribes, Women's, Children and People with Disabilities, Minorities, and the Elderly population.
- To understand and learn different kind of Environmental Concerns and their Dealing mechanism.
- To understand in detail about Development and Nature of Science and Technology with their uses in Everyday life.
- To learn Soft Skills for Effective Interpersonal Communication and Personality Development.

SEMESTER IV

Course Code: USFC401	**Course Title: Foundation Course- IV**

Course outcomes:
The students would be able :

- To gain knowledge Significant, contemporary Rights of Citizens.
- To understand all Approaches of Ecology.
- To understand and learn Some Significant Modern Technologies, Features and Applications with their Issues of control, Access and misuse.

- To understand and learn Basic information on Competitive Examinations- the pattern, eligibility criteria and local centers and Soft skills required for competitive examinations.

FACULTY OF SCIENCE

2. B.Sc. Botany

Name of Department: Botany

Class: FYBSc

Program Outcomes:

Core Discipline knowledge and Critical Thinking

- Students can learn structure, life cycle and systematic position of cryptogams and phanerogams.
- Students can study and evaluate the economic importance of these life forms. They should be able to understand industrial applications of plants.
- They can study about anatomy, physiology, cytology and genetics of these life forms.
- Students can acquire an ability to observe accurately and objectively.
- Students should be able to solve the problems and also think scientifically, independently and draw rational conclusions.

Science Communication

- Curriculum empowers communication skills in science, which further enhances easy spread of scientific knowledge in the society.
- Students are made aware of environment related issues.

All-round Personality

- Students acquire attributes of good citizens with certain ethics, made aware of environmental issues its management and planning.
- Students develop as all-round individuals possessing variety of values and skills conferred by extracurricular activities.

Program Specific Outcomes:

- To get the knowledge of plants from primitive to highly evolved groups.
- To acquire valuable information regarding their utility in human welfare.
- To understand the significance of living single plant cell, its form and functions.
- To learn and correlate plants and their ecological adaptations of various environmental conditions.
- To get the experience of natural manipulation of genes by studying and performing crosses between genes on paper.
- To study the anatomical details of some plants.
- To explain how current medicinal practices are often based on knowledge of indigenous plant and to get introduced to different perspectives on treating ailments according to ethnomedicinal principles.
- To understand patterns of heredity and variation among individuals, species and populations.

SEMESTER I

Course Code: USBO101	Course Title: Plant Diversity I

Course Outcomes:
The students would be able :

- To understand morphology, structure and importance organisms
- To identify and learn their systematic position, habitat, life cycle, nature of reproduction of algae, fungi, lichens and bryophytes.
- To study their economic importance.

Course Code: USBO102	Course Title: Form and Function I

Course outcomes:
The students would be able :

- To differentiate between eukaryotic and prokaryotic cell. To learn important cell organelles, their ultra-structures and functions.
- To understand the nature of energy flow in an ecosystem.
- To identify and understand adaptations of plants belonging to various ecological conditions. To study their morphological peculiarities.
- To study and understand different Mendelian Laws of genetics. To know the way of gene segregation and their independent assortment. To learn allelic and non-allelic interaction of genes and correlate the results.

SEMESTER II

Course Code: USBO201	Course Title: Plant Diversity I

Course Outcomes:
The students would be able :

- To learn morphology, structure, systematic positions, modes of reproduction and economic importance of pteridophytes, gymnosperms as well as angiosperms.
- To learn the taxonomical terminology and understand the meaning of the same.
- To study two families and plants with economic importance belonging to them.

Course Code: USBO202	Course Title: Form and Function I

Course outcomes:
The students would be able :

- To study types of plant tissues and differentiate monocots and dicots on the basis of their anatomy.
- To understand the structures of stomata of monocot and dicot leaves.
- To learn transport mechanism in plants and differentiate between the physiological processes and their importance.
- To study some organic compounds, their synthesis and breakdown in plants.
- To recall botanical names, active constituents, medicinal uses and useful parts of six medicinal plants, which have been used traditionally since very long time in India.

Class: S.Y.B.Sc.

Program Outcomes:
Specific core discipline knowledge

- Students can recall details and information about the evolution, anatomy, morphology, systematic, genetics, physiology, ecology, and conservation of plants and all other forms of life.
- Students can recall details of the unique ecological and evolutionary features of the local and Indian flora.

Communication skills

- Students can communicate effectively using oral and written communication skills
- Involvement of students towards interactive section in class

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

- To understand the phylogeny of plants and study various systems of classification.
- To explore the morphological, anatomical, embryological details as well as economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
- To understand physiological processes and adaptations of plants.
- To provide knowledge about environmental factors and natural resources and their importance in sustainable development.
- To understand patterns of heredity and variation among individuals, species and populations and apply principles for improvement of quality and yield.
- To be able to apply statistical tools to gain insights into significantly different data from different sources.
- To acquire recently published knowledge in molecular biology, such as rDNA technology; PTC and bioinformatics and their applications.

SEMESTER III

Course Code: USBO301	**Course Title: PLANT DIVERSITY**

Course Outcomes:

The students would be able :

- To understand the salient features of three major groups of algae, their life cycle patterns with a suitable example; to be able to identify them.
- To gain the nomenclature information with various classification point of view.
- To provide plant description, describe the morphological and reproductive structures of four families and also identify and classify according to Bentham and Hooker's system.
- To study the modern methods about the instrument and their principles regarding working and functioning.

Course Code: USBO302	**Course Title: FORM AND FUNCTION II**

Course outcomes:

The students would be able :

- To gain the basic knowledge about the various essential organ / tissue systems/ cells/ cell organelles form the plant species diversities.
- To understand the pattern of cell division and its function according to types.
- To acquired the knowledge about the genetic materials and its role in living system.
- To gain the information about the various activities of the chromosomes along with variation with respect to examples like Drosophila as basic organism.

- To relate the above information for understanding the genetic hereditary effects of such variations.
- To gain the knowledge about the central dogma and mechanism of all machinery related to it.

Course Code: USBO303	**Course Title: CURRENT TRENDS IN PLANT SCIENCES I**

Course outcomes:
The students would be able :

- To understand the various aspects of pharmaceutical industries with respect to medicinal herbs and related adulterant plants to it.
- To gain the information about the international standards of pharmacopeia.
- To provide the concise knowledge about Indian pharmacopeia and Ayurvedic pharmacopeia
- To demonstrate the different geographical zones of India their existing flora and the economic values with respect to spices and medicines as well.
- To get exposure for the various aspects of pants in to industries like medicine, cosmetics and notional,
- Also to understand the sustainable practice such as Biofuel production form plants.

SEMESTER IV

Course Code: USBO401	**Course Title: PLANT DIVERSITY**

Course Outcomes:
The students would be able :

- To learn the general characteristics and classification of two major groups of fungi along with life cycles of each group; to be able to identify them.
- To observe the effect of infection occurred due to the fungi towards economic plants.
- To understand the basic mode of transmission and life cycle to preventive measures and other alternatives.
- To gain the information about very unique type of organism on the earth i.e. Lichens and its life cycle and uses for mankind.

Course Code: USBO402	**Course Title: FORM AND FUNCTION II**

Course Outcomes:
The students would be able :

- To acquire the structure and functions of tissue systems of plants.
- To understand the arrangement of the conducting tissues in plants.
- To gain the knowledge of physiological mechanism related to the respiration in plants and specific responses given by plants towards the Photosynthetic region of light spectrum.
- To demonstrate the schematics of mineral cycles like Nitrogen, carbon and water respectively.
- To gain the information of different adaphic factors and the relation between the community flourishing in it.

Course Code: USBO403	Course Title: CURRENT TRENDS IN PLANT SCIENCES I

Course Outcomes:

The students would be able :

- To construct schematics of garden types and specific locations with their suitable plant to grow.
- To understand the importance of some garden types with its principle ideas with examples in India.
- To gain the widely expanding knowledge related to genetic information and its uses in fields like PTC, R-DNA technology, and their utilization.
- To acquire the use of biostatistician tools for analyze, relate, solve and interpret the data generated through the biological experiments.
- To understand the importance and uses of bioinformatics and day to day need of it in various genetic experiments and discoveries.

Class: T.Y.B. Sc

Program Outcomes:

Specific core discipline knowledge

- The subject provides the students' knowledge on paleontology, anatomy, plant diversity study, ecological adaptations, etc. and their co-relation with evolution and current trends
- It prepares the students to tackle current affairs connected to botany, namely, cytotaxonomy, genetics, biotechnology, plant pathology and so on.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students gain knowledge on importance of group discussions in tackling scientific problems, looking at the same study in different angles and drawing different conclusions to enhance the field of study.
- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

- To recognize and identify major groups of non-vascular and vascular plants and their phylogenetic relationships.
- To understand the phylogeny of plants and study various systems of classification.
- To explore the morphological, anatomical, embryological details as well as economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
- To understand physiological processes and adaptations of plants.
- To provide knowledge about environmental factors and natural resources and their importance in sustainable development.
- To be able to carry out phytochemical analysis of plant extracts and application of the isolated compounds for treatment of diseases.
- To be able to deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.

- To explain how current medicinal practices are often based on indigenous plant knowledge and to get introduced to different perspectives on treating ailments according to ethnomedicinal principles.
- To understand patterns of heredity and variation among individuals, species and populations and apply principles for improvement of quality and yield.
- To be able to apply statistical tools to gain insights into significantly different data from different sources.
- To acquire recently published knowledge in molecular biology, such as rDNA technology; PTC and bioinformatics and their applications.

SEMESTER V

Course Code: USBO501	**Course Title: Plant Diversity III**

Course Outcomes:
The students would be able:

- To gain knowledge about microbial diversity and techniques for culturing and visualization.
- To understand the salient features of three major groups of algae, their life cycle patterns with a suitable example; to be able to identify them.
- To learn the general characteristics and classification of two major groups of fungi along with life cycles of each group; to be able to identify them.
- To understand the scope and importance of Plant Pathology and apply the concepts of various control measures of commonly widespread plant diseases.

Course Code: USBO502	**Course Title: Plant Diversity III**

Course outcomes:
The students would be able:

- To acquire knowledge of different fossil forms and understand their role in evolution.
- To study in detail the morphology of various type of flowers and fruit, a tool to identify and describe various plants.
- To provide plant description, describe the morphological and reproductive structures of seven families and also identify and classify according to Bentham and Hooker's system.
- To gain proficiency in the use of keys and identification manuals for identifying any unknown plants to species level.
- To relate anomalies in internal stem structure with function and appreciate the salient features of the root stem transition zone.
- To get exposure to pollen study and learn to apply it in various fields.

Course Code: USBO503	**Course Title: Form and Functions - II**

Course outcomes:
The students would be able:

- To acquire knowledge about two important organelles and molecular mechanisms of translation
- To understand water relations of plants, inorganic and organic solute transport, and apply the knowledge to manage mineral nutrition and survival in challenging abiotic stresses.
- To understand succession in plant communities and study remediation technologies in order to apply knowledge acquired for cleanup of polluted sites.
- To get exposure to principles and techniques of plant tissue culture and apply these studies for improving agriculture and horticulture and to become an entrepreneur.

Course Code: USBO504	**Course Title: Current Trends in Plant Sciences - I**
Course outcomes: The students would be able: • To get exposure to the technique of mushroom cultivation and explore the possibility of entrepreneurship in the same. • To learn ethnobotanical principles, applications and utilize indigenous plant knowledge for the cure of common human diseases and improvement of agriculture. • To gain knowledge about the latest biotechnological techniques for isolation and characterization of genes. • To learn principles and application of commonly used techniques in instrumentation. • To gain proficiency in the monograph study and pharmacognostic analysis of six medicinal plants.	
SEMESTER VI	
Course Code: USBO601	**Course Title: Plant Diversity III**
Course Outcomes: The students would be able: • To identify, describe and study in detail the life cycles of three Bryophytes. • To and study in detail classification and general characters of three classes of Pteridophytes and identify as well as describe the life cycles of examples from each class. • To study evolutionary aspects and economic utilization of Bryophytes and Pteridophytes. • To identify, describe and study in detail the life cycles of three Gymnosperms.	
Course Code: USBO602	**Course Title: Plant Diversity IV**
Course outcomes: The students would be able: • To study contribution of Botanical gardens, BSI to Angiosperm study and provide plant description, describe the morphological and reproductive structures of seven families. • To gain exposure to a phylogenetic system of classification. • To gain insight into the anatomical adaptations of different ecological plant groups. • To understand development plant of male and female gametophytes, embryonic structure and development. • To generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context, using suitable statistical techniques	
Course Code: USBO603	**Course Title: Form and Functions – III**
Course outcomes: The students would be able: • To study various plants biomolecular structures and appreciate the structures, role, functions and applications of enzymes. • To gain insight into the Nitrogen and plant hormone metabolism with applications of the same in agriculture and horticulture.	

- To understand principles of genetic mapping, mutations and solve problems based on them, gain knowledge of various metabolic disorders and their implications.
- To understand and apply tools of Bioinformatics for data retrieval and phylogenetic analysis.

Course Code: USBO604	**Course Title: Current Trends in Plant Sciences - II**

Course outcomes:
The students would be able:

- To gain insight into recent molecular biology techniques for DNA analysis and amplification and Barcoding techniques and applications therein.
- To understand the different aspects and importance of Biodiversity and utilize them for conservation of species so as to prevent further loss or extinction
- To learn about the sources of economically important plants in the field of fats and oils and apply it for extraction, dealing with entrepreneurship in the field.
- To gain knowledge and proficiency in preservation of post-harvest produce and explore the possibility of entrepreneurship in the field.

Class: T.Y.B.Sc Applied Component (Horticulture and gardening)

Program Outcomes:

Specific core discipline knowledge

- Students can recall details and information about the Landscape gardening, Propagation practices, Floriculture, Olericulture, Commercial production, Manure, Fertilizers, plant Diseases, plant tissue culture, green house technology, Post-harvest technology and all other practices in horticultures.

- Students can recall the details of horticulture businesses, Management, and entrepreneurship development.

Communication skills

- Students can communicate effectively using oral and written communication skills.

Designing and Horticultural skills:

- Student can learn about Designing of garden, greenhouse management, florist shop Management, flower decoration, Cultivation of medicinal plants, spices and their application.

Program Specific Outcomes:

The students would be able:

- To recognize and identify major plant disorders and their control measures.
- To explore the natural and artificial propagation and their use in commercial production of the crops.
- To recognize and identify plants for garden feature and their cultivation in the garden.
- To provide knowledge about environmental factors and natural resources and their importance in gardening.

- To be able to carry out analysis of soil pH and application for treatment of commercial production and landscape gardening.
- To get exposure to the technique of Floriculture and explore the possibility of entrepreneurship in the same.
- To learn the Indian (floral Rangoli, Gajara, Veni, etc.) and western type of flower arrangement.

SEMESTER: V

Course Code: USACHO501	**Course Title: HORTICULTURE AND GARDENING**

Course Outcomes:
The students would be able:

- To study the contribution of horticulture research institute and government schemes for strategy Cultivation of numerous Crops.
- To understand the salient features of major Plant diseases like fungal, Bacterial, Viral and their life cycle patterns with a suitable example; to be able to identify them.
- To understand the scope and importance of Plant Pathology and apply the concepts of various control measures of commonly widespread plant diseases.
- To acquire knowledge about Propagation practices and their applications in Cultivation of crops.
- To understand use of Manures, fertilizers and biofertilizers in the various fields of Horticulture.
- To get exposure to Organic farming and learn apply it in field.
- To gain the proficiency in use of garden tools in artificial Propagation practices like Cutting, Layering, budding, etc.

SEMESTER: VI

Course Code: USACHO601	**Course Title: HORTICULTURE AND GARDENING**

Course Outcomes:
The students would be able:

- To gain exposure to Landscape gardening and learn to design of Formal and informal garden.
- To gain knowledge about Horticultural branches, like Pomology (The science of fruit growing), Apiculture, Landscape gardening and Nursery development.
- To acquire knowledge about various garden feature (Hedge, Pergolas, Lawn, etc.) with suitable example for particular garden location.
- To understand the importance of various Major gardens in India.
- To gain insight into the green House technology: Layout, types, Irrigation and construction with applications in agriculture and horticulture.

• To learn about the commercial production fruits and vegetables in relation to propagation, post plantation care, harvesting and post-harvest management. • To gain knowledge and proficiency in preservation of post-harvest produce and explore the possibility of entrepreneurship in the field. • To get exposure to the technique of Floriculture and explore the possibility of entrepreneurship in the same.

3. B.Sc. Biochemistry

Name of Department: Biochemistry	
Class: FY BSc	
Program Outcomes: **Specific core discipline knowledge** • Students can recall details and information about the properties of the universal solvent- Water, Biomolecules and Nutrition. • Students can recall details about Origin of life, Cell biology, Physiology and Microbiology. **Communication skills** • Students can communicate effectively using oral and written communication skills **Problem solving and research skills** • Students can make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context. • It provides familiarity with the basic biochemistry laboratory techniques. Also the practical skills of students enhance their observational skills and help them to use these skills for problem solving.	
Program Specific Outcomes: • To develop an adequate background for the students to study more advanced biochemistry topics. • To understand the unique properties of water which is essential for all the life processes. • To understand the life constituting bio molecules- Carbohydrates, proteins, amino acids, lipids and nucleic acids which are the important constituents of the living systems. • To understand everything about the Cell which is the basic unit of life and the center for all biochemical processes. • To understand the world of micro-organisms which exist as independent cellular units. • To acquire an interest in nutrition for sustaining life, physiology and functioning of life systems. • To understand the importance of broad spectrum of biochemistry.	
SEMESTER I	
Course Code: USBCH101	**Course Title: Biomolecules and Nutrition**
Course Outcomes: The students would be able : • To gain knowledge about water, its effect on biomolecules, structure, properties and the biological significance of water as a universal solvent. • To gain information about the concept of mole, molar, pH, acids, bases and buffers. • To gain knowledge about amino acids and proteins structure, their classification, physical and chemical properties.	

- To acquire information about the introduction, occurrence, classification and functions of carbohydrates.
- It also gives a detailed information about the physical and chemical properties of monosaccharides, disaccharides and polysaccharides.

Course Code: USBCH102	**Course Title: Introduction to Cell biology, Physiology and Microbiology**

Course outcomes:
The students would be able :

- To understand different theories on origin of life, the big bang theory, the process of evolution, gene mutation, mechanism of evolution, gene flow and genetic drift.
- To gain knowledge about the structural organization of cells, the structure and functions of different cell organelles.
- To acquire detailed information about the process of cell division- Mitosis and Meiosis.
- To understand the concepts of microbiology this includes the historical background, general characteristics of bacteria, microbial taxonomy, structure and function of bacterial cell wall and different staining methods for identification of bacteria.

SEMESTER II

Course Code: USBCH201	**Course Title: Biomolecules and Nutrition**

Course Outcomes:
The students would be able :

- To gain knowledge about Lipids- its definition, structure, their classification, physical properties and chemical reactions of fats like saponification, iodination, auto-oxidation etc.
- To acquire information about the introduction, structure, classification and functions of compound lipids, glycolipids, cerebrosides and steroids.
- To gain knowledge about Nucleic acids- its definition, structure, their classification, the structure of RNAs and DNA along with the physical and chemical properties of nucleic acids.
- To acquire information about the different concepts of nutrition like BMR, BMI and SDA. It also describes a detailed information about the nutritional significance of the macro and the micro molecules of a balanced diet.

Course Code: USBCH202	**Course Title: Introduction to Cell biology, Physiology and Microbiology**

Course Outcomes:
The students would be able :

- To understand the process of digestion and absorption of carbohydrates, proteins and lipids along with the different parts of GIT.
- To understand the physiology of respiration and excretion.
- To understand the concepts of microbiology which includes the microbial growth curve, different culture media, generation time, the techniques of sterilization and disinfection and the physical agent of sterlization.

Name of Department: Biochemistry

Class: SYBSc

Program Outcomes:
Specific core discipline knowledge

- Students can recall details and information about the biomolecules, origin of life, cell biology, physiology and microbiology.
- Students can recall details of buffers ,genetics , hormones, enzymes, and fermentation technology.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can solve problems related to biochemistry such as formulation of balanced diet, ionic equilibria, enzyme kinetics and can carry out identification of biomolecules.

Program Specific Outcomes:

- To recognize and identify major groups of biomolecules
- To understand the physiological processes in human body.
- To understand ionic equilibria and physiocochemical principles.
- To be thorough with microscopy techniques.
- To understand patterns of heredity and variation among individuals, species and populations.
- To be able to deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.
- To understand neurophysiology.
- To gain knowledge about various industrial processes and apply principles of the same.

SEMESTER III

Course Code: US BCH 301	**Course Title: Bio-organic chemistry & biophysical methods**

Course Outcomes:

The students would be able :

- To gain knowledge about the concepts, derivations and titration curves related to Acids, Bases ,Buffers and Ionic equilibria and also would be able to solve the numerical problems for the same.
- To understand the Physicochemical Principles such as diffusion, Osmosis, Ways of expressing solute, Surface tension ,Colloids and Viscocity
- To learn the Principles, working and construction of various types of Microscopy techniques

Course Code: US BCH 302	**Course Title: Fundamentals of Genetics and Physiology**

Course outcomes:

The students would be able :

- To acquire knowledge about the History of Genetics, Concepts of Mendelian Genetics and would be able to solve numericals for the same.
- To learn about the blood and various body fluids such as bile, urine and lymph.
- To understand the biological transport mechanisms in plants , in blood and across cell membranes

Course Code: US BCH 303	**Course Title: Applied Biochemistry I**

Course outcomes:

The students would be able :

- To acquire knowledge about beneficial as well as harmful microorganisms in health and diseases and about viruses also.
- To learn about the history, techniques and applications of both plant and animal tissue culture

- To understand fermentation process, fermenters ,processes for making various products and also immobilized enzymes , biosensors and single cell proteins and all applications

SEMESTER IV

Course Code: US BCH 401	**Course Title: Bio-organic chemistry & biophysical methods**

Course Outcomes:
The students would be able :

- To gain knowledge about enzymes, their classification, kinetics as well as inhibition.
- To learn about various plant and animal hormones, their classification , mode of action, structure and functions.
- To study about various techniques for biochemical investigation like use of model organisms, organ and tissue studies and cell fractionation techniques.

Course Code: US BCH 402	**Course Title: Fundamentals of Genetics and Physiology**

Course outcomes:
The students would be able :

- To gain knowledge about prokaryotic and eukaryotic genome organization, and also the process of recombination by transformation, transduction and conjugation .
- To study about various types of movements in plants and process of muscle contraction for locomotion.
- To understand neurophysiology by studying classification of nervous system, impulse transmission and neurotransmitters.

Course Code: US BCH 403	**Course Title: Applied Biochemistry II**

Course outcomes:
The students would be able :

- To gain knowledge about recent trends in biotechnology like bioremediation, biodegradation, biofungicides and biofertilizers.
- To study about pharmacology viz. drugs , dosage forms, drug delivery and pharmacokinetics .
- To understand resource management by studying about solid waste, and its treatment. They would also learn about biomass and bioenergy production.

Class: TYBSc

Program Outcomes:

Specific core discipline knowledge

- Students can recall details and information about metabolic roles of several components plus analytical techniques used to study them, also study about environmental science, genetics and recombinant DNA technology as well as immunological and pathophysiological studies of human body.
- Students can recall detailed role of nutrients and therapeutic drugs in use, applications of biostatistics and bioinformatics techniques.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context.

Program Specific Outcomes:

- To study the metabolic pathways and cycles of various bio-molecules.
- To learn about principle, working and applications of chromatography, spectrophotometer, colorimeter, centrifuge, electrophoresis and radioisotopes.
- To recognize environmental problems and study how to solve them.
- To study the process of DNA replication, repair, transcription and translation.
- To understand the tools and techniques of recombinant DNA technology and its applications.
- To gain knowledge regarding nutrients, its role in diet management and concept of balanced diet.
- To study the mechanism of drug action, pharmacotherapy and use of therapeutic drugs.
- To understand the role of human immune system, antigen-antibody reactions, MHC and its components, transplant immunology.
- To be able to carry out extraction and estimation of different biomolecules.
- To be able to understand and solve biostatistics problems.
- To study various bioinformatics techniques and use in biological science.

SEMESTER V

Course Code: USBCH501	**Course Title: Metabolism & Analytical Techniques-I**

Course Outcomes:

The students would be able :

- To understand simple concepts related to metabolism, metabolic roles played by vitamins, appreciate the correlation between energy molecules, reducing equivalents also to gain knowledge about pH and buffers systems.
- To comprehend the catabolism and anabolism of carbohydrates and the disorders associated with these biomolecules.
- To learn the principle, working and applications of chromatography technique and be able to appreciate the contribution of this technique to the study of various biomolecules.

Course Code: USBCH502	**Course Title: Environmental Science**

Course outcomes:

The students would be able :

- To get aware of our environment
- To get sensitized to the challenging environmental issues and problem.
- To get motivated to address the environmental problems and to work towards finding solutions to these problems.

Course Code: USBCH503	**Course Title: Advanced Genetics & RDT**

Course outcomes:

The students would be able :

- To be able to appreciate the experiments carried out by various scientists to prove DNA as the genetic material, understand the mechanism of DNA replication and comprehend how DNA damage can lead to detrimental effects and how DNA repair systems in the cells try to prevent mutations before being inherited.
- To understand the mechanisms of DNA transcription and translation in prokaryotes
- To understand the basic tools required and know the techniques of recombinant DNA

technology, their applications and the use of the technology for the benefit of society.	
Course Code: USBCH504	**Course Title: Immunology and Pathophysiology- I**
Course Outcomes: The students would be able : • To understand the overall organization of the immune system, appreciate the structure and function of antibodies, relationship between innate and adaptive systems and humoral and cell mediated immunity. • To learn the normal and abnormal metabolic pathways of bio-molecules (carbohydrates, proteins, lipids) and diseases related. • To be able to discuss pathophysiology and etiology of different diseases and in born errors. • To understand basic aspects of cancer biology and familiarize with elementary facets of carcinogenesis and types of cancer along with therapy to treat the cancer.	
SEMESTER VI	
Course Code: USBCH601	**Course Title: Metabolism & Analytical Techniques-II**
Course Outcomes: The students would be able : • To understand breakdown and synthesis of fatty acids and amino acids and appreciate experiments carried out by scientists to enable understand the pathways and cycles of metabolism. • To understand basic concepts related to metabolism, be familiar with the various metabolic pathways and should be able to appreciate the importance of enzymes and coenzymes in pathophysiology of diseases. • To be able to appreciate the various hormones, their actions, regulations and clinical significance. • To learn the principle, working and applications of various analytical techniques and be able to appreciate the contribution of these techniques (colorimeter/ spectrophotometer, Centrifuges and electrophoresis) as tools in understanding the structure and function of biomolecules.	
Course Code: USBCH602	**Course Title: Nutrition & Pharmacology**
Course Outcomes: The students would be able : • To be able to appreciate the role of nutrients in diet to understand nutritional status and concept of balanced diet which will help to identify the overall nutrition to be given to men and women at various age groups. • To be familiarized with dietary management in diseases. • To be able to utilize critical thinking skills in discussing the concept of pharmacokinetics and pharmacotherapy. • To be able to explain various therapeutic drugs in use.	
Course Code: USBCH603	**Course Title: Biostatistics & Bioinformatics**
Course Outcomes: The students would be able : • To understand the basic principles of probability and how they relate to biostatistics • To become familiar with the mathematical and statistical theory underlying the applications	

of biostatistical methods to interpret statistical results correctly, effectively and in context. • To be able to interpret relationships among living things and analyze and solve biological problems, using basic biological concepts, grounded in foundational theories with the help of bioinformatics tools. • To be able to apply existing software effectively to extract information from large databases and to use this information in biological sciences.

Course Code: USBCH604	**Course Title: Immunology and Pathophysiology- II**

Course Outcomes:
The students would be able :

- To understand the pathways that activate the complement system
- To be familiar with the MHC; its structure and classes, specific role of each class of MHC and importance in immune response and graft rejection.
- To grasp a contemporary understanding of classification, structure and mechanism of replication of viruses along with pathophysiology symptoms and preventive measures of AIDS.
- To understand the basic concepts of demography and epidemiology of aging and pathophysiology and issues in common diseases of older people.

3. B.Sc. Biotechnology

Name of Department: Biotechnology

Program Name : B.Sc. Biotechnology (Three Years – Six Semesters)

Program Outcomes:

Specific core discipline knowledge

- Understand and analyze information and knowledge about Biotechnology and its branches such as molecular biology, genetic engineering, cell biology, basic plant and animal physiology, genetics, biostatics, ecology and plant and animal tissue culture, communication skills and scientific writing. Conservation of plants and all other forms of life.
- Relate the theory with the current trends in scientific world and applicability of Biotechnology for the betterment of mankind.
- Apply knowledge gained from the field of biochemistry, biophysics, applied chemistry, immunology, cell biology, cytogenetics, molecular biology, medical microbiology, environmental biotechnology, biostatistics, and bioinformatics.
- Describe basic principles of bioprocess technology and molecular diagnostics.
- Develop logical thinking and reasoning abilities required in the in the field of research and entrepreneurship.
- Elaborate on important aspects of Biochemistry such as protein biochemistry, metabolic pathways and their regulation, hormones and their secretion, and role of biotechnology to treat over nutrition [obesity] and Protein-energy malnutrition.

- Understand basic industrial operations of a microbial fermentation based industry including QC and QA aspects.
- Develop skills in pharmacology and toxicology that can make them ready to be absorbed in the sector of Pharmaceutical Biotechnology.
- Apply biotechnological remedies to tackle Environmental pollution and industrial effluent and waste water treatment.

Communication skills

- Carry out verbal and non-verbal communication, using oral presentation, scientific writing and presentation.

Problem solving and research skills

- Perform basic microbial techniques in laboratory.
- Prepare review reports of scientific papers.
- Analyze statistical analysis of data via biometric analysis of mean, median, mode and standard deviation and data representation by graph, bar diagram, pie charts, histogram, polygon and curve.
- Generate and test hypotheses, make observations and generate data through various biotechnological techniques and instrumentation, analyze data and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

Class: FYBT

Program Specific Outcomes:

By the end of the program students will have:

- Understood the Nomenclature and classification of inorganic compounds and different types of chemical bonds.
- Gained hand-on skills in preparation of Buffers, Solutions, Titrimetric and volumetric estimation, Estimation and handling of basic Analytical Techniques like chromatography and calorimetry.
- Learned the origin of life and to understand in detail about the classification of plants, animals, microorganism, viruses and bacteria.
- Applied principles of sterilization and microbiological techniques to deal with microbes.
- Acquired knowledge of the emergence of new modern biotechnology from the traditional one.
- Known different branches of biotechnology and application of genetic engineering for food improvement to meet the need of growing population.

Class: SYBT

Program Specific Outcomes:

By the end of the program students will have:

- Gained an understanding of the different aspects of classical physics and its applications in the field of biology.
- Learned the fundamentals and applications of organic and green chemistry.
- Acquired knowledge of immune effector mechanisms and various immunotechniques.
- Comprehended the cell cytoskeleton, chromosomal aberrations and underlying principles of sex determination, linkage and mapping.
- Gained an insight into various mechanism of gene expression and regulation.
- Gained an understanding of the basic skills applied in fermentation technology and built a foundation for more advanced studies in bioprocess technology.
- Developed research aptitude, logical thinking and reasoning.
- Gained an insight into the metabolic processes associated with catabolism of carbohydrates, amino acids, lipids and nucleotides.
- Acquired knowledge of different aspects of analytical chemistry, natural product chemistry and basic concepts in polymer chemistry and nanomaterials.
- Acquired knowledge of various aspects of systemic infections and their causative agents and the skills required to deal with them.
- Gained an understanding of the causes, types and control methods for environmental pollution and application of different life forms in environmental remediation.
- Learned the basic concepts of biostatistics and application of the various statistical tools for analysis of biological data.
- Learned the basic concepts of and the tools used in Bioinformatics.
- Gained an understanding of the basic principles and analytical skills used in molecular diagnosis and its application in developing new diagnostic kits.
- Developed an understanding of the systematic process and to select and screen a business idea and designing the strategies for successful implementation of ideas.
- Gained an insight into to write a business plan.

Class: TYBT

Program Specific Outcomes:

- Generate skill based human resources for the fermentation-based Food and/or Pharmaceutical industry as well as academia.
- Understand basic knowledge of both upstream and downstream aspects of microbial fermentations.
- Gained required skills and platform knowledge of a protein biochemist, and a genetic engineer.
- Learn documentation skills related to QC and QA and other regulatory processes.
- Apply knowledge of Biotechnology in Environmental Management [Green Technology}.
- Acquire technical know-hows to adopt renewable energy sources such as solar, biomass based etc.

SEMESTER I

Course Code: USBT101	**Course Title: Basic Chemistry-I**

Course Outcomes:

- Acquaint with basic concepts of Chemistry like Classification and Nomenclature of Chemical compounds.
- Understand the classification and nomenclature of Organic and Inorganic compounds.

- Understand about the nature, structure, theories and types of chemical bonds present in the chemical compounds.
- Prepare buffers and solutions and understanding the chemistry of water as it most important component in preparation of the buffers.
- Discuss units of concentration viz. normality, molarity, molality, mole fraction, mole concept, solubility, weight volume ratios, ppm, ppb etc. also, about able to inculcate skill of standard solutions preparation.
- Explain the properties of acid, bases and buffers.

Course Code: USBT102	**Course Title: Basic Chemistry-II**

Course outcomes:

- Explain concepts of Stereochemistry, Titrimetry and Gravimetry along with Analytical Techniques like Methods of Separation, Chromatography and Colorimetry
- Understand Stereochemistry, in detail, in terms of Types of Isomerism, Geometric Isomerism and Optical Isomerism, Conformation, Configuration and Projection formulae of it.
- Perform Titrimetric Analysis and Gravimetric Analysis.
- Elaborate on Analytical Techniques like Chromatography and Colorimetry
- Explain Methods of Separation.

Course Code: USBT103	**Course Title: Basic Life Sciences-I: Biodiversity and Cell Biology.**

Course outcomes:

- Discuss origin of Life, Biological evolution and origin of Eukaryotic cells.
- Understand the concept of Biodiversity, Ecological and Genetic Diversity, and will able to know its significance.
- Comment Plants, Animals and Microorganisms Diversity.
- Describe classification of Animals in to further Non-Chordates and Chordates with detail study of their general characteristic.
- Describe classification of Plants in to Algae, fungi, Bryophyta, pteridophyta, gymnosperms and angiosperms with detail study of their general characteristic.
- Understand ultrastructure of prokaryotic cell and Eukaryotic cell
- Explain classification of Bacteria and viruses.

Course Code: USBT104	**Course Title: Basic Life Science-II: Microbial Techniques.**

Course Outcomes:

- Explain different parts of simple, compound, dark field and phase contrast microscope and its functions.
- Discuss applicability of microscopes in the field of microbiology.
- Differentiate between stains and dyes.
- Elaborate on working mechanism of Simple Staining, Differential Staining and Acid Fast Staining with specific examples

• Explain physical and chemical sterilization, their principle, mechanism along with advantages and disadvantages. • Describe nutritional/media requirements for the growth of microorganisms and preparation and application of different types of media. • Perform isolation and pure culture of micro-organisms • Comment on growth phase and enumeration of growth. • Explain preservation of cultures.	
Course Code: USBT105	**Course Title: Basic Biotechnology-I : Introduction to Biotechnology**
Course Outcomes: • Discuss history, traditional and modern biotechnology, difference branches of biotechnology. • Elaborate on recent advancement in technology and research in Biotechnology. • Apply new advance techniques of molecular biology, Genetic engineering to improve the quality of food to meet the increasing food demand of the world. • Evaluate principles behind the ethics in Biotechnology and Intellectual property rights. • Discuss applications of biotechnology in food science and fermentation technology.	
Course Code: USBT106	**Course Title: Basic Biotechnology-II : Molecular Biology**
Course outcomes: • Explain detailed structure of DNA. • Understand the replication mechanism of prokaryotes and eukaryotes. • Describe different types of mutation and various mutagens i.e., both physical and chemical. • Understand different DNA repair mechanisms. • Explain experimental evidences for DNA and RNA as Genetic Material. • Comment on genetic engineering in various model organisms. • Describe the salient features of various vectors and enzymes used in genetic engineering • Perform isolation and purification techniques of DNA and RNA	
Course Code: USBT107	**Course Title: Societal Awareness**

Course Outcomes:

- Describe concept of Indian society, disparity, The Indian Constitution and Significant Aspects of Political Processes
- Explain multi-cultural diversity of Indian society through its demographic composition
- Understand the concept of disparity as arising out of stratification and inequality
- Discuss inter-group conflicts arising out of communalism.
- Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof.
- Discuss on the guidelines in the Indian Constitution.
- Understand Significant Aspects of Political Processes.

SEMESTER II

Course Code: USBT201	**Course Title: Chemistry-I: Bioorganic Chemistry**

Course Outcomes:

- Explain classification, structure and characterization of biomolecules such as carbohydrates, lipids, sterol, proteins, amino acids and nucleic acids.
- Understand and comment on the chemical / physical properties, characteristics reactions, function, difference and its types.

Course Code: USBT202	**Course Title: Chemistry-II: Physical Chemistry**

Course Outcomes:

- Explain concepts of Thermodynamics, Chemical Kinetics, Oxidation Reduction reactions
- Discuss Laws of Thermodynamics and its Limitations, Mathematical expression
- Determine the Order of Reaction and Rate of reaction
- Apply Rules to assign Oxidation Numbers, Balancing Redox Reactions by Ion Electron Method.

Course Code: USBT203	**Course Title: Life Science-I: Physiology and Ecology**

Course outcomes:

- Describe physiological processes in plants and animals.
- Discuss in detail the different physiological processes undergoing in plants and animals.
- Explain different types of plant hormones and their functions along with plant secondary metabolites.
- Understand different components of Ecosystem and their importance.
- Analyze different types of Ecological pyramids, food chains and food web.
- Summarize different types of biogeochemical cycles with their importance in ecosystem.
- Comprehend different types of interaction with interspecific and intraspecific competition and their important to sustain ecosystem.

Course Code: USBT204	**Course Title: Life Science-II: Genetics**

Course Outcomes:

- Comprehend Mendel's laws of heredity and understanding the concept of mono and di hybrid cross with examples.
- Discuss Application of Mendel's Principles in human genetics.
- Elaborate on Incomplete Dominance and Co-dominance.
- Explain Multiple Alleles, Environmental effect on the expression of the Human Genes, Gene Interaction and Epistasis.
- Understand gene exchange mechanism in bacteria, viral life cycle, and genetic analysis of bacteria.
- Describe Genetic Structure of Populations; Hardy- Weinberg Law and its assumptions.
- Discuss the techniques used in measuring Genetic Variation at Protein Level and measuring Genetic Variations at DNA level.
- Understand about natural Selection, Genetic Drift, Speciation, Role of Population Genetics in Conservation Biology.

Course Code: USBT205	**Course Title: Biotechnology-I: Tissue Culture & Scientific Writing and communication Skills**

Course Outcomes:

- Explain the principles and techniques of Plant tissue culture with their application.
- Explain the principles and techniques of Animal tissue culture with their application.
- Discuss the modes of communication and technique of scientific writhing.
- Practice science communications in the form of oral presentations, scientific reading, writing & presentation in their research work.

Course Code: USBT206	**Course Title: Biotechnology-II: Enzymology, Immunology and Biostatics**

Course Outcomes:

- Explain concepts in Enzymology, Immunology and Biostatistics.
- Discuss classification, nomenclature, properties, enzyme kinetics and types of enzyme inhibitions.
- Give an overview of the immune system and about the cells and organelles involved there.
- Explain types of Immunity, factors influencing and mechanism of each, antigens, antibody and vaccines.
- Understand the importance of statistics in biology.
- Representation of data and types of data, Normal and frequency distribution, measure of central tendency and measure of dispersion.

Course Code: USBT207	**Course Title: Globalization, Ecology and Sustainable Development.**

Course outcomes:

- Understand the concept of Globalization and its impact.
- Understand the concepts of liberalization, privatization and globalization, effect of globalization on various sectors, origin and evolution of Human rights.
- Explain concepts of environment, ecology and how they are interconnected.
- Describe the reasons for degradation of environment and their impact on human life and importance of sustainable development.

SEMESTER III	
Course Code: USBT301	**Course Title: BIOPHYSICS**
Course Outcomes: • Develop an understanding of the different aspects of classical physics • Relate principles of physics to applications and techniques in the field of biology such as microscopy, spectroscopy and electrophoresis.	
Course Code: USBT302	**Course Title: APPLIED CHEMISTRY –I**
Course outcomes: • Develop an understanding of the different aspects of organic and green chemistry • Discuss role of organic compounds in biology and synthesis of organic compounds • Discuss role of green chemistry and its application in industry.	
Course Code: USBT303	**Course Title: IMMUNOLOGY**
Course outcomes: • Understand the role of different types of cells, effector molecules and effector mechanisms in immunology. • Understand the principles underlying various immunotechniques.	
Course Code: USBT304	**Course Title: CELL BIOLOGY AND CYTOGENETICS**
Course Outcomes: • Develop an understanding of the cytoskeleton and cell membrane. • Discuss the structure of chromosomes and types of chromosomal aberrations. • Discuss the principles underlying sex determination, linkage and mapping.	
Course Code: USBT305	**Course Title:** MOLECULAR BIOLOGY
Course outcomes: • Discuss the mechanisms associated with gene expression at the level of transcription and translation • Discuss the mechanisms associated with regulation of gene expression in prokaryotes and eukaryotes	
Course Code: USBT306	**Course Title: BIOPROCESS TECHNOLOGY**
Course outcomes: • Develop an understanding of the various aspects of bioprocess technology • Develop skills associated with screening of industrially important strains. • Understand principles underlying design of fermentor and fermentation process	
Course Code: USBT307	**Course Title: RESEARCH METHODLOGY**
Course Outcomes: • Understand basic principles of research methodology and identify a research problem • Understand a general definition of research design • Identify the overall process of designing a research study from its inception to its report.	
SEMESTER IV	
Course Code: USBT401	**Course Title: BIOCHEMISTRY**
Course Outcomes:	

- Discuss the metabolic pathways of carbohydrates, amino acids, lipids and nucleotides.
- Explain the role of energy rich molecules in metabolism.

Course Code: USBT402	**Course Title: APPLIED CHEMISTRY –II**

Course Outcomes:

- Develop an understanding of the different aspects of analytical chemistry.
- Gain knowledge of natural product chemistry and related acquired skills.
- Gain an understanding of basic concepts in polymer chemistry and Nanomaterials.

Course Code: USBT403	**Course Title: MEDICAL MICROBIOLOGY**

Course Outcomes:

- List the factors playing a role in causing a disease gain.
- Discuss the various aspects of systemic infections including causative agents, symptoms and prophylaxis.
- Gain the technical capability of handling, isolating and identifying various bacteria

Course Code: USBT404	**Course Title: ENVIRONMENTAL BIOTECHNOLOGY**

Course Outcomes:

- Gain an understanding of the causes, types and control methods for environmental pollution.
- Application of different life forms in environmental remediation

Course Code: USBT405	**Course Title: BIOINFORMATICS and BIOSTATISTICS**

Course Outcomes:

- Gain an understanding of the basic concepts of Bioinformatics and Biostatistics.
- Understand the tools used in bioinformatics.
- Apply the various statistical tools for analysis of biological data

Course Code: USBT406	**Course Title: MOLECULAR DIAGNOSTICS**

Course Outcomes:

- Gain an understanding of the basic principles used in molecular diagnosis.
- Gain critical thinking and analytical skills to understand new diagnostic methods.
- Apply the knowledge and skills gained in the course should be useful in developing new diagnostic kits.

Course Code: USBT407	**Course Title: ENTERPRENEURSHIP DEVELOPMENT**

Course Outcomes:

- Develop an understanding of the systematic process and to select and screen a business idea.
- Design strategies for successful implementation of ideas.
- Write a business plan.

SEMESTER V

Course Code: USBT501	**Course Title: Cell Biology**

Course Outcomes:

- Explain Cell cycle and its control
- Describe Cell cycle control in yeast and Animal Cell.
- Comprehend Cell signaling and signal transduction.
- Discuss General Principles of Cell Signaling and different receptors in signaling.
- Elaborate on Target-Cell Adaptation.
- Discuss the Logic of Intracellular and "Neural Networks".

- Describe Multidisciplinary approach in Developmental Biology.
- Comment on Stages of Embryonic development.
- Evaluate Mechanism of differentiation in Embryonic cells.
- Discuss Model Organism in Developmental Biology.
- Explain Cancer as microevolutionary process.
- Understand Molecular genetics of cancer.

Course Code: USBT502	**Course Title:** **Medical Microbiology & Instrumentation**

Course outcomes:

- Understand Virology: Classification, Cultivation, Purification and Infection.
- Describe Viroids and Prions
- Explain Chemotherapeutic drugs: Classification, Mechanism and use.
- Understand Principle, instrumentation, working and applications of Fluorescence Spectroscopy, Luminometry, Light scattering spectroscopy, infrared Spectroscopy and Atomic absorption Spectroscopy.
- Understand Principle, working and applications of Affinity chromatography, Ion-exchange chromatography, Molecular (size) exclusion chromatography.
- Describe HPLC - Method development and validation.
- Discuss Isotopes in Biology and autoradiography.
- Discuss Applications of Tracer techniques in Biology.

Course Code: USBT503	**Course Title: Genomes and Molecular Biology**

Course outcomes:

- Explain Genetic engineering of plants; Methodology. Plant transformation with the Ti plasmid of *A.tumefaciens*, Ti plasmid derived vector system.
- Describe Transgenic plants: Physical methods of transferring genes to plants : electroporation, microprojectile bombardment, liposome mediated, protoplast fusion.
- Elaborate on vectors for plant cells.
- Discuss improvement of seed quality protein.
- Discuss Transgenic Animal: Method, cloning and application.
- Explain Vectors in Genetic Engineering: Types and applications.
- Explain Gene Sequencing and editing: Techniques and application.

Course Code: USBT504	**Course Title: Marine Biotechnology**

Course Outcomes:

- Understand Marine Biotechnology: Different types of Ecosystems, Bioprospecting.
- Explain bioactive compound from different marine organisms.
- Comment on approved Marine Drugs, Natural Products and Microbial enzyme.
- Discuss different marine food sources: Nutraceuticals.
- Describe Marine Bioresources like Secondary metabolites, proteins and lipids.
- Elaborate on Major Functions of Some Marine Components in Cosmetics and Cosmeceuticals.

Course Code: Applied Component	**Course Title: Biosafety**

Course outcomes:

- Understand Biosafety – Risk assessment, Laboratory procedures, equipment and risk management.
- Carry out Laboratory Practices – GLP, SOPs, data validation, documentation and Audits.
- Describe Microbial contamination detection methods and standard assays.
- Discuss different concepts of Biosafety in Biotechnology.
- Justify Biosafety and Bioethics in rDNA technology.

SEMESTER VI

Course Code: USBT601	**Course Title: Biochemistry**

Course Outcomes:

- Understand higher protein structural levels- tertiary and quaternary with knowledge of protein denaturation and folding patterns.
- Describe protein interactions like complementary interactions between protein and ligand, those modulated by chemical energy with protein functions.
- Demonstrate practical understanding of how to purify proteins using different methods like salt precipitation and different chromatographic techniques.
- Explain carbohydrate biosynthesis and regulation particularly polysaccharides in bacteria, plants and animals.
- Understand cholesterol biosynthesis and regulation.
- Discuss structure, release, transport, biochemical functions and disorders associated with hormones secreted by different endocrine glands in the body.
- Comment on dietary sources, bioactive form, functions and disorder associated with different fat soluble and water soluble vitamins.
- Describe physiological and biochemical functions of important and trace elements in malnutrition.

Course Code: USBT602	**Course Title: Industrial Microbiology**

Course outcomes:

- Understand the basic principles underlying Dairy Science and Technology such as processing of milk and production of dairy products like cheese, butter and yoghurt.
- Apply practical knowledge of performing rapid platform tests for the analysis of bacteriological quality of milk and/or dairy products.
- Describe unit operations such as Pasteurization, preservation techniques and composition of starter cultures and their role in the production of dairy products.
- Discuss up-stream and downstream aspects of microbial fermentations.
- Explain fermentative production of both primary and secondary metabolites of microbial origin with appropriate examples such as ethanol, enzymes, antibiotics, amino acids etc.
- Discuss various aspects of fermentative production such as inoculum development [both bacterial and fungal] and scale up.
- Carry out methods of recovery [filtration, centrifugation, precipitation, cell disruption] of biomass and/or products depending upon if the products are intracellular or extracellular.
- Explain various chromatographic techniques and membrane processes to separate, concentrate and/or purify the fermentation products.

- Comment on downstream processing operations such as whole broth processing and the product formulation techniques such as drying and crystallization.
- Explain importance of Good Manufacturing Practices [GMP] and its implementation requirements.
- Carry out documentation related to GMP practices and regulatory certification of GMP.
- Justify importance of Quality Control [QC] and Quality Assurance [QA] in an industrial set up and their requirements of implementation.

Course Code: USBT603	**Course Title: Basic Pharmacology and Neurochemistry**

Course outcomes:

- Explain mechanism of drug action with understanding of drug receptors and biological responses.
- Describe second messenger systems and chemistry of drug-receptor binding.
- Discuss dose- response relationship with knowledge of therapeutic index, ED and LD terms.
- Understand drug antagonism concept.
- Explain absorption of drugs from alimentary tract, from lungs, after parenteral administration and factors affecting
- Discuss factors influencing drug distribution and physiological barriers to drug distribution.
- Understand terms in basic toxicology and regulatory toxicology.
- Discuss causes, allergy to drugs and effects of prolonged drug administration.
- Explain principles of treatment in deliberate and accidental self-poisoning.
- Describe general and poison specific measures in poisoning.
- Describe specific poisoning with examples, herbicides, pesticides, biological substances and incapacitating agents.
- Explain anatomy and functioning of the brain, neuronal pathways, propagation of nerve impulses, neuronal excitation and inhibition, synapses and gap junctions.
- Explain knowledge of neurotoxins and neurotransmitters.

Course Code: USBT604	**Course Title: Environmental Biotechnology**

Course Outcomes:

- Explain various renewable sources of energy such as Wind, Solar, Geo-thermal, Hydro and Biomass, the means to trap them and the need to replace non-renewable energy sources by renewable ones.
- Describe the concepts of Biogas technology-biogas plant and types, biogas production, and biodigester.
- Discuss fuel ethanol production from various raw materials such as corn and ligno-cellulosic biomass-advantages and disadvantages associated with the process.
- Explain microbial hydrogen, biodiesel production processes and petrocrops as an alternative and promising source of energy.
- Understand in details the process of industrial effluent treatment and the biotechnological process involved with it such as aerobic biological treatment-activated sludge process, and anaerobic biological treatment-contact digesters, various reactors etc.

- Discuss biological treatment of solid wastes, biological pollution indicators and role of biosensors in monitoring environmental pollution.
- Explain the prevalence of xenobiotics in the environment and their biodegradation using various microorganisms.
- Explain bioreactor based technology for the industrial effluent treatment using immobilized microbial cells and/or enzymes.
- Give scientific rationales behind biological treatment of waste water using packaged organisms and genetically engineered microorganisms.
- Discuss the causes of heavy metal pollution and their removal by microbial accumulation, biosorption methods by microorganisms and the biomass.
- Expain dos and don'ts involved with hazardous waste management or simply learn biodegradation of wastes from various industries such as tannery, paper and pulp, petroleum, dairy, distillery, dye and antibiotic industry.
- Elaborate on biotechnological ways to remove oil spillage and grease deposits.
- Perform and carry out estimation of Biochemical Oxygen Demand [BOD], Chemical Oxygen Demand [COD] and characterization of industrial effluent.

5. B.Sc. Chemistry

Name of Department: Chemistry

Class: F.Y.B.Sc.

Program Outcomes:

Specific core discipline knowledge

- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Inorganic, Organic and Physical Chemistries.
- Students will be able to carry out scientific experiments as well as accurately record and analyze the results of such experiments.
- 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.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can perform various experiments and generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a scientific context

Program Specific Outcomes:

This program gives understanding of:

- Common laboratory techniques including pH measurement, acid/base titrations and colorimetry.
- The use of the techniques mentioned above to solve chemical problems.
- How to carry out practical laboratory experiments
- Identify chemical formulae and solve numerical problems.
- The basic colligative properties of solutions
- The fundamentals of acid/base equilibria, including pH calculations, buffer behavior, acid/base titrations,
- The thermodynamic and kinetic forces involved in chemical reactions which determine how much and how soon products are formed
- The basics of thermodynamic and stoichiometric parameters
- General periodicity patterns of (organic/inorganic) molecules, and the ability to design synthetic approaches to such species.
- General chemical equilibria, Solubility and complex ion equilibria
- Use models, charts, Equipments and safe handling of chemicals.

SEMESTER- I

Course Code: USCH 101	**Course Title: Chemistry – I**

Course Outcomes:

The students would be able :

- To understand concepts in thermodynamics, different thermodynamic quantities such as heat and work and how they are measured, related or transformed from one to the other
- To study states of matter and how they depend on temperature and pressure as well as how they co-exist in phase equilibria
- To acquire knowledge of chemical equilibrium and its relationship with themodynamic quantities
- The transport of ions and thermodynamic functions with applications to electron transfer in biological systems
- To study chemical kinetics; how reaction rates are measured and represented in rate laws, and applications of chemical kinetics in studying enzyme mechanisms
- To study atomic structures of atoms Rutherford's Atomic Model, Bohr's theory
- To study Simple principles of quantum mechanics; Atomic orbitals, Aufbau principle
- To study Long form of Periodic Table; Classification for elements as main group, transition and inner transition elements; Periodicity properties
- To understand basic rules of IUPAC nomenclature, nomenclature of mono and bi-functional aliphatic compounds
- To learn bonding and structure of organic compounds, hybridization, overlap of atomic orbitals, shapes of molecules;
- To gain knowledge about Fundamentals of organic reaction mechanism, various Electronic Effects, Bond fission, Types , shape and their relative stability of reactive intermediates
- To study various types of organic reactions such as Addition, Elimination and Substitution reaction.
- To determine the rate constant, enthalpy, to carry out standardization, commercial analysis and gravimetric analysis of several of samples in chemistry lab.
- To carry out Titration, Purification by recrystallization, to understand paper chromatography, thin layer chromatography in chemistry lab.

Course Code: USCH 102	Course Title: Chemistry -II

Course outcomes:

The students would be able :

- To understand concept of reaction rates and use the coefficients of a balanced chemical equation to express the rate of reaction in terms of the change in concentration of reactant or product over time
- To Distinguish between instantaneous rates and average rates from graphs
- To Determine the rate law from initial rate data and order of reaction with respect to each reactant
- To Recognize the rate law and able to use integrated rate equation of first and second order reactions to find the values of one variable, given values of the other variables
- To Explain the concept of reaction half-life and describe the relationship between half-life and rate constant for first order and second order reaction
- To study the terms Surface tension, Viscosity, coefficient of viscosity, relative viscosity, specific viscosity
- To understand concept of thermotropic phases, Nematic, smectic and cholesteric phases and also the applications of liquid crystals
- To know the determination of refractive index by Abbe's refractometer
- To understand properties of Metallic and non-metallic nature, diagonal relationship and anomalous behavior of second period elements
- To learn physical as well chemical properties of oxides of carbon, oxides and oxyacids of sulphur and nitrogen with respect to environmental aspects.
- To understand the basic concepts of stereo chemistry, Review the concept of isomer, Fischer Projection, Newman and Sawhorse Projection formulae of erythro, threo isomers which result from free rotation of C-C single bond ,from chirality ,from restricted rotation R,S and E, D/L, nomenclature
- To understand the Conformation analysis of alkanes that is ethane, propane and n-butane and their Relative stability with energy diagrams.
- To carry out quantitative analysis of salt mixture and redox titration in chemistry lab.

Class: FY BSc

Program Outcomes:

Specific core discipline knowledge

- Students can recall details about concept of Qualitative Analysis , Thermodynamics , Chemistry of Hydrocarbons , Reduction Chemistry , Stereochemistry.
- Students can recall details of Chemistry of Aliphatic Hydrocarbons , Aromatic Hydrocarbons as well as acid base theories .
- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

- To identify types of chemical bonds as well as comparison between Ionic & Covalent Bonds.
- To study the Ideal Gas Laws , Chemical Equilibrium & Thermodynamic parameters .

- To able to understand Ionic Equilibria as well as introduction of various types of buffers .
- To understand concept of Qualitative Analysis , Balanced Chemical Equations .
- To study the acid base theories and their application .
- To provide the knowledge of Aliphatic Hydrocarbons and Aromatic Hydrocarbons through various reactions .
- To be able to deal with various instruments like Colorimetry , PH metry , Molecular Spectroscopy studied .
- To study the Oxidation and Reduction Chemistry as well as applications of Redox Chemistry

SEMESTER II

Course Code: USCH201	**Course Title: General Chemistry**

Course Outcomes:
The students would be able :

- To acquire knowledge about basic concepts of physical chemistry , Inorganic chemistry as well as organic chemistry
- Students will be able to study ideal gas laws , solve the numericals ,
- Students will study the thermodynamic parameters
- In Inorganic chemistry they will understand the concepts of qualitative analysis which they are performing in the practical
- They will get the knowledge of all acid base theories which helps in understanding organic reactions like friedel craft's acylation reaction
- In organic chemistry they will understand how the reaction of alkenes takes place with their mechanism.

Course Code: USCH202	**Course Title: General chemistry**

Course outcomes:
The students would be able :

- To acquire knowledge about basic concepts of physical chemistry , Inorganic chemistry as well as organic chemistry
- To able to understand Ionic Equilibria with strong, moderate and weak electrolyte. Buffers are introduced and numericals are solved
- In physical chemistry, they will study molecular spectroscopy as well as solid state chemistry.
- In Inorganic Chemistry, types of chemical bonds and their comparison, basic VSEPR theory for molecule is studied.
- They will understand oxidation reduction chemistry with the application of Redox chemistry.
- In Organic Chemistry, they will study the stereochemistry of cycloalkanes and their conformational analysis.
- Also they will study aromaticity of aromatic hydrocarbons, electrophilic substitution reactions like halogenation, nitration and sulphonation .

Class: S.Y.B.Sc Sem III

Program Outcomes:

Specific core discipline knowledge

In the first two semesters the learner was introduced to some basic aspects in the various core branches of chemistry like Physical Chemistry, Organic chemistry and Inorganic chemistry. Concepts about the structure of atom, distribution of electrons, Thermodynamics, Formation of organic compounds and basic ideas in reactivity of molecules in general and organic compounds in particular were introduced to the learner. He was made inquisitive about why and how should atoms combine to give molecules or ions. The non-orbital approach to appreciating the shapes of polyatomic species in general and molecules in particular.

This program contains theory along with the laboratory session unit that goes with it deals with the basics of chemical analysis, separating components from a given sample, basic concepts like pH, experimental techniques like Titrimetry, Gravimetry, using instruments to carry out analysis, the various techniques like chromatography, electrophoresis, Instrumentation in general is felt to be of interest to learners.

Program Specific Outcomes:

To infuse in the learner a spirit of inquiry into the fundamental aspects of the various core areas of Chemistry.

To make the learner proficient in analysing the various observations and chemical phenomena presented to him during the course.

To make the learner capable of solving problems in the various units of this course .To give the learner an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry.

To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling.

To make the learner capable of analysing and interpreting results of the experiments students conduct or perform.

To make the learner capable of acquiring or pursuing a source of livelihood like jobs in chemical industry

To arouse the interest to pursue higher levels of learning in chemistry,

This course is expected to introduce the learner to this interesting field of Analytical Chemistry. It is expected to provide the learner an overview of this very important branch of chemistry. After successful completion of this course the learner is expected to be familiar with the question of what is analysis, why it is required and the methods, techniques, procedures and protocols that may be used or required in the course of a given problem of analysis. The learner is also expected to appreciate the role of an Analytical Chemist and a Chemical Analyst.

Correctness or acceptability of the results of a given analysis and how to deal with wrong or erroneous results: when to reject them and when and how to retain them to be meaningful and/or acceptable are some other attributes expected as outcomes of learning this paper.

Goal:

To introduce the learner to an area of learning that is vital for the inherent nature of the subject itself but also is important and irreplaceable irrespective of the long term interest of specialisation or subject of interest of the learner.

SEMESTER - III

Course Code: USCH301	**Course Title:** (General Chemistry) Unit-I Physical Chemistry Unit-II Inorganic Chemistry Unit-III Organic Chemistry.

Course Outcomes:

On completing the learning of this unit the learner is expected to

- Know about Chemical Thermodynamics, free energy with Pressure and Temperature.
- To gain knowledge about the Electrochemistry, Conductivity, degree of ionization, transference number.
- To study Chemical Bonding, Non-Directional Bonding, Directional Bonding- Orbital approach, Molecular Orbital Theory .
- Know the various reactions and reactivity of halogenated hydrocarbons: Alkyl halides, Aryl halides Organomagnesium and organolithium compounds.
- To understand the Nomenclature, methods of preparation and reactions of Alcohols, phenols and epoxides.

Course Code: USCH302	**Course Title:** (General Chemistry) Unit-I Physical Chemistry Unit-II Inorganic Chemistry Unit-III Organic Chemistry.

Course outcomes:

The students would be able :

- To know about Chemical Kinetics, Understand basics of chemical kinetics and predict reaction mechanism. Types of Complex Chemical reactions, Effect of temperature on the rate of reaction, Theories of reaction rates. Calculate rate constant of zero, first and second order reaction.
- To understand the different aspects and importance of Solutions, the basics of solutions, colligative properties, and their applications. Thermodynamics of ideal solutions, Partial miscibility of liquids, of liquids, Nernst distribution law and its applications, Solvent extraction.
- To study the Selected topics on p block elements like Chemistry of Boron compounds, Chemistry of Silicon and Germanium, Chemistry of Nitrogen family .
- To gain knowledge about the Nomenclature of aliphatic, alicyclic and aromatic carbonyl compounds.
- To know about General mechanism of nucleophilic addition reaction.
- To understand the Reactions of aldehydes and ketones
- To learn common reaction mechanisms of Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt and Cannizzaro reaction.
- To gain knowledge about the Keto-enol tautomerism.
- To study the Active methylene compounds.

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Course Code: USCH303	**Course Title:** Basics in Analytical Chemistry

Course outcomes:

Intorduction to Analytical Chemistry and Statistical Treatment of analytical data-I

Learners should be able to

Select a method of analysis.

Decide how to identify a sample and prepare it for analysis.

Select a procedure for analysis .

Identify sources of possible errors in the results obtained..

Classical Methods of Analysis

The main objectives of this unit is to

Introduce classical methods of chemical analysis.

Appreciate the various terms and types of titrimetric analysis.

Ability to select proper titrimetric method

Appreciate the usefulness of the gravimetric method of analysis

Identify a suitable gravimetric method

Perform the required calculations involved in the analysis by titrimetry as well as gravimetry.

Instrumental Methods-I

On completing the learning of this unit the learner is expected to

Know the various instrumental methods of analysis

Advantages of using instruments to make measurements

The various observable properties of a given analyte and the stimulus best suited for its analysis

Know about a generalized diagram of an analytical instrument

Select a suitable instrumental method for analysis

Appreciate the basic terms in spectrometry

Use the relationship between absorbance (and its variations) and concentration of the analyte.

Chose a suitable method for photometric titrations.

Class: SYBSc

Program Outcomes:

- To make the student capable of solving problems in the various units of this course
- To give the student an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry
- To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling
- To make the learner capable of analysing and interpreting results of the experiments he conducts or performs

Program Specific Outcomes:

- To make the student proficient in analysing the various observations and chemical phenomena presented to him during the course.
- To make the student capable of solving problems in the various units of this course
- To give the student an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry
- To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling
- To make the student capable of analysing and interpreting results of the experiments he conducts or performs
- To make the student capable of acquiring or pursuing a source of livelihood like jobs in chemical industry
- To arouse the interest to pursue higher levels of learning in chemistry.

SEMESTER IV

Course Code: USCH401	**Course Title: Chemistry paper 1**

Course Outcomes:
The students would be able :

- To setup electrochemical cells,to analyze cell reactions, study spectrochemical series, study various types of electrodes.
- To study phase rule, apply phase rule, study various phase diagram, condensed phase rule.
- To study comparitive chemistry of transition metals
- To study carboxylic acids and their derivatives.

Course Code: USCH402	**Course Title: Chemistry paper 2**

Course outcomes:
The students would be able :

- **To study various catalytic reactions**
- **Predominance diagrams of various ions**
- **Catagories of acids and bases.**
- **Uses and environmental chemistry of volatile oxides and oxo acids**
- **Study reactions of amines, diazonium salts and heterocyclic compounds**

Course Code: USCH403	**Course Title: Chemistry paper 3**

Course outcomes:
The students would be able :

- Study separation techniques in analytical chemistry
- To study uses of pH metry, conductometry and potentiometry.
- To study statistical treatment of analytical data

Class: TYBSc

Program Outcomes:

Specific core discipline knowledge

- Students can solve and understand major concepts in chemistry and draw logical conclusion.
- Employ critical thinking and scientific knowledge to design carry out, record and analyze.

Communication skills

- Students can communicate effectively using oral and written communication skills

Program Specific Outcomes:

- To be able to solve the problem and also think methodologically, independently and draw a logical conclusion.
- To find out the green route for chemical reaction for sustainable development.
- To create awareness of the impact of chemistry on the environment, society.

SEMESTER V

Course Code: USCH501	**Course Title: PHYSICAL CHEMISTRY**

Course Outcomes:

The students would be able :

- To gain knowledge about Molecular spectroscopy such as Rotational, Vibrational, Raman Spectroscopy.
- To understand Solution of solid in liquid, osmotic pressure, Collision theory of reaction rates.
- To learn decay constant half life, average life, unit of radioactivity, nuclear reaction, fission process fussion process.
- To study Chemical and physical adsorption ,to determine surface area of an adsorbent using BET equation, learn colloidal state and their electrical properties.

Course Code: USCH502	**Course Title: INORGANIC CHEMISTRY**

Course outcomes:

The students would be able :

- To understand importance of symmetry elements and operations, molecular orbital theory for Heteronuclear Diatomic molecule and polyatomic species.
- To study chemistry of lanthanides with respect to occurrence extraction separation and application.
- To gain insight of organometallic compounds and their reactions, to learn properties of metallocenes and catalysis.
- To learn types of metallurgies, metallurgy of copper and its extraction. Chemistry of group 18 with general characteristics and trends. to learn essential and non-essential elements in biological system

Course Code: USCH503	**Course Title: ORGANIC CHEMISTRY**

Course outcomes:

The students would be able :

- To learn how to write mechanism of organic reactions, NGP,acyl nucleophilic substitution reaction ,pericyclic reactions and nomenclature, Photochemical reactions.
- To study stereochemistry, molecular chirality, element of symmetry, chirality of compounds without chiral carbon.
- To learn agrochemicals their advantages and disadvantages.
- To learn heterocyclic chemistry with reactions
- To learn to write IUPAC nomenclature of bicyclic compounds biphenyl, cummulenes quinolones,isoquinolines.

- To write multicomponent synthesis, green chemistry, and planning of organic synthesis.
- To study UV-visible mass IR NMR spectroscopy.
- To learn about Terpenoids, citral alkaloids, Nicotine with their structure synthesis and harmful effects.

Course Code: USCH504	**Course Title: ANALYTICAL CHEMISTRY**

Course Outcomes:
The students would be able :

- To learn quality in analytical chemistry, purpose, significance and difficulties in encountering in sampling of solid, liquid, gases.
- To calculate numerical and word problem in Redox , complexometric ,EDTA titrations
- To understand atomic soectroscopy, molecular fluorescence and phosphorescence spectroscopy ,instrumentation and application of turbidimetry and nephelometry.
- To study insight of solvent extractions –principle apparatus and applications
- Introduction and principle of HPLC and HPTLC

Course Code: USACDD501	**Course Title: DRUGS AND DYES**

Course outcomes:
The students would be able :

- To study about drugs ,sources, classification , nomenclature , route of drug administration and dosage forms.
- To introduce about CNS drugs
- To learn analgesics antipyretic and antinflametry ,antihistaminic drug,cardiovascular ,antidiabetic, antiparkinsonism drug
- To understand Dyestuff industry. Natural and synthetic drug, classification of dyes based on application and dying method, applicability on substrate .
- To learn about unit process like nitration,sulphonation , halogenation etc.
- To study preparation of benzene ,naphthalene ,anthracene derivative

Class: TYBSc

Program Outcomes:

- Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- Create an awareness of the impact of chemistry on the environment, society and development outside the scientific community.
- To inculcate the scientific temperament in the students and outside the scientific community.
- Use modern techniques, decent equipments and chemistry software.

Program Specific Outcomes:

- Gain the knowledge of Chemistry through theory and practical's.
- To explain nomenclature, stereochemistry, structures, reactivity,and mechanism of the chemical reactions.
- Identify chemical formulae and solve numerical problems.

- Use modern chemical tools, Models, Chem-draw, Charts and Equipments.
- Know structure-activity relationship.
- Understand good laboratory practices and safety.
- Develop research oriented skills.
- make aware and handle the sophisticated instruments/equipments.

SEMESTER VI

Course Code: USCH 601	**Course Title: Physical Chemistry**

Course Outcomes:
The students would be able :

- To understand concept of activity and activity coefficient.
- To classify cells and derive expression for cells.
- To understand method of preparation and applications of light emitting polymers.
- To explain meaning of polymers, their classification.
- To calculate molar mass of polymers.
- To understand basics of quantum mechanics.
- To gain depth knowledge about renewable energy sources.
- To understand principle and instrumentation of NMR and ESR
- To solve numericals.

Course Code: USCH 602	**Course Title: Inorganic Chemistry**

Course outcomes:
The students would be able :

- To understand CFT in detail.
- To get knowledge about molecular orbital theory for coordination compounds.
- To study stability of metal complexes.
- To know about electronic spectra
- To gain depth knowledge of reactivity of metal complexes.
- To learn organometallic compounds of main group metals.
- To study structure and bonding of metallocenes on the basis of VBT
- To gain knowledge about catalysis.
- To learn about metallergy
- To inculcate knowledge of some essential and non essential and non essential elements in biological system.
- To understand chemistry of Group 18.

Course Code: USCH 603	**Course Title: Organic Chemistry**

Course outcomes:
The students would be able :

- To gain knowledge about stereoselectivity and stereospecificity
- To know about structure, configuration and classification of amino acids and proteins.
- To write mechanisms of different rearrangement reactions with example and stereochemistry of reactions.
- To gain in depth knowledge of carbohydrates.
- To understand IR, PMR spectroscopy.
- To write polymerization reactions with examples.

• To learn about different catalysts and reagents.	
Course Code: USCH 604	**Course Title: Analytical Chemistry**
Course Outcomes: The students would be able : • To learn different electro analytical techniques and able to solve numerical and word problems based on this topic. • To get knowledge of different methods of separation techniques like Gas chromatography, Ion exchange chromatography and solve numerical based on it. • To learn principles, instrumentation of TGA and different types of thermometric titrations. • To know about validation parameters like specificity, selectivity, precision, linearity and accuracy.	
Course Code: USACDD 601	**Course Title: Drugs and Dyes**
Course outcomes: The students would be able : • To know drug discovery, design and development. • To learn about drug metabolism and chemotherapeutic agents. • To get general idea of different types of drugs like Analgesics, Antipyretics, Anti-inflammatory, antihistaminic, Cardiovascular, Anti diabetic agents. • To classify dyes based on applications and dyeing methods. • To learn different dyes used in food and cosmetics, paper and leather dyes. • To get knowledge of growth and development of Indian dyestuff industry.	

6. B.Sc. Computer Science

Name of Department: Computer Science
Class: F.Y.B.Sc.
Program Outcomes: **Specific core discipline knowledge** • To lay the theoretical foundations of software and hardware equally supplemented by the practical techniques. • With this strong foundation of computer science along with core subjects like Mathematics, Statistics etc. the computer science students are expected to contribute efficient solutions for the various problems that are given to them. • To provide exposure to basics, advanced and emerging trend of subject. **Communication skills** • Students can communicate effectively using oral and written communication skills. **Problem solving and research skills** • Students can develop GUI applications, websites and web application.

- Student can form fundamental skills for solving computational problem that will inculcate research oriented acumen.

Program Specific Outcomes:

- To form strong foundation of computer science.
- To introduce emerging trend to the student in gradual way.
- To cover core concepts of Computer Science and also to cover the latest technologies this helps them to get industry ready.
- To promote Open Source Technologies as much as possible.
- To groom the students for the challenges of ICT industry.
- To help learners develop their soft skills and develop their personality together with their technical skills.
- To develop professional, social and academic skills to harness hidden strengths, capabilities and knowledge equip them to excel in real work environment and corporate life.
- To able to explain various concepts of programming using python.
- To explain that is anyone is freely licensed to use, copy, study and change the software in any way and source code openly shared to anyone.
- To understand the solving algorithm, problems.
- To familiarize students with basics of Statistics. This will be essential for prospective researchers and professionals to know these basics.
- To explore and understand the concepts of Data Structures and its significance in programming. Provide and holistic approach to design, use and implement abstract data types.
- To familiarize with the concept of Green Computing and Green IT infrastructure for making computing and information system environment sustainable.

SEMESTER I

Course Code: USCS101	**Course Title: Computer Organization and Design**

Course Outcomes:

The students would be able :

- To learn about how computer systems work and underlying principles.
- To understand the basics of digital electronics needed for computers.
- To understand the basics of instruction set architecture for reduced and complex instruction sets.
- To understand the basics of processor structure and operation.
- To understand how data is transferred between the processor and I/O devices.

Course Code: USCS102	**Course Title: Programming with Python- I**

Course Outcomes:

The students would be able :

- To understand the concepts of programming before actually starting to write programs.
- To develop logic for Problem Solving.
- To made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.
- To apply the problem solving skills using syntactically simple language i.e. Python (version: 3.X or higher)

Course Code: USCS103	Course Title: Free and Open-source Software
Course Outcomes: The students would be able : • To have a good working knowledge of Open Source ecosystem, its use, impact and importance. • To learn Open Source methodologies, case studies with real life examples.	
Course Code: USCS104	**Course Title: Database Systems**
Course Outcomes: The students would be able : • To evaluate business information problem and find the requirements of a problem in terms of data. • To design the database schema with the use of appropriate data types for storage of data in database. • To create, manipulate, query and back up the databases.	
Course Code: USCS105	**Course Title: Discrete Mathematics**
Course outcomes: The students would be able : • To provide overview of theory of discrete objects, starting with relations and partially ordered sets. • To learn recurrence relations, generating function and operations on them. • To give an understanding of graphs and trees, which are widely used in software. • To provide basic knowledge about models of automata theory and the corresponding formal languages.	
Course Code: USCS106	**Course Title: Descriptive Statistics and Introduction to Probability**
Course outcomes: The students would be able : • To know descriptive statistical concepts. • To study of probability concept required for Computer learners.	
Course Code: USCS107	**Course Title: Soft Skills Development**
Course outcomes: The students would be able : • To know about various aspects of soft skills and learn ways to develop personality • To understand the importance and type of communication in personal and professional environment. • To provide insight into much needed technical and non-technical qualities in career planning. • To learn about Leadership, team building, decision making and stress management.	
SEMESTER II	
Course Code: USCS201	**Course Title: Programming with C**
Course Outcomes:	

The students would be able :

- To write, compile and debug programs in C language.
- To use different data types in a computer program.
- To design programs involving decision structures, loops and functions.
- To explain the difference between call by value and call by reference
- To understand the dynamics of memory by the use of pointers.
- To use different data structures and create/update basic data files.
-

Course Code: USCS202	**Course Title: Programming with Python – II**

Course Outcomes:

The students would be able :

- To understand how to read/write to files using python.
- To catch their own errors that happen during execution of programs.
- To get an introduction to the concept of pattern matching.
- To made familiar with the concepts of GUI controls and designing GUI applications.
- To connect to the database to move the data to/from the application.
- To know how to connect to computers, read from URL and send email.

Course Code: USCS203	**Course Title: Linux**

Course Outcomes:

The students would be able :

- To understand completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution.
- To learn advanced subjects in computer science practically.
- To progress as a Developer or Linux System Administrator using the acquired skill set.

Course Code: USCS204	**Course Title: Data Structures**

Course Outcomes:

The students would be able :

- To learn about Data structures, its types and significance in computing.
- To explore about Abstract Data types and its implementation.
- To program various applications using different data structure in Python.

Course Code: USCS205	**Course Title: Calculus**

Course outcomes:

The students would be able :

- To understanding of Mathematical concepts like limit, continuity, derivative, integration of functions.
- To appreciate real world applications which uses these concepts.
- To formulate a problem through Mathematical modeling and simulation.

Course Code: USCS206	Course Title: Statistical Methods and Testing of Hypothesis

Course outcomes:
The students would be able :

- To know descriptive statistical concepts.
- To study of probability concept required for Computer learners.

Course Code: USCS207	Course Title: Green Technologies

Course outcomes:
The students would be able :

- To learn about green IT can be achieved in and by hardware, software, network communication and data center operations.
- To Understand the strategies, frameworks, processes and management of green IT.

Class: S.Y.B.Sc.

Program Outcomes:

Specific core discipline knowledge

- Students are able to learn core computer science subjects.
- Students can acquire skill sets as expected by the industry with the new technological environment.
- Students can able to cater the needs of society and nation in present day context.

Communication skills

- Students can communicate effectively using oral and written communication skills.

Problem solving and research skills

- Student can form fundamental skills for solving computational problem that will inculcate research oriented acumen.

Program Specific Outcomes:

- To provide the comprehensive insight into theory of computation understanding of grammar, syntax and other elements of modern language designs.
- To develop capabilities to design formulations of computing models and its applications in diverse areas.
- To develop understanding of Object Oriented Programming which holds key indispensable position in any curriculum of Computer Science.
- To understand the structure, functioning and algorithms operating system.
- To provide understanding of modern day needs of Mobile platforms and applications
- To develop understanding of concepts and techniques for data management along with its implementation and usage.
- To explain Graph theory which is rapidly moving into the mainstream mainly because of its applications in diverse fields which include new opportunities in the areas of genomics, communications networks and coding theory, algorithms and computations and operations research.

- To introduce one of the upcoming concepts Physical Computing and IoT programming which will definitely open future area as Embedded Engineer, involvement in IoT projects, Robotics and many more.
- To provide insight into emerging technologies to design and develop state of the art web applications using client-side scripting, server-side scripting, and database connectivity.
- To understand basic principles of algorithm design and why algorithm analysis is important.
- To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications.

SEMESTER III

Course Code: USCS301	**Course Title: Theory of Computation**

Course Outcomes:
The students would be able :

- To understand Grammar and Languages.
- To learn about Automata theory and its application in Language Design.
- To learn about Turing Machines and Pushdown Automata.
- To understand Linear Bound Automata and its applications.

Course Code: USCS302	**Course Title: Core Java**

Course outcomes:
The students would be able :

- To understand object-oriented programming concepts using Java.
- To gain knowledge of input, its processing and getting suitable output.
- To understand, design, implement and evaluate classes and applets.
- To gain knowledge on implementation of AWT package.

Course Code: USCS303	**Course Title: Operating System**

Course outcomes:
The students would be able :

- To provide a understanding of operating system, its structures and functioning.
- To develop and master understanding of algorithms used by operating systems for various purposes.
- To provide a understanding of Memory, Storage-structure and File System.

Course Code: USCS304	**Course Title: Database Management Systems**

Course outcomes:
The students would be able :

- To master concepts of stored procedure and triggers and its use.
- To learn about using PL/SQL for data management.
- To understand concepts and implementations of transaction management and crash recovery.

Course Code: USCS305	**Course Title: Combinatorics and Graph Theory**

Course outcomes:
The students would be able :

- To appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings.
- To understand the combinatorial features in real world situations and Computer Science applications.
- To apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems.

Course Code: USCS306	**Course Title: Physical Computing and IoT Programming**

Course outcomes:
The students would be able :

- To enable learners to understand System On Chip Architectures.
- To Introduce and prepare Raspberry Pi with hardware and installation.
- To learn physical interfaces and electronics of Raspberry Pi and program them using practical's.
- To learn how to make consumer grade IoT safe and secure with proper use of protocols.

Course Code: USCS307	**Course Title: Web Programming**

Course outcomes:
The students would be able :

- To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
- To understand the various platforms, devices, display resolutions, viewports, and browsers that render websites.
- To develop and implement client-side and server-side scripting language programs.
- To develop and implement Database Driven Websites
- To design and apply XML to create a markup language for data and document centric applications.

SEMESTER IV

Course Code: USCS401	**Course Title: Fundamentals of Algorithms**

Course Outcomes:
The students would be able :

- To understand basic principles of algorithm design and why algorithm analysis is important.
- To understand how to implement algorithms in Python.
- To understand how to transform new problems into algorithmic problems with efficient solutions.
- To understand algorithm design techniques for solving different problems.

Course Code: USCS402	**Course Title: Advanced Java**

Course outcomes:
The students would be able :

- To understand the concepts related to Java Technology.
- To explore and understand use of Java Server Programming.

Course Code: USCS403	**Course Title: Computer Networks**

Course outcomes:
The students would be able :

- To understand the concepts of networking, which are important for them to be known as a 'networking professionals'.
- To proceed with industrial requirements and International vendor certifications.

Course Code: USCS404	**Course Title: Software Engineering**

Course outcomes:
The students would be able :

- To understand each phase in the development of a software.
- To learn about software risk management.
- To understand the concepts of software testing.

Course Code: USCS405	**Course Title: Linear Algebra using Python**

Course outcomes:
The students would be able :

- To appreciate the relevance of linear algebra in the field of computer science.
- To understand the concepts through program implementation.
- To instill a computational thinking while learning linear algebra.

Course Code: USCS406	**Course Title: .Net Technologies**

Course outcomes:
The students would be able :

- To understand the .NET framework.
- To develop a proficiency in the C# programming language.
- To proficiently develop ASP.NET web applications using C#.
- To use ADO.NET for data persistence in a web application.

Course Code: USCS407	**Course Title: Android Developer Fundamentals**

- To understand the requirements of Mobile programming environment.
- To learn about basic methods, tools and techniques for developing Apps.
- To explore and practice App development on Android Platform.
- To develop working prototypes of working systems for various uses in daily lives.

Class: T.Y.B.Sc.

Program Outcomes:

Specific core discipline knowledge

- Students can able to develop capabilities to design formulations of computing models and its applications in diverse areas.
- Student can able to become technologically savvy, theoretically strong, innovatively skilled and ethically responsible of computer science professionals.

Skill Enhancement

- It helps the student to evaluate their computer science domain specific skills and also to meet industry expectations.

- It will also give the opportunity to the student to prove their ability in the subject practically through the Project Implementation.
- It can boost their confidence and also can encourage them to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course.

Communication skills

- Students can communicate effectively using oral and written communication skills.

Problem solving and research skills

- Students can collect data, test hypothesis, prepare a model, train the model, test the model and predict its accuracy for further use.

Program Specific Outcomes:

- To introduce tools and techniques use by AI which bring transformational changes to real world.
- To provide learner with knowledge in Software Testing techniques.
- To provide knowledge of basic concepts of computer security including network
- Security and cryptography.
- To understand the details of web services technologies like SOAP, WSDL, and UDDI.
- To get the understanding computer Graphics programming using Directx or Opengl. Along with the VR and AR they should also aware of GPU, newer technologies and programming using most important API for windows.
- To know the wireless and adhoc network, connecting different wireless devices and understanding their compatibility.
- To gather information in many different ways from different devices. To learn to conceptualize and understand the framework.
- To understand the procedures for identification, preservation, and extraction of electronic evidence.
- To study auditing and investigation of network and host system intrusions, analysis and documentation of information gathered
- To provide an overview of the important issues in classical and web information retrieval.
- The focus is to give an up-to- date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents and of methods for evaluating systems.
- Understanding basic data science concepts.
- Learning to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization.
- Making aware of how to address advanced statistical situations, Modeling and Machine Learning.
- To understand the ethics, legality, methodologies and techniques of hacking.

SEMESTER V

Course Code: USCS501	**Course Title: Artificial Intelligence**

Course Outcomes:

The students would be able :

- To get a clear understanding of AI and different search algorithms used for solving problems.
- To get acquainted with different learning algorithms and models used in machine learning.

Course Code: USCS503	Course Title: Software Testing and Quality Assurance
Course outcomes: The students would be able : • To understand various software testing methods and strategies. • To understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. • To design SQA activities, SQA strategy, formal technical review report for softwar equality control and assurance.	
Course Code: USCS504	**Course Title: Information and Network Security**
Course outcomes: The students would be able : • To understand the principles and practices of cryptographic techniques. • To understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. • To understand various protocols for network security to protect against the threats in a network.	
Course Code: USCS506	**Course Title: Web Services**
Course Outcomes: The students would be able : • To emphasis on SOAP based web services and associated standards such as WSDL. • To design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services.	
Course Code: USCS507	**Course Title: Game Programming**
Course outcomes: The students would be able : • To study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.	
SEMESTER VI	
Course Code: USCS601	**Course Title: Wireless Sensor Networks &Communication**
Course Outcomes: The students would be able : • To learn various application of wireless sensor network. • To describe different networks. • To learn various protocols and designing of wireless network. • To implement and evaluate new ideas for solving wireless sensor network design and issue.	
Course Code: USCS603	**Course Title: Cyber Forensics**
Course Outcomes: The students would be able :	

• To plan and prepare for all stages of an investigation. Stages: detection, initial response and management interaction. • To investigate various media to collect evidences and report them in a way that would be acceptable in the court of law.

Course Code: USCS604	**Course Title: Information Retrieval**
Course Outcomes: The students would be able : • To get an understanding of the field of information retrieval and its relationship to search engine. • To learn how to apply different information retrieval models.	

Course Code: USCS606	**Course Title: Data Science**
Course Outcomes: The students would be able : • To understand concept of Data Science. • To understand and comprehend the problem. • To define suitable statistical method to be adopted.	

Course Code: USCS607	**Course Title: Ethical Hacking**
Course Outcomes: The students would be able : • To identify security vulnerability and weakness in target application. • To test and exploit systems using various tool. • To understand the impact of hacking in real time machines.	

7. B.Sc. Hospitality Studies

Name of Department: Hotel Management
Class: FY B.Sc Hospitality Studies
Program Outcomes: • To create an atmosphere of excellence where students gain a plethora of knowledge and profundity of experience with emphasis on theory and practical. With the task , we aim to address the evolving needs of business & industry for present and future
Program Specific Outcomes:

- The program for hospitality would impart the skills and the knowledge to adopt essential roles within the leisure industry, hotels, resorts, travel & tourism, airlines, cruise line, hospital, education, event management and other services.

SEMESTER - I

Course Code: 548 / 423000081	**Course Title: Bsc In Hospitality studies**

Course Outcomes:

The students would be able :

- To inculcate a right attitude and the required basic knowledge and technical skills in overall basic learning in kitchen, food & beverage, housekeeping and front office of an hospitality sector

Class: FY

Program Outcomes:

- To create an atmosphere of excellence where students gain a plethora of knowledge and profundity of experience with emphasis on theory and practical. With the task , we aim to address the evolving needs of business & industry for present and future

Program Specific Outcomes:

- The program for hospitality would impart the skills and the knowledge to adopt essential roles within the leisure industry, hotels, resorts, travel & tourism, airlines, cruise line, hospital, education, event management and other services.

SEMESTER - II

Course Code: 548/ 423000081	**Course Title: Bsc In Hospitality studies**

Course Outcomes:

The students would be able :

- By the end of the second semester students should be confident enough in their skills which would boost their morale to take up the challenge in various department of hospitality sector for the third and fourth semester

Class: SY

Program Outcomes:

- To create an atmosphere of excellence where students gain a plethora of knowledge and profundity of experience with emphasis on theory and practical. With the task , we aim to address the evolving needs of business & industry for present and future

Program Specific Outcomes:

- The program for hospitality would impart the skills and the knowledge to adopt essential roles within the leisure industry, hotels, resorts, travel & tourism, airlines, cruise line, hospital, education, event management and other services.

SEMESTER – III & IV

Course Code: 548/423000081	**Course Title: Bsc In Hospitality studies**

Course Outcomes:

The students would be able :

- **Students will be sent for Industrial Training either during the IIIrd or IVth semester as per the convenience of Industry/Institute**
- Students will able to learn the various operational aspects of the hospitality department like bulk cooking in the kitchen, alcoholic beverage knowledge in food & beverage, check in and check out procedure in front office, layouts of rooms , laundry procedure in the house keeping

Class: TY

Program Outcomes:

- To create an atmosphere of excellence where students gain a plethora of knowledge and profundity of experience with emphasis on theory and practical. With the task , we aim to address the evolving needs of business & industry for present and future

Program Specific Outcomes:

- The program for hospitality would impart the skills and the knowledge to adopt essential roles within the leisure industry, hotels, resorts, travel & tourism, airlines, cruise line, hospital, education, event management and other services.

SEMESTER - V

Course Code: 548/423000081	**Course Title: Bsc In Hospitality studies**

Course Outcomes:

The students would be able :

- To educate students on basic to advance culinary skills.
- Identify Food & Beverage setup and planning of various outlets in the department.
- To understand the formulas that are applied in the front office for forecasting and
- Evaluating
- Explain and apply the guidelines for hiring various housekeeping contract services and man power

Class: TY

Program Outcomes:

- To create an atmosphere of excellence where students gain a plethora of knowledge and profundity of experience with emphasis on theory and practical. With the task , we aim to address the evolving needs of business & industry for present and future

Program Specific Outcomes:

- The program for hospitality would impart the skills and the knowledge to adopt essential roles within the leisure industry, hotels, resorts, travel & tourism, airlines, cruise line, hospital, education, event management and other services.

SEMESTER - VI

Course Code: 548/423000081	**Course Title: Bsc In Hospitality studies**

Course Outcomes:

The students would be able :

- The objective is to get students to attain expertise in their culinary skills to become independent entrepreneurs.
- Understand and apply cost dynamics as related to the Food & Beverage industry and the advance skills in the food & beverage
- To plan and evaluate budgets. Create and evaluate the aspects of Interior Design of housekeeping
- Yield management and its application in the Hotel Industry. Measurement of Yield for Management Decision Making. Passport & Visa regulations.

8. B.Sc. Information Technology

Name of Department: Information Technology	
Class: F.Y.B.Sc.	
Program Outcomes: **Software development knowledge** • Student can learn to develop software, website, programming and assembly languages. • Student learns process of specifying, designing, programming, documentation, testing etc. **Communication skills** • Student can communicate effectively using oral and written communication skills. • Student can able to speak wide variety of people. • Students can be able to share information effectively and clearly. **Mathematic skills** • Student can learn to solve discrete and engineering mathematics problems. • Different methods from mathematic are performed by the students. • **Green computing** • Student can learn to develop green information system. Student studies and practice of designing and use of computer resources.	
Program Specific Outcomes: • To think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems. • To apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programs. • To be capable of managing complex IT projects with consideration of the human, financial and environmental factors. • To work effectively as a part of a team to achieve a common stated goal. • To communicate effectively with a range of audiences both technical and non-technical. • To develop an aptitude to engage in continuing professional development.	
SEMESTER I	
Course Code: USIT101	**Course Title: Imperative Programming**
Course Outcomes: The students would be able : • The objective of this course is to provide a comprehensive study of the C programming language, stressing upon the strengths of C, which provide the students with the means of writing modular, efficient, maintainable, and portable code.	

- Students should be able to write, compile and debug programs in C language.
- Students should be able to design programs involving decision structures, loops and functions.
- Students should be able to explain the difference between call by value and call by reference
- Students should be able to understand the dynamics of memory by the use of pointers.
- Students should be able to use different data structures and create/update basic data files

Course Code: USIT102	**Course Title: Digital Electronics**

Course outcomes:
The students would be able :

- To understand the structure and operation of modern processors and their instruction sets.
- To understand the basics of digital electronics needed for computers
- To understand the basics of instruction set architecture for reduced and complex instruction sets
- To understand the basics of processor structure and operation
- To understand how data is transferred between the processor and I/O devices

Course Code: USIT103	**Course Title: Operating System**

Course outcomes:
The students would be able :

- Learners must understand proper working of operating system. To provide a sound understanding of Computer operating system, its structures, functioning and algorithms.
- To provide a understanding of operating system, its structures and functioning
- Develop and master understanding of algorithms used by operating systems for various purposes.

Course Code: USIT104	**Course Title: Discrete Mathematics**

Course Outcomes:
The students would be able :

- The purpose of the course is to familiarize the prospective learners with mathematical structures that are fundamentally discrete. This course introduces sets and functions, forming and solving recurrence relations and different counting principles. These concepts are useful to study or describe objects or problems in computer algorithms and programming
- To provide overview of theory of discrete objects, starting with relations and partially ordered sets.
- Study about recurrence relations, generating function and operations on them.
- Give an understanding of graphs and trees, which are widely used in software.

Course Code: USIT105	**Course Title: Communication Skills**

Course outcomes:
The students would be able :

- To help learners develop their soft skills and develop their personality together with their technical skills. Developing professional, social and academic skills to harness hidden strengths, capabilities and knowledge equip them to excel in real work environment and corporate life. Understand various issues in personal and profession communication and learn to overcome them
- To know about various aspects of soft skills and learn ways to develop personality
- Understand the importance and type of communication in personal and professional environment.
- To provide insight into much needed technical and non-technical qualities in career planning.
- Learn about Leadership, team building, decision making and stress management

SEMESTER II

Course Code: USIT201	**Course Title: Object Oriented Programming**

Course Outcomes:
The students would be able :

- The objective of this course is to provide a comprehensive study of the C++ programming language, it includes Internet and the World Wide Web.
- Students should be able to design web page using HTML5 logic.
- Students should be able to explain the concept of Java script with their properties and methods.
- Students should be able to understand the function of PHP, advanced PHP and MySQL.

Course Code: USIT202	**Course Title: Microprocessor Architecture**

Course Outcomes:
The students would be able :

- To understand the assembly language programming concept.
- To study the pin diagram, architecture, programming model of 8085 microprocessor.
- To study the instruction set of 8085 microprocessor.
- To understand the programming concept of 8085 microprocessor and execute them on hardware unit.
- To understand the architecture, features, instructions of Pentium and Pentium pro microprocessor.

Course Code: USIT203	**Course Title: Web Programming**

Course Outcomes:
The students would be able :

- The objective of this course is to study the HTML (Hyper Text Markup Language), stressing upon the object oriented programming language with its principle.

- Students should be able to write, compile and debug programs in C++ language.
- Students should be able to design programs involving object, class, constructor, and destructor.
- Students should be able to explain the concept of polymorphism and virtual function.
- Students should be able to understand the function of inheritance and exception handling.
- Students should be able to use different templates.

Course Code: USIT204	**Course Title: Numerical and Statistical Methods**

Course Outcomes:
The students would be able :

- The purpose of the course is to familiarize the prospective learners with mathematical modeling and engineering problem solving concepts. This course introduces round-off errors, truncation errors, and Taylor series. These concepts are useful to study or describe objects or problems in computer algorithms and programming
- To provide overview of algebraic and Transcendental Equations.
- Study about Solution of simultaneous algebraic equations (linear) using iterative methods, Numerical differentiation and Integration, Numerical solution of 1st and 2nd order differential equations.
- Give an understanding of Least-Squares Regression, Linear Programming, random variables and distribution.

Course Code: USIT205	**Course Title: Green Computing**

Course Outcomes:
The students would be able :

- To understand the overviews and issues of toxins, power consumption, equipment disposal and to take initiatives and study the standards of global initiatives.
- To understand the power problems and minimizing the power usage, also provide some cooling facilities.
- To change the way of work going paperless.
- To understand the concept of recycling process.
- To understand the greening information system by staying green.

Class: S.Y.B.Sc

Program Outcomes:
Specific core discipline knowledge

- Students employable and impart industry oriented training to apply their knowledge and skills to be employed and excel in IT professional careers.
- Students can be capable of managing complex IT projects with consideration of the human, financial and environmental factors.

- Students can work effectively as a part of a team to achieve a common stated goal and adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.

Communication skills

Students can communicate effectively with a range of audiences both technical and non-technical and to develop an aptitude to engage in continuing professional development.

Problem solving and research skills

- Students can think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.

Program Specific Outcomes:

- To understand programming languages and tools to develop computer programs and systems that are effective solutions to problems.
- To gain experience of working in teams to build software systems.
- To understand, design, and analyze precise specifications of algorithms, procedures, and interaction behavior.
- To learn the practical implementation, as the learning of the practical subjects will happen in laboratories.
- To apply mathematics, logic, and statistics to the design, development, and analysis of software systems.
- Understand software development and the concepts behind Java programming, and develop simple to complex programs.
- To understand how to manage data using a database, how to perform ethical hacking and explain the different concepts in computer networks.
- To provide knowledge of the different types of data structures and develop programs to search and sort for elements.
- To acquire knowledge about different software development process models.
- To gain a strong ground in basic discipline of study.

SEMESTER III

Course Code: USIT301	**Course Title: Python Programming**

Course Outcomes:

The students would be able :

- To acquire programming skills in core Python.
- To acquire Object Oriented Skills in Python.
- To develop the skill of designing Graphical user Interfaces in Python.
- To develop the ability to write database applications in Python

Course Code: USIT302	**Course Title: Data Structures**

Course outcomes:

The students would be able :

- To get deep knowledge about different types of data structures and also the importance of algorithm and its complexity
- To understand the use of array and different types of linked list
- To learn about stack,stack operations,queue and different types of it
- To understand the use of different sorting and searching techniques
- To learn about graph theory and different types of hashing techniques

Course Code: USIT303	**Course Title: Computer Networks**

Course outcomes:
The students would be able :

- To understand data communication, network models, physical layer, digital and analog transmission.
- To acquire knowledge about bandwidth utilization, transmission media, switching and data link layer.
- To get exposure to data link control, media access control, wireless LANs.
- To understand network layers, unicast routing and next generation IP.
- To gain proficiency in the transport layer and standard client0server protocols.

Course Code: USIT304	**Course Title: Database Management Systems**

Course Outcomes:
The students would be able :

- To understand database system and purpose of database system.
- To acquire knowledge of Database Design,ER Diagram and Unified Modeling Language.
- To gain proficiency in the Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).
- To acquire knowledge about Constraints, Views and SQL**.**
- To understand Transaction management ,Concurrencyand PL-SQL.

Course Code: USIT305	**Course Title: Applied Mathematics**

Course outcomes:
The students would be able :

- To understand the matrices and complex numbers in detail and different forms of them.
- To solve the equation of the first order and of the first degree, Differential equation of the first order of a degree higher than the first and Linear Differential Equations with Constant Coefficients.
- To learn about different types of theorem like The Laplace Transform,Second Shifting Theorem, The Convolution Theorem, CaleyHamilton Theorem,etc.
- To study about multiple integrals like double integrals, triple integrals and also to learn about beta and gamma functions.

SEMESTER IV

Course Code: USIT401	**Course Title: Core Java**
Course Outcomes: The students would be able : • To acquire knowledge of programming language java. • To understand data types, control flow statements, iterations and classes. • To gain proficiency in inheritance and packages. • To understand enumeration, arrays, exceptions and byte stream. • To acquire knowledge of event handling and layouts.	
Course Code: USIT402	**Course Title: Introduction to Embedded Systems**
Course Outcomes: The students would be able : • To make familiar with the basic concepts and terminology of the target area, the embedded systems design flow. • To give an understanding of the embedded system architecture. • To acquaint students with methods of executive device control and to give them opportunity to apply and test those methods in practice. • To teach students to make measurements with the specified accuracy.	
Course Code:USIT403	**Course Title: Computer Oriented Statistical Techniques**
Course Outcomes: The students would be able : • To perform the operations addition, inverse, transpose and multiplication on matrix. • To execute the statistical functions like mean, median, mode, quartiles, range, inter quartile range histogram. • To import the data from different sources and calculate the standard deviation, variance, co-variance. • To perform the hypothetical testing, chi-squared test, Linear Regression. • To perform the binomial and normal distribution on the data. • To compute the Least squares means, the Linear Least Square Regression,etc.	
Course Code:USIT404	**Course Title: Software Engineering**
Course Outcomes: The students would be able : • To understand the use of different types of software models like waterfall model, spiral model, iterative, RAD, time boxing model, etc. • To learn about different types of systems like socio-technical system, critical system, etc. • To get knowledge about different types of system models like data model, behavioural model, context and object models, etc. • To study and implementation of different types of diagram like class, sequence, activity, deployment, state transition, component, collaboration, etc.	

- To study and implementation of Entity Relationship Diagrams.

Course Code: USIT405	**Course Title: Computer Graphics and Animation**

Course Outcomes:

The students would be able :

- To introduce the use of the components of a graphics system and become familiar with building approach of graphics system components and algorithms related with them.
- To learn the basic principles of 2- dimensional and 3- dimensional computer graphics.
- Provide an understanding of how to scan convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition.
- Provide an understanding of mapping from a world coordinates to device coordinates, clipping, and projections.
- To be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
- To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies and principles.

Class: T.Y.B.Sc.

Program Outcomes:

- Student can gain the knowledge of Software Project Management , student can able to learn process of monitoring and control issues or risks.
- Student can learn internet of things, transferring data through various devices.
- Students can able to learn advance Web Programming which helps to understand different methods to develop web site.
- Students can learn linux System Administration. Students can learn the process and methods of installing different servers and clients.
- Students able to do programming in high level language like JAVA
- Students can learn different Software Quality Assurance, Security in computing, Business intelligence, Geographical information systems and various aspects of Cyber laws.

Implementation and Practical Knowledge :

- Student can implement theoretical knowledge into practical in appropriate IDE to gain industrial work experience.

Program Specific Outcomes:

- To understand the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
- To understand the interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.
- To learn the fundamental aspects of the JavaScript *programming* language and how to *program* using document object model application *programming*
- To manage the operations of a computer system like maintain, enhance, create user account/report, taking backups using Linux tools and command-line interface tools. There are some of the things that a Linux system administrator should know and understand: Linux File Systems.

- To support for many industry standards and continues simplification of *enterprise* ready APIs.
- To assures that all software engineering processes, methods, activities and work items are monitored and comply against the defined standards.
- To provide security against users, software, devices, operating systems, networks, cloud and data.
- To provide a set of processes, architectures, and technologies that convert raw data into meaningful information that drives profitable business actions. It is a suite of software and services to transform data into actionable intelligence and knowledge.
- To understand a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.
- To provide legal recognition to electronic documents and a framework to support e-filing and e-commerce transactions and also provides a legal framework to mitigate, check cybercrimes.

SEMESTER V

Course Code: USIT501	**Course Title: Software Project Management**

Course Outcomes:

The students would be able :

- To learn the definition of software Project.
- To gain knowledge about types of software projects and various activities covered by management.
- To differentiate between traditional and modern project management practices.
- To acquire knowledge about evaluation of individual project and cost benefit evaluation techniques.
- To learn about managing program and resource allocation..
- To understand the overview of Project Planning.
- To understand the importance of choosing methodologies and technologies for project.
- To gain knowledge about software process models.
- To learn different effort estimation techniques.
- To understand the importance of expert judgment.
- To acquire knowledge about COCOMO II model for cost estimation.
- To understand the importance of activity planning.
- To learn various ways of shortening the project duration.
- To understand the importance of risk management.
- To get exposure on measuring risks related to project.
- To acquire knowledge on resource allocation.
- To learn the various techniques of review.
- To understand the concept of cost monitoring.
- To gain knowledge about software configuration management.
- To learn the different types of contracts.

- To acquire knowledge about managing people involved in software project.
- To understand the importance of working in teams.
- To gain knowledge about coordination and dependencies.
- To learn concept of software quality and quality management system.
- To get knowledge about quality improvement models.
- To learn the process of project closeout.

Course Code: USIT502	**Course Title: Internet of Things**

Course outcomes:
The students would be able :

- To understand the technology of the internet
- To learn the Design Principles for Connected Devices
- To learn the overview of internet
- To get knowledge of TCP/IP protocol suite.
- To learn the concept of prototyping.
- To understand prototyping in embedded devices.
- To acquire knowledge about Raspberry pi.
- To understand prototyping in physical design using various techniques.
- To learn prototyping in online components using API.
- To learn the techniques for writing embedded code.
- To understand the different business models.
- To acquire knowledge about an IOT start up.
- To learn different ideas of manufacturing IOT products.
- To get knowledge of costing and maintaining.
- To learn the ethics of IOT.

Course Code: USIT503	**Course Title: Advanced Web Programming**

Course outcomes:
The students would be able :

- To understand .Net framework and its run time environment.
- To gain basic knowledge of C# language with its object oriented concept.
- To gain the knowledge of namespaces and assemblies.
- To understand fundamentals of web application development.
- To make use of different server controls like validation, navigation and rich server control.
- To be able to handle the exceptions and page tracing.
- To understand different levels of state management using cookies and sessions.
- To provide uniformity, enhance presentation use of themes and master pages.
- To understand back hand connectivity with SQL using ADO .Net Frame.
- To use data binding with data controls like grid view, details view and form view.
- To make use of xml for validation and transformation.

- To understand web application, security requirements using forms and windows authentication.
- To understand partial web page refreshment using ajax control tool.

Course Code: USIT505	**Course Title: Linux System Administration**

Course Outcomes:

The students would be able :

- To have knowledge about Red Hat Enterprise Linux.
- To be able to work with the Bash Shell.
- To learn System Administration Tasks like Performing Job Management Tasks, System and Process Monitoring and Management, Scheduling Jobs, Mounting Devices, Creating Backups, Managing Printers, Setting Up System Logging.
- To understand the concept of RPM, Meta Package Handlers, Creating Repositories, Managing Repositories, Installing Software with Yum, Querying Software, Extracting Files from RPM Packages.
- To learn how to Configure and Manage Storage.
- To have practical knowledge about Connecting to the Network by Understanding Network Manager, Network Service Scripts, Setting Up IPv6.
- To understand the concept of Users, Groups, and Permissions.
- To know the methods of securing Server with iptables by understanding Firewalls, Masquerading, Configuration Files.
- To learn how to Setting Up Cryptographic Services by Introducing SSL, GNU Privacy Guard, Signing RPM Files.
- To Configure Server for File Sharing by NFS, Configuring Samba, Offering FTP Services.
- To know the method of Configuring DNS and DHCP.
- To set up a Mail Server using the Message Transfer Agent, the Mail Delivery Agent, the Mail User Agent.
- To Configure Apache on Red Hat Enterprise Linux.
- To learn Bash Shell Scripting.
- To have knowledge on High-Availability Clustering.
- To know how to set up an Installation Server.

Course Code: USIT506	**Course Title: Enterprise Java**

Course Outcomes:

The students would be able :

- To understand Java Enterprise edition with its different technologies.
- To understand Java EE architectural server and contains.
- To understand server side technology like Java Servlets with its API and life cycle.
- To make data base connectivity using JDBC.
- To navigate using request dispatcher interface.
- To understand state management using cookies and session.
- To understand how to upload and download the file.

- To be able to work with non-blocking I/O resources.
- To understand server side technology like Java Server Pages.
- To make use of action elements, implicit objects, expression language and JSTL.
- To understand enterprise bill, architectural and its bill.
- To be able to working with session beans and message driven beans.
- To understand interceptors and JNDI.
- To make use of ORM and JPA with its API.
- To understand writing JPA application.
- To be able to understand hibernate architectural and components.
- To understand writing hibernate application.

SEMESTER VI

Course Code: USIT601	**Course Title: Software Quality Assurance**

Course Outcomes:

The students would be able :

- To understand the concept of Software Quality, how to use Total Quality Management concept.
- To have knowledge of software quality assessment, software development process, Quality Management System Structure.
- To gather information related to Fundamentals of Testing.
- To design Requirement Traceability Matrix.
- To know the idea of Test Policy, Test Strategy or Test Approach, Test Planning, Test Team Efficiency.
- To learn about different categories of Defect, Error, or Mistake in Software.
- To understand Testing throughout the software life cycle, Test levels.
- To learn different methods of Unit Testing- Boundary Value Testing, Equivalence Class Testing,Decision Table–Based Testing,Path Testing, Data Flow Testing.
- To understand the importance of Software Verification and Validation.
- To know methods of Verification, Types of reviews.
- To study Levels of Validation, Acceptance Testing.
- To learn V-test Model, VV Model.
- To know about several Special Tests like GUI testing, Security Testing, Performance Testing, Volume Testing, Stress Testing, Recovery Testing, Regression Testing, Intersystem Testing, Smoke Testing, Compliance Testing.
- To understand different Risk Associated with New Technologies and how to overcome by using COTS Testing, Client Server Testing, Web Application Testing, Mobile Application Testing, e-Commerce Testing, Agile Development Testing, Data Warehousing Testing.

Course Code: USIT602	**Course Title: Security in Computing**

Course Outcomes:

The students would be able :

- To understand the concept of Information Security.
- To know how to use Security Methodology, Strategy and Tactics.
- To analyze Risk by identifying possible Threat, Types of Attacks.
- To learn about Secure Design Principles like the CIA Triad and Other Models, Defense Models.
- To understand concept of Authentication and Authorization.
- To know the idea of Encryption: difference in Symmetric-Key Cryptography, Public Key Cryptography and Public Key Infrastructure.
- To have information related to Storage Security, Database Security.
- To gain insight into Secure Network Design and Network Device Security.
- To learn about Firewalls.
- To gather knowledge related to Wireless Network Security basics, its threats, Wireless Vulnerabilities and Mitigations, Wireless Network Positioning and Secure Gateways.
- To know Intrusion Detection and Prevention Systems.
- To learn Voice over IP (VoIP) and PBX Security, TEM (Telecom Expense Management).
- To understand Operating System Security Models, International Standards for Operating System Security.
- To have information related to Virtual Machines and Cloud Computing.
- To study Secure Application Design in Web Application Security, Client Application Security, Remote Administration Security.
- To know how to implement Physical Security by Choosing Site Location for Security, Securing Assets - Locks and Entry Controls, Physical Intrusion Detection.

Course Code: USIT603	**Course Title: Business Intelligence**

Course Outcomes:

The students would be able :

- To learn the meaning of business intelligence.
- To understand the difference between data, knowledge and information.
- To learn the role of mathematical model.
- To understand the role of decision making system.
- To learn mathematical models for decision making.
- To understand the definition of data mining.
- To learn the techniques of data preparation.
- To understand the various techniques of classification.
- To learn different methods of clustering.
- To gain knowledge of Business intelligence applications.
- To learn different marketing models.
- To understand logistic and production models.
- To learn the concept of Data envelopment analysis.
- To understand the importance of knowledge management.
- To learn the Concepts and Definitions of Artificial Intelligence.

Course Code: USIT604	Course Title: Principles of Geographic Information Systems.

Course Outcomes:

The students would be able :

- To understand the nature of GIS.
- To learn the real world and representations of GIS.
- To gain knowledge about Geographic Information and Spatial Database Models and Representations of the real world Geographic Phenomena.
- To understand Computer Representations of Geographic Information.
- To get exposure of Organizing and Managing Spatial Data The Temporal Dimension.
- To understand Data Management and Processing Systems Hardware and Software Trends Geographic Information Systems.
- To gain knowledge of Stages of Spatial Data handling.
- To learn the use of Database management Systems.
- To understand GIS and Spatial Databases.
- To learn Spatial referencing and Positioning Spatial Referencing.
- To understand Satellite-based Positioning.
- To gain knowledge of Data Entry and Preparation Spatial Data Input.
- To understand the concept of Data Quality.
- To learn the concept of Data Preparation.
- To understand the Point Data Transformation.
- To learn Spatial Data Analysis Classification of analytical GIS Capabilities Retrieval, classification and measurement.
- To understand the use of Overlay functions.
- To learn the Neighborhood functions.
- To understand different types of analysis.
- To get exposure of GIS and Application models.
- To gain knowledge of Error Propagation in spatial data processing.
- To understand the need of Data Visualization GIS and Maps, The Visualization Process.
- To gain knowledge of different Visualization Strategies.
- To learn the mapping of qualitative data.
- To understand Mapping of Cosmetics, Mapping of Dissemination.

Course Code: USIT607	Course Title: Cyber Laws.

Course Outcome:

The students would be able:

- To understand the definition of cybercrime.
- To understand the meaning of Power of Arrest without Warrant under the IT Act, 2000.
- To learn the concept of Cyber Crime and Criminal Justice.
- To gain knowledge about Penalties, Adjudication and Appeals Under the IT Act,2000.
- To understand the Contracts in the InfoTech World.
- To learn Terms and Conditions of Contracts.

- To understand Jurisdiction in the Cyber World.
- To learn the concept of Concept of Domain Name and Reply to Cyber Squatter.
- To understand the concept of copyright.
- To gain knowledge of Hyper-Linking and Framing.
- To acquire knowledge about Liability of ISPs for Copyright Violation in the Cyber World.
- To understand the concept of E-Commerce Taxation.
- To gain knowledge about Income Tax Act.
- To understand The Impact of the Internet on Customer Duties, Taxation Policies in India.
- To acquire knowledge about Digital Signature, Certifying Authorities and E-Governance.
- To understand the concept of "A Warning to Babudom!".
- To learn the Indian Evidence Act of 1872 v. Information Technology Act, 2000
- To understand the different Amendments in the Indian Evidence Act by the IT Act.
- To gain knowledge about Protection of Cyber Consumers in India.

Course Code: USIT6P1	**Course Title: Project Implementation**

Course outcomes:
The students would be able :

- To accomplish the Implementation and Testing phase:
    1. Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.
    2. Coding Details and Code Efficiency: Include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does.
    3. Code Efficiency: Explain how the code is efficient and how the code optimization is achieved.
    4. Testing Approach: Testing should be according to the scheme presented in the system design following some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate.
    5. Unit Testing: Testing a unit or module as a whole to see the interaction of many functions.
    6. Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability.
    7. Modifications and Improvements: Define what modifications are implemented in the system and how it improved the system.
- To evaluate Results and Discussion:
    1. Test Reports: Explain the test results and reports based on the test cases by taking different sample inputs and show the outputs.
    2. User Documentation: Define the working of the software; explain its different functions, components with screen shots. It should provide all the details of the product so that any user is able to understand the working and functionality of the document.

- To summarize conclusions in a fairly short chapter (2 or 3 pages).
- To identify limitations of the System encountered during the testing of the project.
- To List the criticisms accepted during the demonstrations of the project.
- To describe Future Scope of the Project :
    1. New areas of investigation prompted by developments in this project.
    2. Parts of the current work that was not completed due to time constraints and/or problems encountered.
- To acknowledge References i.e. the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project.
- To include Glossary if there are any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur.
- To include Appendices to provide further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

9. B.Sc. Physics

Name of Department: Physics

Class: F.Y.B.Sc.

Program Outcomes:

- Students can recall details and information about Newton's laws, thermodynamics and different types of lenses and their applications.
- Students can recall details of different atomic model, Rutherford Postulates, Nuclear structure, different types of nuclear forces, energy laws, De-Broglie hypothesis, Einstein energy mass relation and Planck's postulates.
- Students can recall details and information about scalar, vector, differential equation and wave motion.
- Students can recall details and information about resistance, inductor capacitor, logic gates, electric field magnetic field, ohm's law, Kirchhoff's law.
- Students can perform basics experiments, observations, calculations and can interpret the result and can draw their own conclusion.

Program Specific Outcomes:

- To understand the Newton's law and its application.
- To understand the fluid mechanics and its applications.
- To understand the basic mathematical concepts and applications of them in physical situations.
- To develop analytical abilities towards real word problem.
- To be able to develop problem solving attitude.
- To familiarize with current & recent scientific & technological development.

SEMESTER - I

Course Code: USPH101	Course Title: Classical Physics

Course Outcomes:
The students would be able :

- To understand Newton's laws and apply them in calculations of the motion of simple systems.
- To understand use the free body diagrams to analyze the forces on the object.
- To understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them.
- To understand the concepts of lens system and interference.
- To apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.
- To develop the problem- solving skills in all the topics covered.

Course Code: USPH102	Course Title: Modern Physics

Course outcomes:
The students would be able :

- To understand nuclear properties and nuclear behavior.
- To understand the type isotopes and their applications.
- To understand Carbon dating and its applications.
- To understand different types of chemical reactions.
- To demonstrate and understand the quantum mechanical concepts.
- To demonstrate quantitative problem-solving skills in all the topics covered.
- To understand different types of nuclear reactor and their uses.

SEMESTER- II

Course Code: USPH201	Course Title: Mathematical Physics

Course Outcomes:
The students would be able :

- To understand the basic mathematical concepts and applications of them in physical situations.
- To develop an understanding about simple harmonic motion & wave motion.
- To demonstrate quantitative problem-solving skill in all topics covered.

Course Code: USPH202	Course Title: Electricity and electronics

Course Outcomes:
The students would be able :

- To understand different circuit theorem and able to solve different circuit problems.
- To understand the response of different electrical component to ac source.
- To understand the concept of digital electronics and its application.
- To demonstrate and understand the concepts of electrostatics & magneto statics.
- To demonstrate quantitative problem-solving skills in all the topics covered.

Class: S. Y. B. SC.

Program Outcomes:

Students can recall details and information about mechanics and thermodynamics.

Students can recall details of Vector calculus and Analog electronics.
Students can recall details of acoustics of building, properties of material and physics Connected to biology i.e. Biophysics.
Students will make up for problem solving skills effectively.
A quantitative and conceptual understanding of the core areas of physics, including optics, quantum mechanics, Digital Electronics, Radio Communication at a level compatible with graduate programs in physics at peer institutions.
The ability to communicate scientific results effectively in presentations or posters.
Students can generate and make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

The ability to analyze and interpret quantitative results, both in the core areas of physics and interdisciplinary areas.
The ability to use contemporary experimental apparatus and analysis tools to acquire, analyze and interpret scientific data.
The ability to apply the principles of physics to solve new and unfamiliar problems.
Develop analytical abilities towards real world problems.
The science of Physics has diversified immensely in recent times and numerous new fields in Physics, such as Geo-Physics, Radio-Physics, Physics of metals and materials, etc. have come into existence.
The fundamentals and the generality of many principles of Physics are common to all these specialized diverse fields. Most problems in applied areas have been discussed intensely in academic conferences and journals, but have not found their place in curricula or in text books.
The third course in each semester offers interdisciplinary application- oriented topics. It will be offered as a choice to all learners across various combinations.
This course will seek to foster a spirit of multidisciplinary approach in learning.
The 'practical' component in the applied course will be seen as a combination of laboratory sessions , a visit to a Research Institute/Industry, mini project, an assignment on a relevant topic etc. For the various units, experts will guide as 'Resource Persons' and their laboratories/ departments could serve as Resource Centers. Faculty members/Teachers can avail of their expertise to train themselves in the delivery of these courses whenever required.

SEMESTER III

Course Code: USPH301	**Course Title: Mechanics and Thermodynamics**

Course Outcomes:

The students would be able :

- To understand the concepts of mechanics & properties of matter & to apply them to problems.
- To comprehend the basic concepts of thermodynamics & its applications in physical situation.
- To learn about situations in low temperature.
- To demonstrate tentative problem solving skills in all above areas.

Course Code: USPH302	**Course Title: Vector calculus, Analog Electronics**

Course outcomes:

The students would be able :

- To understand the basic concepts of mathematical physics and their applications in physical situations.
- To understand the basic laws of electrodynamics and be able to perform calculations using them.
- To understand the basics of transistor biasing, operational amplifiers, their applications
- To understand the basic concepts of oscillators and be able to perform calculations using them.
- To demonstrate quantitative problem solving skill in all the topics covered.

Course Code: USPH303	**Course Title: Applied Physics-1**

Course outcomes:

The students would be able :

- To exposed to contextual real life situations.
- To appreciate the role of Physics in 'interdisciplinary areas related to Biophysics, materials and Acoustics etc.
- To understand the scope of the subject in Industry & Research.
- Experimental learning opportunities will faster creative thinking & a spirit of inquiry.

SEMESTER IV

Course Code: USPH401	**Course Title: Optics and Digital Electronics**

Course Outcomes:

The students would be able :

- To understand the diffraction and polarization processes and applications of them in physical situations.
- To understand the applications of interference in design and working of interferometers.
- To understand the resolving power of different optical instruments.
- To understand the working of digital circuits
- To use IC 555 timer for various timing applications.
- To demonstrate quantitative problem solving skills in all the topics covered.

Course Code: USPH402	**Course Title: Quantum Physics**

Course Outcomes:

The students would be able :

- To understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics.
- To demonstrate quantitative problem solving skills in all the topics covered

Course Code: USPH403	**Course Title: Applied Physics II**

Course Outcomes:

The students would be able :

- To understand the concepts of Geophysics & properties of material to apply them to problems.
- To develop assembly language programming skills and real time applications of microprocessor.
- To understand architecture, silent features, instruction set, programming of 8085 microprocessor.
- To train their practical knowledge through lab experiments.
- To understand the concept of Basics of communication, Concept of modulation and its various types.

Class: T.Y.B.Sc.

Program Outcomes:

- The students are expected to understand the physical phenomena at the undergraduate level & get exposure to important ideas of Physics.

- Students can recall details and information about the units and measurements of physical quantities, physical states of matter, different physical quantities and their behavior under different physical parameters.
- Students can recall details of the different laws related to the classical, statistical and quantum mechanics along with modern physics concepts.
- Students can solve the problem related to the actual practical problem; they can make small working circuits to analyze the working and characteristics of different IC's.

Program Specific Outcomes:

- To make the students understand the kinds of motions those are related to physics.
- The students are learning some mathematical techniques required to understand the physical phenomena at the undergraduate level and get exposure to important ideas of statistical mechanics.
- The students learn the different aspects of solid state physics, atomic and molecular physics, and electrodynamics along with classical mechanics.
- Understand the difference between different statistics, classical as well as quantum.
- Develop quantitative problem solving skills.
- The course is built on exploring the fundamentals of nuclear matter as well as considering some of the important applications of nuclear physics.
- This course introduces students to the essence of special relativity which revolutionized the concept of physics in the last century by unifying space and time, mass and energy, electricity and magnetism.
- This course also gives a very brief introduction of general relativity.

SEMESTER V

Course Code: USPH501	**Course Title: Mathematical ,Thermal & Statistical Physics**

Course Outcomes:

The students would be able :

- Solve simple problems in probability, understand the concept of independent events & work with standard continuous distributions.
- The students will have idea of the functions of complex variables; solve non-homogeneous differential equations & partial differential equations using simple methods.
- The units on statistical mechanics would introduce the students to the concept of microstates, Boltzmann distribution & statistical origins of entropy.

• It is also expected that the student will understand the difference between different statistics, classical as well as quantum.

Course Code: USPH502	**Course Title: Solid State Physics**

Course outcomes:

The students would be able :

- Understand the basics of crystallography, electrical properties of metals, Band theory of solids, demarcation among the types of materials, Semiconductor Physics & Superconductivity.
- Understand the basic concepts of Fermi probability distribution function, Density of States, conduction in semiconductors & BCS theory of superconductivity.
- Demonstrate quantitative problem solving skills in all the topics covered.

Course Code: USPH503	**Course Title: Atomic & molecular Physics**

Course outcomes:

The students would be able :

- The application of quantum physics in atomic physics.
- The importance of electron spins, symmetric & antisymmetric wave functions & vector atom model.
- Effect of magnetic field on a toms & its application.
- Learn molecular physics & its application.
- This course will be useful to get an insight into spectroscopy.

Course Code: USPH504	**Course Title: Electrodynamics**

Course Outcomes:

The students would be able :

- Understand the laws of electrodynamics & be able to perform calculations using them.
- Understand Maxwell's electrodynamics & its relation to relativity.
- Understand how optical laws can be derived from electromagnetic principles.
- Develop quantitative problem solving skills.

SEMESTER VI

Course Code: USPH601	Course Title: Classical Mechanics

Course Outcomes:

The students would be able :

- To understand the kinds of motions that can occur under a central potential and their applications to planetary orbits.
- The students should also appreciate the effect of moving coordinate system, rectilinear as well as rotating. The students are expected to learn the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle.
- They should also be able to solve simple examples using this formalism. The introduction to simple concepts from fluid mechanics and understanding of the dynamics of rigid bodies is also expected.
- They should appreciate the drastic effect of adding nonlinear corrections to usual problems of mechanics and nonlinear mechanics can help understand the irregularity we observe around us in nature.

Course Code: USPH602	Course Title: Electronics

Course Outcomes:

The students would be able :

- Understand the basics of semiconductor devices and their applications.
- Understand the basic concepts of operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation.
- Understand the basic concepts of timing pulse generation and regulated power supplies.
- Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication.
- Develop quantitative problem solving skills in all the topics covered.

Course Code: USPH603	Course Title: Nuclear Physics

Course Outcomes:

The students would be able :

- To understand the fundamental principles and concepts governing classical nuclear and particle physics and have a knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation.

- Knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.

Course Code: USPH604	**Course Title: Special Theory of Relativity**

Course Outcomes:

The students would be able :

Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result.
Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time.
Understand the transformation equations for: Space and time, velocity, frequency, mass, momentum, force, Energy, Charge and current density, electric and magnetic fields.
Solve problems based on length contraction, time dilation, velocity addition, Doppler Effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.

Name of Department: Electronic Instrumentation (Applied Component of Physics)

Class: T.Y.B.Sc.

Program Outcomes:

The objective of these papers is to introduce the students to sensors and transducers, Signal conditioning, data acquisition systems and measuring instruments used in the laboratory. Students are to be exposed to know, in principle, the modern techniques in the field of medical science.

Program Specific Outcomes:

To learn PCB designing and working of consumer electronic devices.
To develop logic circuit design and implementation.
To know advanced programming skills and interfacing techniques.
To understand basic building blocks of microcontrollers.
To know the terminologies like embedded, CISK and RISK processors.
To master Programming and interfacing skills of microprocessor and microcontrollers.
To develop object oriented programming skills and programming in C++. To develop various experimental skills.

SEMESTER V	
Course Code: USACEI501	**Course Title: Analog circuits, instruments & consumer appliances**
Course Outcomes: The students would be able : To know the difference between transducers & sensors. To understand the construction, working & uses of different types of transducers. To understand the concept of signal conditioning, devices used and their operations. To get acquainted with the measuring instruments used in laboratory. To get the insight of the modern medical instruments in principle, which are used in day to day life.	
Course Code: USACEI5P1	**Course Title: Practical**
Course outcomes: The students would be able : To understand relevant concepts. The planning of the experiments. To understand designing of experiments. To make the experiments open ended. To recording of observation s & plotting of graphs. To do calculation of results & estimation of possible errors in the observation of results.	
SEMESTER VI	
Course Code: USACEI602	**Course Title: DIGITAL ELECTRONICS, MICROPROCESSOR, MICROCONTROLLER AND OOP**
Course Outcomes: The students would be able : To Analyze/design and implement combinational logic circuits. To develop assembly language programming skills and real time applications of microprocessor.	

To illustrate how to interface the I/O peripheral (PPI) with 8085 microprocessor. To understand architecture, silent features, instruction set, programming and interfacing of 8051 microcontroller. To develop the programming skills in programming Language C++.

Course Code: USACEI6P1	**Course Title: PRACTICAL**

Course Outcomes:

The students would be able :

To verify theoretical knowledge practically through lab experiments.
To get practical training to interface different programmable peripherals and I/O devices to microprocessor and microcontroller.

10.B.Sc. Mathematics

Name of Department: Mathematics

Class: FYBSc

Program Outcomes:

Specific core discipline knowledge

- Students will demonstrate an understanding of the common body of knowledge in mathematics.
- Students can be able to identify areas in mathematics and other fields where calculus is useful.

Communication skills

- Students will be able to productively discuss mathematics and able to write detailed solutions using appropriate mathematical language.

Problem solving and research skills

- Students will demonstrate the ability to apply analytical and theoretical stills to model and solve mathematical problems.
- Students will demonstrate the ability to analyze data and draw appropriate statistical conclusions.
- Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields

Program Specific Outcomes:

- Compute limits and derivatives of algebraic, trigonometric, inverse trigonometric, exponential, logarithmic, and piece-wise defined functions.
- Compute definite and indefinite integrals of algebraic, trigonometric, inverse trigonometric, exponential, logarithmic, and piece-wise defined functions.
- Determine the continuity and differentiability of a function at a point and on a set.

- Use the derivative of a function to determine the properties of the graph of the function and use the graph of a function to estimate its derivative.
- Be able to recognize the power of abstraction and generalization, and to carry out investigative mathematical work with independent judgment.
- Be able to carry out objective analysis and prediction of quantitative information with independent judgment.
- Provide advanced knowledge on topics in pure mathematics, empowering the students to pursue higher degrees at reputed academic institutions.
- Good understanding of number theory which can be used in modern online cryptographic technologies.
- Provide scope for interaction with international researchers and developing collaborations.
- Demonstrate the highest standard of ethics in research.
- Be able to work independently, and to collaborate effectively in team work and team building.

SEMESTER I

Course Code: USMT101	**Course Title: CALCULUS I**

Course Outcomes:
The students would be able:
• to understand and recall basic facts about mathematics
• to identify algebraic and order properties of real numbers.
• to identify and apply the function property of real number system such as the completeness property.
• to understand the concept of sandwich theorem ,monotonic theorem, monotonic convergence theorem, subsequence sequence.
• to check domain and range of the function, injective function, surjective function, bijective function, composite of two function ,inverse of bijective function.
•to understand the geometric interpretation of graph.

Course Code: USMT102	**Course Title: ALGEBRA I**

Course outcomes:
The students would be able :

- To study about integers, divisibility in integers, congruence and its elementary properties.
- To study the basic concept of a function, its various types and various aspect of equivalence relation.
- To study about polynomial and its various properties.

SEMESTER II

Course Code: USMT201	**Course Title: CALCULUS II**

Course Outcomes:
The students would be able :
• to use in most area of mathematics even for studying finite structures.
• to find the convergence and divergence for different test.
• to define and check the differentiation of real valued function of one variable.

•to identify and apply the intermediate value theorem , mean value theorem and L'Hospital's rule.
•to check continuity and differentiability of a function.
• to understand the concept of local maxima and local minima and their application.

Course Code: USMT202	**Course Title: LINEAR ALGEBRA**

Course outcomes:
The students would be able to :

- Interpret existence and uniqueness of solutions geometrically
- Discuss associativity and non-commutativity of matrix multiplication
- Discus the existence of basis of an abstract vector space
- Describe coordinates of a vector relative to a given basis
- Understand the relationship between a linear transformation and its matrix representation
- Describe geometrically significant linear transformation of the plane to itself

Class: SYBSc

Program Outcomes:

Specific core discipline knowledge

- To develop problem solving abilities.
- Using result and definition student can proofs related to differentiation, determinant, matrices, inner product space, counting and advance counting.
- Using result and definition student can proofs related to Riemann integral, indefinite and improper integral, group theory, differential equation.

Communication skills

- It develops communication skill with new symbols and sign in mathematics.

Problem solving and research skills

- Students can solve various problem of Computer science, Social science, Engineering and technology and operation research.

Further it is use in master study as prerequisites and research works

Program Specific Outcomes:

- To learn the concept of function of several variables.
- To learn the differentiations and its applications.
- To learn linear transformation and matrices.
- To learn determinant and inner product space.
- To learn counting and advance counting with recurrence relation.
- To learn Riemann integral, indefinite and improper integrals.
- To learn beta and gamma function with improper integrals.
- To learn basic concept of group theory.
- To learn first order and second order differential equations.

SEMESTER III

Course Code: USMT 301	**Course Title: CALCULUS III**

Course Outcomes:
The students would be able :

- To understand the concept of Euclidean norm, Euclidean distance, open ball, open set and convergence of sequence in $\mathbf{R}^n$.
- To analyze the basic results of limits and continuity on vector fields.
- To find the derivatives of functions of several variables using chain rule.
- To analyze properties related to continuity and differentiability of functions of several variables.
- To gain knowledge about higher order partial derivatives and mixed partial derivatives.
- To find tangent planes and normal lines to the given surface.
- To understand the concept of Jacobian and Hessian matrix.
- To find the maxima, minima and saddle points of function of 2 variables using second derivative test.

Course Code: USMT 302	**Course Title: ALGEBRA III**

Course outcomes:
The students would be able to:

- Analyze the determinant of product algebraically and geometrically
- Explain what the determinant measures the geometrically
- Explain the gram-schmidt orthogonalisation process
- Explain how orthogonal projections relate to least square approximations

Course Code: USMT 303	**Course Title: DISCRETE MATHEMATICS**

Course outcomes:
The students would be able :

- To study about permutation and its various types.
- To learn how to use recurrence relation in counting problems and its different forms.
- To understand finite, infinite, countable, uncountable set with example.
- To study about arrangement, selection, derangement, example of standard identities.

SEMESTER IV

Course Code: USMT 401	**Course Title: CALCULUS IV**

Course Outcomes:
The students would be able:

- To find approximate area bounded by the curves using integration.
- To understand upper/lower Riemann Sums and their properties
- To define Riemann Integral on a closed and bounded interval.
- To state different properties of Riemann integration.
- To understand the concept of improper integrals (type 1 and type 2)
- To check the convergence of improper integrals using different tests
- To gain knowledge about fundamental theorem of calculus and mean value theorem and also understand their application.

Course Code: USMT 402	**Course Title: ALGEBRA IV**

Course outcomes:
The students would be able :

- Definition of a group, Abelion group, order of group, finite and infinite groups, examples of groups
- Definition of subgroup, necessary and sufficient conditions for a non-empty set to be a sub group
- Cyclic subgroup of a group , cyclic groups
- Properties of cyclic groups
- Lagrange's theorem
- Consequences of Lagrange's theorem
- Homomorphism and its properties

Course Code: USMT 403	**Course Title: ORDINARY DIFFERENTIAL EQUATIONS**

Course outcomes:
The students would be able :

- To understand the first order first degree and its various types of forms.
- To learn when a second order linear differential equation is homogeneous and non-homogeneous and how to deal with its various roots.
- To study about homogenous linear system of ordinary differential equations in two variables.

Class: TYBSc (Mathematics)

Program Outcomes:

Specific core discipline knowledge

- To develop problem solving abilities.
- Using result and definition student can proofs related to multivariable calculus with integrals, linear algebra, Topology of metric space and graph theory.
- Using result and definition student can proofs related to Complex analysis, algebra, topology and metric space with real analysis and combinatory.

Communication skills

- It develops communication skill with new symbols, sign and concept in mathematics.

Problem solving and research skills

- Students can solve various problem of Computer science, Social science, Engineering and technology and operation research.

Further it is use in master study as prerequisites and research works.

Program Specific Outcomes:

- To learn the concept of multiple integral, surfaces integral, line integral.
- To learn the Quotien space and orthogonal transformation, eigen value and eigen vectors and diagonalization.
- To learn metric space and sequence and complete metric space and compact sets.
- To learn basic of graph, trees and Eulerian and Hamiltonian graphs.

- To learn introduction to complex, Cauchy integral formula and power series, Laurent series, isolated singularities.
- To learn group theory, Ring theory and filed theory.
- To learn Continues function of metric space, connected sets and sequence and series of functions.
- To learn Coloring of graphs, planer graphs and combinatorial.

SEMESTER V

Course Code: USMT501	**Course Title: MULTIVARIABLE CALCULUS II**

Course Outcomes:
The students would be able :

- To study double and triple integral to calculate area of region, area under the curve, the volume and the average value of a function of two variables over rectangular region.
- To get exposure to the techniques of integration which is used to improve the architecture, not only of buildings but also of important infra structure, such as bridge.
- To relate single, double and triple integral, i.e. to understand the conversion of double integral to single integral using Stoke's theorem and triple integral to double integral using Divergence theorem.
- To gain knowledge about line integral for the calculation of the area of the surface in three dimension which can be used to calculate the work done on a charged particle travelling along some curve.

Course Code: USMT502	**Course Title: Linear Algebra**

Course outcomes:
The students would be able :

- To gain the knowledge of Eigen Value and L.T.
- Student will demonstrate competence with basic ideas of linear algebra.
- Compose clear and accurate proofs using the concepts of linear algebra.
- To understand what is meant by eigen value and eigen vectors with the help of this students explain concept of eigen in real life eg.-Consider we eat pizza but there are so many tastes
  i.e. sour, salty, bitter,sweet etc if we compare it to our topic then we get conclusion i.e.Eigen value =pizza. Eigen vectors =sweet,sour ,bitter,salty etc
  It is also applicable in google
  It is also applicable in electronics

Course Code: USMT 503	**Course Title: Topology of Metric Spaces**

Course outcomes:
The students would be able :

- Demonstrate an understanding of the concepts of metric spaces and Topological spaces and their role in mathematics
- Demonstrate familiarity with range of examples of these structures

- Prove basic results about completeness, compactness and convergence within these structures
- Apply the theory in the course to solve a variety of problems at an appropriate level of difficulty
- Demonstrate skills in communicating mathematics orally and in writing

Course Code: USMT5C4	**Course Title: Graph Theory (Elective C)**

Course outcomes:
The students would be able :

- To get familiar with the concepts of graphs and learn the fundamental results.
- To understand various types of trees, algorithms for spanning trees, shortest path problems which are used to find shortest path in road or a network.
- To determine whether graphs are Hamiltonion or Eulerian and study related results.
- To apply graph theory based tool in solving practical problems.
- To improve proof writing skill.

SEMESTER VI

Course Code: USMT 601	**Course Title: BASIC COMPLEX ANALYSIS**

Course Outcomes:
The students would be able:

- To understand the concept of limit of a complex valued function.
- To define and check the continuity and differentiability of complex valued functions.
- To gain knowledge about the stereographic projection of complex numbers.
- To understand the concept of analytic functions and the necessary sufficient conditions to check whether function is analytic.
- To find the harmonic conjugate of harmonic functions.
- To state Cauchy Integral Theorem and understand its applications.
- To define complex exponential, logarithmic and hyperbolic functions and analyze their properties.
- To understand the concept of mobius transformations.
- To state Taylor's theorem and establish Taylor's series of various functions.
- To find different type of singularities in complex valued functions.
- To understand the concept of power series in complex numbers.
- To find radius of convergence of different power series and analyze the results.
- To acquire knowledge about Cauchy residue Theorem and its applications.

Course Code: USMT 602	**Course Title: ALGEBRA**

Course outcomes:
The students would be able :

- To demonstrate and understanding of idea of group,ring,integral domain.
- Appriciate and to be able to prove basic result of group and ring theory.

• Demonstrate capacity for mathematical reasoning and analyzing proving ,explaining concepts of group and ring. • Generate groups in specific condition.It is useful for computer science for coading
Course Code: USMT 603 | **Course Title: Topology of Metric Spaces and Real Analysis**
Course outcomes: The students would be able : • Demonstrate an understanding of the concepts of Connectedness, Continuity and Sequence Series • Prove basic results about these structures • Apply the theory in the course to solve variety of problems • Handle abstraction ideas of mathematics and mathematical proof • Understand the fundamental of topology for these who wish to continue further study in pure mathematics
Course Code: USMT6C4 | **Course Title: Graph Theory and Combinatorics (Elective C)**
Course outcomes: The students would be able : • To solve problems involving vertex and edge coloring,chromatic polynomial in coloring of graphs. • To describe planarity of graphs,flows in Networks, Mini-Max Theorem. • To understand the ideas of permutations and combinations, inclusion and exclusion principle, basic properties of matching,solving recurrence relation. • To know some important classes of graph theoretic problems.

11.B.Sc. Zoology

Name of Department: Zoology
Class: F.Y.BSc
Program Outcomes: **Specific core discipline knowledge** • Curiosity will be ignited in the mind of learners to know more about fascinating world of animals and therefore enhancing interest in the subject. • Students would understand the treasures of biodiversity and would therefore contribute their best for its conservation. And also understand physical chemical and biological factors and interdependence of animals and would spur an interest for making a career in wildlife conservation and research fields. • Learners would be able to understand safety measures in a laboratory and also the working of instruments which help to study different components of zoology

Program Specific Outcomes:

- To nurture interest in the students for the subject of Zoology
- To create awareness of the basic and modern concepts of Zoology
- To orient students about the importance of abiotic and biotic factors of environment and their conservation
- To provide an insight to the basic nutritional and health aspects of human life
- To inculcate good laboratory practices in students and to train them about scientific handling of important instruments

SEMESTER I

Course Code: USZO101	**Course Title: I. Wonders of the animal world,** **II. Biodiversity and its conservation** **III.Footsteps to follow**

- **Course Outcomes:**
  The students would be able
- Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology
- Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation
- Minds of learners would be impulsed to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences

Course Code: USZO102	**Course Title: I. Laboratory safety and units of measurements** **II. Animal biotechnology.** **III. Instrumentation**

Course outcomes:
The students would be able :

- To work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions.
- To understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box.
- To be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.

SEMESTER II

Course Code: USZO201	**Course Title: I. Ecology and Wildlife management** **II. Ecosystem** **III. National parks and Sanctuaries.**

Course outcomes:

The students would be able :

- To study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.
- To grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.
- To choose career options in the field of wild life conservation, research, photography and ecotourism

Course Code: USZO202	Course Title: I**. Nutrition and health** **II. Public health and Hygene.** **III. Common Human diseases and disorders.**

Course Outcomes:

The students would be able :

- To inculcate healthy dietary habits in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits..
- To promote optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense.
- To promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases.

Class: S.Y.BSc

Program Outcomes:

Specific core discipline knowledge

- Students will be able to understand basic terms and concepts in genetics, Mendelian inheritance, origin of life and evolution
- The learners will be able to understand the cell biology, biomolecules, physiology of osmoregulation, nutrition and excretion and the organs related to them.
- Students will be able to understand basic concepts Human reproduction, Embryology, ethology, economic zoology and pollution.

Program Specific Outcomes:

- To Introduce basic terms of genetics and study Mendelian principles of inheritance and other forms pattern of inheritance
- To familiarize the learners with the structure, types and classification of chromosome, concept of sex determination and its types, sex influenced and sex limited genes.
- To make the learner understand the structure of nucleic acids and the concept of central dogma of molecular biology and basic concept of gene regulation

- To expose the learners to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms and make them understand the physiology of each process
- To expose the learners to various respiratory and circulatory structures in different classes of organisms and understand their physiology.
- To expose the learners to various locomotory and reproductive structures in different classes of organisms and to make them understand physiology of locomotion and reproduction
- To equip learners with a sound knowledge of how animals interact with one another and their environment.
- To acquaint learners with the concepts of parasitism, their relationship with environment and modes of transmission.
- To disseminate information on economic aspects of zoology like apiculture, vermiculture, dairy science and encourage young learners for self employment.
- To impart scientific knowledge to the learner about how life originated and evolved on our planet.
- To develop learner's knowledge and understanding of genetic variability within a population and how the change in the gene pool leads to evolution of species.
- To inculcate scientific temperament in the learner.
- To study the structural and functional organization of cell with an emphasis on nucleus, plasma membrane and cytoskeleton
- To give learner insight into the structure of biomolecules, and their role in sustenance of life.
- To acquaint the learners with different aspects of human reproduction and make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control.
- To provide a panoramic view of impact of human activities leading to pollution and its implications.

SEMESTER III

Course Code: USZO301	**Course Title: I. Fundamentals of Genetics.** **II.Chromosome & Heredity** **III. Nucleic Acids**

- **Course Outcomes:**
  The students would be able
- Understand and apply the principles of inheritance. Understand the concept of multiple alleles, linkage and crossing over.
- Learners would understand the structure and types of chromosomes. Learners would understand mechanisms of sex determination. Learners would be able to correlate the disorders linked to a particular sex chromosome.
- Learner would understand the importance of nucleic acids as genetic material

Course Code: USZO302	**Course Title: I. Study of Nutrition & Excretion**

	II . Study of Respiration & circulation **III. Control and Coordination** **Locomotion** **& Reproduction**

Course outcomes:

The students would be able :

- To understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy. Learners would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.
- To understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy. Learners would be able to correlate the habit and habitat with respiratory and circulatory structures .
- understand the process of control and coordination by nervous and endocrine regulation. Learners would be fascinated by various locomotory structures found in the animal kingdom. Learners would be acquainted with various reproductive strategies present
- To understand the

Course Code: USZO303	**Course Title: I. Ethology** **II . Parasitology** **III. Economic Zoology**

Course outcomes:

The students would be able :

- To gain an insight into different types of animal behaviour and their role in biological adaptations.
- Learners would be sensitized to the feelings instrumental in social behavior in animals.
- To understand the general epidemiological aspects of parasites that affect humans and apply simple preventive measures for the same. Learners would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment
- To gain knowledge on animals useful to mankind and the means to make the most of it.
- Learners would learn the modern techniques in animal husbandry. Learners would be pursuing entrepreneurship as careers.

SEMESTER IV

- **Course Outcomes:**
- To understand the principles of taxonomy, levels of organizations, modern classification up to class and the evolutionary significance of various levels of organization like symmetry, coelom, segmentation, etc.
- To learn in the field and practice experiential learning making taxonomy live and interesting.
- To draw diagram of an organism / animal as they perceive through observation rather than copying a diagram from a book into the journal.

Course Code: USZO401	**Course Title: I. Origin & Evolution of Life** **II. Population Genetics & Evolution**

	III. Scientific Attitude, Methodology, Writing & Ethics.

Course Outcomes:
The students would be able :

- To learn insight about origin of life. Learner will know about the different theories of evolution.
- To gain understand the forces that cause evolutionary changes in natural populations. Learner would comprehend the mechanisms of speciation .Learner will be able to distinguish between microevolution, macroevolution and megaevolution
- To learn develop qualities such as critical thinking and analysis. The learner will develop the skills of scientific communication. Learner will understand the ethical aspects of research

Course Code: USZO402	**Course Title: I. Cell Biology** **II. Endomembrane System** **III. Biomolecules**

Course Outcomes:
The students would be able :

- To acquire insight of transport mechanisms for maintenance and composition of cell
- To appreciate the intricacy of endomembrane system.
- Learner would understand the interlinking of endomembrane system for functioning of cell.
- To realize the importance of biomolecules and their clinical significance
.

Course Code: USZO303	**Course Title: I. Comparative Embryology** **II. Aspects of human Reproduction** **III. Pollution and Effects on Animals**

Course Outcomes:
The students would be able :

- To understand and compare the different pre- embryonic stages Learner will be able to appreciate the functional aspects of extra embryonic membranes and classify the different types of placentae.
- To . understand human reproductive physiology Learners will become familiar with advances in ART and related ethical issues
- To sensitize about the adverse effects of pollution and measures to control it

Class: T.Y.BSc

Program Outcomes:

Specific core discipline knowledge

- Students can recall the principles of taxonomy, levels of organisations, modern classification up to class and the evolutionary significance, various aspects of human blood, clinical disorders and their,Diagnosis, Mammalian Histology, Basic Toxicology,

General Pathology and Biostatistics, integumentary system, osteology and the developmental stages of chick embryo.

- Students can recall details of the unique ecological and evolutionary features of the local and Indian fauna.
- Students can recall various environmental issues and their management.

Communication skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

- To recognize and identify major groups of up to class and the evolutionary significance of various levels of organization like symmetry, coelom, segmentation, etc.
- To understand the significance of the diagnostic tools relevant to human health.
- To explore the morphological, anatomical, embryological details as well as economic importance of Kingdom Animalia
- To understand physiological processes and adaptations of Kingdom Animalia.
- To provide knowledge about environmental factors and natural resources and their importance in sustainable development.
- To be able to deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.
- To understand patterns of heredity and variation among individuals, species and populations and apply principles for improvement of quality and yield.
- To be able to apply statistical tools to gain insights into significantly different data from different sources.

SEMESTER V

Course Code: USZO501	**Course Title: Principles of Taxonomy, Kingdom: Animalia I,III Kingdom: Animalia II,IV Type study: Sepia**

- **Course Outcomes:**

The students would be able

- To understand the principles of taxonomy, levels of organizations, modern classification up to class and the evolutionary significance of various levels of organization like symmetry, coelom, segmentation, etc.
- To learn in the field and practice experiential learning making taxonomy live and interesting.
- To draw diagram of an organism / animal as they perceive through observation rather than copying a diagram from a book into the journal.
- To attribute characters of a specimen up to specific class.

Course Code: USZO502	**Course Title: Basic Haematology** **II Applied Haematology**

	III Basic Immunology **IV Applied Immunology**
Course outcomes: The students would be able : • To learn various aspects of human blood, clinical disorders and their diagnosis. • To learn the significance of the diagnostic tools relevant to human health. • To understand scope of hematology and immunology as career options in the field of pathology. • To understand the clinical significance of various diagnostic tests.	
Course Code: USZO503	**Course Title: Mammalian Histology** **II Toxicology** **III General Pathology** **IV Biostatistics**
Course outcomes: The students would be able : • To learn use of Microtomy as a histo-pathological tools for clinical pathology also its applications in research. • To learn toxicology emphasizing its importance in pharmaceuticals and additionally the insights into regulatory aspect. • To understand the practical difficulties and the norms associated with toxicity testing. • To apply biostatistics in interpretation and validation of experimental data.	
Course Code: USZO504	**Course Title: Integumentary system and derivatives** **Human Osteology** **Muscles of long bones of Human limbs** **Developmental biology of Chick**
Course Outcomes: The students would be able : • To understand concepts of integumentary system, osteology and the developmental stages of chick embryo. • To understand the structural and the functional aspects of epidermal and dermal derivatives, various fore limb and hind limb muscles and their arrangement etc.	
SEMESTER VI	
Course Code: USZO601	**Course Title: Phylum Chordata:** **Group Protochordata**

	and Group Euchordata I **Group Euchordata II** **Group Euchordata III** **Type study: Shark**
• **Course Outcomes:** • To understand the principles of taxonomy, levels of organizations, modern classification up to class and the evolutionary significance of various levels of organization like symmetry, coelom, segmentation, etc. • To learn in the field and practice experiential learning making taxonomy live and interesting. • To draw diagram of an organism / animal as they perceive through observation rather than copying a diagram from a book into the journal. • To attribute characters of a specimen up to specific class.	
Course Code: USZO602	**Course Title: Enzymology** **Homeostasis** **Endocrinology** **Animal Tissue Culture**
Course Outcomes: The students would be able : • To learn about adaptive responses of animals to environment for their survival. • To gain awareness about industrial significance of enzymes. • To learn sterilization and culture techniques in animal tissue culture.	
Course Code: USZO603	**Course Title: Molecular Biology** **Genetic Engineering** **Human Genetics** **Bioinformatics**
Course Outcomes: The students would be able : • To learn concepts of Molecular Biology, Genetic Engineering, Human Genetics and Bioinformatics. Molecular biology and genetic engineering. • To learn scope of gene manipulation techniques in medical science as well as industry. • To learn various concepts of bioinformatics such as protein sequencing, construction of evolutionary trees etc. • To learn Use of available software in public domain to study human diseases . • To learn the practical utilization of bioinformatics in preparing probes using database.	
Course Code: USZO604	**Course Title: Environment** **management** **Wildlife management**

	Bioprospecting and Zoopharmacognosy Zoogeography

Course Outcomes:
The students would be able :

- To understand various environmental issues and their management.
- To learn wildlife conservation as well as human-animal conflict.
- To learn concepts of bioprospecting and zoopharmacognosy. Case studies supplemented with it will help understanding the patterns of distribution of different animal species throughout the globe.

12. M.Sc. Bioanalytical Sciences

Class: M.Sc. Bioanalytical Sciences

Objectives of the Course

- Develop trained manpower in the field of Bio-analytical Sciences with specific emphasis for exploitation of ASU system of medicine as well as its need for changing trends of modern pharmaceutical Industries
- Amalgamate traditional analytical chemical techniques with modern genomic and proteomic technologies of manufacturing and analysis
- Introduce the powerful tools of informatics in routine use at manufacturing, QC and research.
- Exposure to National & International regulatory affairs with reference to drugs

Program Outcomes:

Specific core discipline knowledge

- Students can recall details and information about the Indian Pharmaceutical Industry Pharmacopeias
- Students can recall details and information about traditional medicinal system of ASU
- Students can develop skills to operate instruments like UV Visible spectrometer, HPLC, HPTLC, FTIR, GC, GC-MS.
- Students get exposed with guidelines and regulations with reference to drugs

Communication skills

- Students can communicate effectively using oral and written communication skills as well as presentation skills

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context
- Students are enabled to solve complex problems with reference to the technique used to identify, purify and isolate a compound from mixed solutions via HPLC, GC-MS, FTIR, HPTLC, UV-Visible Spectroscopy.

Program Specific Outcomes:

- To recognize and identify the importance of Indian traditional system of medicine and compare it with the modern medicine system.
- To understand the working of pharmaceutical industries and learn the guidelines which are followed by the industries
- To make the learner industry ready by providing them with hands-on experience on instruments.
- To understand processes of standardization and manufacture of drugs from biological sources.
- To get exposed to classic and modern methods of extraction
- To be able to carry out phytochemical analysis of plant extracts and application of the isolated compounds for treatment of diseases.
- To be able to deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.
- To explain how current medicinal practices are often based on indigenous plant knowledge and to get introduced to different perspectives on treating ailments according to ethnomedicinal principles.
- To get exposed to pharmacopeias and to know the regulations and guidelines in manufacturing of drugs
- To be able to apply statistical tools to gain insights into significantly different data from different sources.
- To acquire recently published knowledge in molecular biology, such as rDNA technology; PTC and bioinformatics and their applications.
- To get skilled in handling and carry out experimentation on UV- Visible spectroscopy, HPLC, GC, HPTLC, GC -MS and LC- MS.
- To get hands-on experience to perform bioassays and different microbial assays
- To gain knowledge about BA/ BE
- To gain knowledge about QA and QC

SEMESTER I

Course Code: PSBN101	Course Title: Different Medicinal Systems, Pharmacognosy & Extraction Techniques

Course Outcomes:

The students would be able to :

- Classify and compare different medicinal systems.
- Understand the Principle and practices of the traditional system of medicine viz. Ayurveda, Siddha, Unani and also modern medicine.
- Identify the sources of drugs used for drug formulation, types of Drug formulation
- get aware about the how ASU drugs are manufactures with respect to Raw material to finished product
- Differentiate between Excipient and API and understand the importance of the excipient in various dosage forms.
- Compare disease management with respect to ASU and Modern drugs.
- Define Pharmacognosy and explore plants for its medicinal uses
- Define ethnobotany, pharmacology and also understand concepts like ethno medicines
- Describe herbaria and prepare their own herbaria for selected plants
- Know the importance of Authentication, Storage and drying techniques in preparation of drugs derived from biological sources
- Identify Phytogeographical regions of India.
- Evaluate raw material for adulterants.
- Explain the concepts of GAP and GHP for medicinal plants.
- Describe Physico-chemical properties of drugs and solvents.
- Discuss the concept of partition & Partition Coefficient.
- Write Solvent properties.
- Recall classic and modern methods of extraction and compare between both the methods of extraction.
- Explain the applications of extraction.
- Describe Microwave assisted extraction and compare advantages and disadvantages of the same.
- Explain Ionization and its effect on the extraction of drugs
- Memorize 'First law of drug metabolism'.
- Describe Matrix components & analyte isolation.
- Analyse the importance of Concentration of extracts.
- Discuss Isolations of fractions and Purification of isolate.
- Experiment the concept of Liquid - liquid extraction of moderna drug from plasma and formulations
- Evaluate Microscopic characters to identify adulteration in drug formulations by comparing with plant powders.
- Experiment and separate plant pigments using paper chromatography
- Determine the sugars experimentally using descending paper chromatography.

Course Code: PSBN102	Course Title: GLP, Drug Act and Quality Management

Course outcomes:

The students would be able to :

- Describe GLP and its guidelines and demonstrate GLP practicing
- Explain Documentation of laboratory work and preparation of SOPs
- Discuss Calibration records
- Understand the significance of validation in GLP
- Describe Transfer of methods
- Explain Documentation of results
- write about WHO guidelines, Pharmacopoeia, specified test in monographs w.r.t liquid formulation (injectable) and solid dosage form
- Discuss Indian Drugs and Cosmetics Act w.r.t Schedule Y, M, H. Schedule A, S; foreign guidelines w.r.t US, EU, Australia & Japan; CFR 21 part 11.
- Define and differentiate QC and QA
- Discuss requirements for implementing QC & QA
- Conceptualize QC and QA in ASU drugs
- Write and discuss the standardizing analytical methods and factors for standardization, validation, Audit requirements,
- Describe audits and audit reports.
- Understand the importance of personnel responsibility in QA.
- Experiment dissolution, disintegration, hardness and friability of tablets.

Course Code: PSBN103	Course Title: Chromatography & Spectroscopy-I

Course outcomes:

The students would be able to :

- Describe and discuss the principles of chromatographic separation.
- Enlist uses of TLC.
- Recommend Solvent systems for TLC for detection of compounds.
- Describe and discuss the principles and instrumentation of HPLC.
- Understand the chromatographic process.
- Read Chromatogram.
- Explain separation mode, column chemistry and Reverse phase HPLC.
- Enlist and explain in brief various HPLC techniques.
- Tell about recent advances in HPLC.
- Describe and discuss the principles and instrumentation of GC.
- Analyse factors that affect chromatographic separation.
- Explain GC techniques and recommend selection of Liquid stationary phases.
- Discuss in detail about GC hardware.

- Describe principle and instrumentation of UV-Visible, fluorescence, Nephelometry, Turbidimetry and IR.
- Enlist applications of UV, Visible, fluorescence, Nephelometry, Turbidimetry and IR
- Summarize basic concepts of NMR spectroscopy
- Determine caffeine by UV and HPLC
- Analyse modern drug by IR
- Separate herbal raw material from its formulation; Separate modern drug from plasma; Separate modern drug from formulation using HPLC
- Separate mixture of solvent by GC
- Write about derivatization in GC

Course Code: PSBN104	**Course Title: Proteomics, Bioinformatics & Environmental Issues**

Course outcomes:

The students would be able to:

- Define Omics and explain Genomics, Metabolomics, Lipidomics and Proteomics
- Signify proteome and discuss on Methods for cell disruption/protein extraction, Protein purification/ Fractionation, Protein identification and characterization
- Illustrate on invitro and invivo modifications of proteins.
- Describe basic protein chemistry
- Define electrophoresis, describe the principle of electrophoretic separation
- Identify and label the equipment's used in electrophoresis
- Demonstrate process of electrophoretic separation using 2-D gel electrophoresis
- Identify, describe and differentiate between AGE, PAGE, Native. SDS and 2DGE
- Analyse protein profile by SDS page
- Recall Extensions of Electrophoresis-Immunoelectrophoresis/pulsefield
- Summarize Standardization of electrophoretic technique, Detection techniques
- Enlist different Applications of electrophoresis
- Understand and apply tools of Bioinformatics for drug discovery and protein.
- Define and describe chemi-informatics.
- Identify the types and sources of laboratory waste
- Describe the hazards and safe handling of chemical and biological materials in a Bioanalytical laboratory.
- Explain Regulations of Pollution Control Board for Laboratories.
- Experiment on Separation of human serum / plasma proteins / egg white using PAGE
- Evaluate protein and Nucleic acid sequence using global search engine / software like BIOEDIT and analyze the findings.
- Use Clustal W. omega, BLAST A, BLAST O, FASTA, PROSITE, Alignment, SCOP, Rasmol, CATH and identify protein with the said bioinformatics tools.

SEMESTER II

Course Code: PSBN201	Course Title: Indian Pharmaceutical Industry, Phytochemistry & Extraction Techniques

Course Outcomes:

The students would be able to :

- Describe historical background, market trends and activities of R&D.
- Describe the Govt. initiatives and public sector in the pharma industry.
- Explain the role of Drug Pricing policy in India and its impact on the Indian Pharmaceutical Industry.
- Explain the role of Analytical chemist in Pharmaceutical Industry.
- Write about the R&D strategies of Indian Pharma, Bulk Drug manufacturing & its R&D and Varied Dosage forms and its R&D.
- Explain principle of SPE, Enlist and discuss general properties of bonded silica sorbents.
- Describe Sorbent/analyte interactions.
- Illustrate on Sample pretreatment of different biological matrices and developing SPE methods.
- Explain Disc cartridges, 96-Well Format and Direct injection of plasma and tell about Other new developments
- Describe and distinguish between primary and secondary metabolites
- Classify secondary metabolites
- Draw integrated pathway for secondary metabolite production
- Enlist and describe extraction techniques
- Describe the concept of SCFE and SCFC
- Discuss the instrumentation, Factors affecting, benefits, Applications of SCFE and SCFC.
- Perform experiment on SPE of a modern drug from formulation and modern drug from plasma
- Prepare specific reagents and conduct qualitative test for the presence of alkaloids, tannins, lignans, steroids and glycosides using TLC.
- Prepare calibration graphs for Li, Na, and K by flame Photometry
- Determine percentage purity of $CaCO_3$/$MgCO_3$ by Titrimetry, Complexometry and IE chromatography
- Compare classical and modern method of extraction of phytoconstituent of medicinal plants
- Analyse effect of drying on phytoconstituents
- Study phytochemical variation within a species using HPLC/HPTLC

Course Code: PSBN202	Course Title: IPR and Patenting, Stability Studies and Packaging

Course outcomes:

The students would be able to :

- Describe the concept of IPR and identify its types
- Talk about Global Harmonization and International Agreements related to IPR & patents

- Study about stability chambers and describe the factors that influence stability of drug formulations
- Identify types of Stability chambers and their design considerations
- Identify Stability issues of ASU raw materials and finished products
- Explain Guidelines on Stability evaluations
- Tell Approaches to stability studies of ASU formulations
- Describe Indian Patent Act
- Explain IPR as a strategic tool
- Discuss IP clearance
- Define Packaging
- Explain the fundamentals of Distribution
- Describe Packaging Forms & discuss their Significance
- Identify Packaging Materials and Ancillary Mats
- Explain Package Material Testing
- Discuss Compatibility & Migration Studies
- Explain theory and Solve problems related to Accelerated Shelf Life Testing.
- Explain the concept of Packaging Validation
- Discuss Packaging Laws and regulatory compliance
- Draft patent claim
- Test for degradation of compounds using TLC
- Perform Stability testing of solution and solid dosage forms for photo degradation.
- Analyse the effect of hydrogen peroxide, hydrochloric acid and sodium hydroxide solutions on the stability of drugs in solution at elevated temperatures and room temperature.
- Analyse Stability of drugs in dosage forms at 25°C, 60% RH and 40°C, 75% RH and at different Pressures.

Course Code: PSBN203	**Course Title: Chromatography & Spectroscopy-II**

Course outcomes:

The students would be able :

- Describe and discuss the principles and instrumentation of HPTLC.
- Compare between HPTLC and TLC
- Explain the relationship between Densitometry & quantitation in HPTLC
- Explain the relationship between HPTLC in fingerprinting & QC
- Troubleshoot HPTLC
- Write down applications of HPTLC
- Explain Chiral HPLC
- Explain Column switching in HPLC
- Describe Gradient reverse-phase HPLC
- Summarize Column conditions
- Write about automation in HPLC

- Enlist and describe detectors in HPLC
- Recall Manual and Electronic data Processing
- Troubleshoot HPLC
- Write down applications of HPLC
- Differentiate between Universal and specific Detectors in GC
- Explain Derivatization for GC
- Enlist and discuss GC strategies for analysis involving biological matrices
- Troubleshoot GC
- Write down applications of GC
- Explain theory and write applications of CD and ORD
- Describe Emission spectroscopy
- Describe Principles, instrumentation and applications of Flame photometry, Atomic Emission Spectroscopy, AAS, ICP and X-ray diffraction
- Perform HPTLC separation of a modern drug from plasma and its formulations
- Perform HPTLC fingerprinting of Herbal raw material
- Detect of herbal raw material from its formulations by using HPTLC
- Separate solutes from their matrix using GC
- Determine Caffeine by HPTLC, HPLC and UV

Course Code: PSBN204	**Course Title: New Drug Development, Immunoassays, Pharmacokinetics, Laboratory Safety Measures**

Course outcomes:

The students would be able :

- Define NCE and describe stages in the development of NCE
- Discuss about Preclinical studies on NCE
- Write enzyme as Therapeutics agents, as diagnostics, as catalyst in processes as drug target
- Define Immunoassay and explain its theory
- Enlist the requirements for immunoassay
- Write the advantages of immunoassay
- Describe and discuss the principles and instrumentation in ELISA and write down its application
- Explain the types of Detection systems
- Describe Basic concepts of Pharmacokinetics & pharmacodynamics
- Enlist different pharmacokinetic & pharmacodynamics parameters and their meanings.
- identify basic techniques of evaluating Pharmacokinetic & pharmacodynamics parameters
- Describe basic types of models in pharmacokinetics & pharmacodynamics
- Classify drugs and their formulations
- Explain Route of entry, Absorption and Distribution of drugs with examples
- Explain the Concepts of Drug Metabolism & elimination with examples
- Define and describe Adverse Drug reactions(ADRs) and Serious Adverse Events(SAEs)

- Enlist and explain Laboratory Safety Measures w.r.t handling of chemicals and biological materials
- Perform Immunoassay of HEPALISA in serum.
- Perform Immunoassay for HCG in urine
- Perform Immunoassay of T3 and T4 by RIA/IRMA
- Calculate different Pharmacokinetic parameters like Ka, Ke, t½, C max, Tmax and AUC.

13.M.Sc. Biotechnology

Name of Department: Biotechnology

Class: M.Sc Biotechnology

Program Outcomes:

- Students have a deeper understanding of the concepts and its practical value in the advanced domains of biotechnology.
- Students will be competent for jobs in various domains of industries which will help them to build-up a progressive and successful career
- Students will have a sense of scientific, social and environment responsibilities.
- Students will be able to communicate and function scientifically in an efficient manner.

Program Specific Outcomes:

- Students will have adept understanding of subjects like Biochemistry, Molecular Biology, Cell biology, Animal and plant culture, Immunology, analytical instruments, IPR etc
- Students will be equipped with practical skills in Biochemistry, immunology, cell and molecular biology, analytical and genome-based techniques.
- Students can apply the knowledge acquired for commercial applications.
- Students will have enhanced oral and written communication skills.
- Students are able to understand the importance of research and gain knowledge on frontiers in the field of Biotechnology
- Students will be able to design project, collect data and check its acceptance based on statistical significance.
- Students can do literature survey, scientific writing and submit report.
- Students can design hypothesis and after following suitable statistical test on collected data, they can check its validity.
- Students will be well equipped with practical skills in nanotechnology, bioinformatics, biostatistics, embryology, animal cell culture and plant cell culture.
- Student realize the impact of Biotechnology on Agriculture, Industry, Medicine, Environment etc.
- Students are able to build an interdisciplinary approach and scientific research aptitude.

SEMESTER I	
Course Code: PSBT101	**Course Title: Biochemistry**
Course Outcomes: • Get insight into the structure and functions of polysaccharides. • Understand the structure and physiological significance of oxygen binding proteins. • Learn the concept of lipoproteins and disorders related to lipoprotein dysfunction. • Familiar about the inborn errors of metabolism and nutritional disorders. • Get insight into the detailed concept of neurobiology and neurochemistry.	
Course Code: PSBT102	**Course Title: Immunology**
Course outcomes: • Understand the structural features of components of immune system as well as their function. • Gain knowledge about development of immune system and mechanisms by which our body elicits immune response. • Understand the concept of antigen presentation and recognition patterns, complement pathways, various types of molecules involved in the immune system and mucosal immunity. • Gain insights on the immunological basis of cancer. • Apply their knowledge of different antigen-antibody interactions and design immunological experiments to figure out kind of immune responses in the setting of infection/disorder.	
Course Code: PSBT103	**Course Title: Molecular biology**
Course outcomes: • Understand the details of chromatin structure and its functional implications • Understand the basis of gene expression and basic control processes involved in it • Elucidate different post translational events and the underlying functional importance • Gain knowledge on protein folding, transport and protein sorting. • Acquire knowledge and understanding of fundamentals of genomics and proteomics, and their applications in various applied areas of biology. • Gain hands-on experience in gene cloning, protein expression and purification which would enable them to begin a career in industry that engages in genetic engineering as well as in research laboratories conducting fundamental research.	
Course Code: PSBT 104	**Course Title: Biochemical and biophysical techniques**
Course Outcomes: • Learn history, theoretical basis and basic understanding of microscopic techniques and applications therein. • Understand the principles and practical applications of new spectrophotometer technologies.	

- Study basics of chromatography and radioisotopes and its applications.
- Gain insights of immunotechniques for generation of antibodies and learn the principles of histochemical techniques.

SEMESTER II

Course Code: PSBT 201	**Course Title: Metabolism**

Course outcomes:

- Acquire knowledge about advanced pathways of carbohydrate and lipid metabolism in animals.
- Get insight into the of physiological biochemistry including regulation acid base balance and mineral metabolism.
- Understand the concept behind stress mechanism of plants.
- Get acquainted about advanced metabolic pathways in plants and fungi.

Course Code: PSBT202	**Course Title: Immunology**

Course Outcomes:

- Gain knowledge on different intricate aspects of various immunological diseases.
- Predict the nature of immune response that develops against bacterial, viral or parasitic infection, hypersensitive reactions, autoimmune and immunodeficiency disorders
- Understand assays and techniques involved in in-vitro and in vivo imaging.
- Decipher the links between the immune system and the nervous system.
- Elucidate psychological modulation of immunity.

Course Code: PSBT203	**Course Title: Bioprocess technology**

Course outcomes:

- Comprehend the basic principles of bioprocess technology.
- Grasp the effect of process parameters on fermentation and their measurement and control.
- Acquire knowledge in the processes involved in downstream processing.
- Understand and appreciate relevance of microorganisms and enzymes in the fermentation process from an industrial perspective.
- Apply skills and knowledge gained in designing and conducting experiments, analyze and interpret data, and apply the laboratory skills to solve complex bioprocess engineering problems.

Course Code: PSBT 204	**Course Title: IPR & biosafety**

Course Outcomes:

- Get introduced to the concepts of intellectual properties and IPR protection for biotech inventions.
- Understand the concepts of novelty, inventive step and moral issues in patenting biotech inventions.

- Learn the process of patent filing across several countries in the world and infringement cases.
- Gain knowledge about the history of biosafety and biohazards and also the analysis of risk assessment and risk management.

SEMESTER III

Course Code: PSBT301	**Course Title: PTC and ATC**

Course Outcomes:

- Gain knowledge about important metabolic pathway in plant cells.
- Understand the principle and types of cryopreservation for plant as well as animal cells/tissues.
- Learn about microbial and cross contamination.
- Acquire knowledge of troubleshooting the problems common to cell culture.

Course Code: PSBT302	**Course Title: Medical microbiology**

Course outcomes:

- Understand the basics of medical microbiology and gain knowledge regarding the pathogenesis and molecular diagnosis of bacterial fungal and viral diseases.
- Acquire knowledge about chromosomal disorders and their diagnosis using cytological techniques.
- Develop an understanding of medical biofilms and their various diseases associated with them.

Course Code: PSBT303	**Course Title: Clinical Studies**

Course outcomes:

- Learn about different phases of new drug discovery.
- Gain knowledge about ethical regulations and working system of ethics committee concerned with clinical trials.
- Understand the types and significance of toxicological studies.
- Understand the scope and importance of Medical writing and Clinical data management.

Course Code: PSBT304	**Course Title: Developmental Biology**

Course Outcomes:

- Understand principles of developmental biology towards evaluating and analyzing primary literature in the field.
- Explain key concepts, including mechanisms by which differential gene activity controls development, mechanisms that determine cell fate and mechanisms that ensure consistency and reliability of development.
- Get exposure to frontiers in the field of developmental biology and contraceptive research.

SEMESTER IV

Course Code: PSBT401	**Course Title: Nanotechnology**

Course Outcomes:

- Get exposure to the technique of synthesis of nanomaterials.
- Gain knowledge about the characterization of nanomaterials.
- Learn about nanomedicine.
- Understand the different aspects and importance of nanomaterials.
- Learn principle and applications of nanomaterials.

Course Code: PSBT402	**Course Title: GMO and environment**

Course Outcomes:

- Develop an understanding of GMOs/GM crops and their development
- Gain insights in the way genetic modification affects agriculture
- Understand the potential risks & benefits associated with GMO crop consumption
- Learn about the potential risks of human activities on the environment and the measures to remediate the environment.

Course Code: PSBT403	**Course Title: Bioinformatics**

Course Outcomes:

- Learn the basics of bioinformatics
- Understand the process of analyzing nucleic acid and protein data using different tools
- Gain knowledge about gene expression profiling and microarrays.
- Analyze sequence data and interpret results of their study using different software packages.
- Perform text and sequence-based searches and analyze and discuss results in light of molecular biological knowledge.

Course Code: PSBT404	**Course Title: Biostatistics**

Course outcomes:

- Analyze and interpret large set of numerical survey or research data.
- Learn selection and application of suitable statistical test to reveal significance / confidence level in data interpretation.
- Reveal the distribution pattern in collected data.
- Find out correlation between variables in any data

14. M.Sc. Chemistry

Name of Department: Chemistry

Class: M.Sc. Part- I

Program Outcomes:

- The purpose of the postgraduate chemistry program is provide the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry'

Program Specific Outcomes:

- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Physical, Inorganic, Organic and Analytical chemistry
- Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problem.
- Students will be able to design and carry out scientific experiment as well as accurate record and analyze the results of such experiment.
- Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats.
- Students will able to explore new areas of research in chemistry
- Students will be able to explain why chemistry is an integral activity for addressing social, economic and environmental problems.

SEMESTER - I

Course Code: PSCH101	**Course Title: PHYSICAL CHEMISTRY**

Course Outcomes:
The students would be able :

- Understand the concept of thermodynamics, different thermodynamic quantities such as heat and work how they are measured, related or transformed from one to other
- Chemical Dynamics ; how reaction rates are measured and represented in rate laws and kinetics of polymerization
- Limitation of classical mechanics, also understand the differences between classical and quantum mechanics.
- Understand the concept of electrochemistry, explain the Debye-Huckel theory of activity coefficient

Course Code: PSCH102	**Course Title: INORGANIC CHEMISTRY**

Course outcomes:
The students would be able :

- **U**nderstand the bonding including weak force of attraction i.e. van der Wall's Force, ion-dipole, dipole-dipole and London forces
- concept of VBT and MOT
- Group theory; explain the symmetry and symmetry operations, representation of groups and applications of group theory.
- Understand the concept of solid state chemistry; structure and preparation and applications.
- Understand the tools behind the nanomaterials.
- The bonding models, structure, reactivity and application of coordination complexes.

Course Code: PSCH103	**Course Title: ORGANIC CHEMISTRY**

Course outcomes:
The students would be able :

- Understand the concept of physical organic chemistry; thermodynamic and kinetics requirement of reaction, determine the mechanism of reaction and concept of acid and bases.
- Understand the aliphatic and aromatic nucleophile substitution reactions.

- Understand the Huckel rule for aromaticity.
- Understand the concept of Stereochemistry; concept of chirality, molecules with two or three chiral centers, axial and planner chirality, prochirality
- Understand the concept of oxidation and reduction, oxidizing and reducing agents.

Course Code: PSCH104	**Course Title: ANALYTICAL CHEMISTRY**

Course Outcomes:

The students would be able :

- Understand the concept of errors and types of error, some term involve in analytical method.
- Know the safety in laboratories and good laboratory practices.
- The principle and application of modern instrumentation.
- Formulation and solving the problems in analytical chemistry.
- Study the instrumentation and applications of IR spectroscopy.

Class: M.Sc. Part 1

Program Outcomes:

Specific core discipline knowledge

- Students can recall details and information about the various reactions, spectroscopic techniques, instrumentation, chromatography, inorganic compounds in various biological processes.

Laboratory skills

- Students can synthesize different complexes effectively using various organic reactions.

Characterization and research skills

- Students can characterize complexes with the help of various spectroscopic techniques.
- Students can apply Schrödinger wave equation, Huckel molecular orbital theory to different molecules.

Program Specific Outcomes:

- To recognize and identify various instrumentation techniques.
- To understand the basics of spectroscopy and its applications.
- To understand structure and bonding of various organometallic chemistry of transition metals.
- To provide knowledge about various biological oxygen carriers, nitrogen fixation, copper containing enzymes, metal ion transport and storage and their importance in sustainable development.
- To understand medicinal applications of cis-platin and related compounds.
- To be able to deal with all heavy metals and its toxicity, interaction of radiation in context with the environment.
- To explain how different octahedral and square planar complexes undergo reactions.
- To understand various organic reactions and its rearrangements.
- To be able to apply Schrödinger wave equation, Huckel molecular orbital theory to different molecules.
- To acquire recently published knowledge in electro analytical methods, NMR and Mass spectroscopy, X-ray spectroscopy, Mass spectrometry and radioanalytical methods.

SEMESTER II

Course Code: PSCH 201	**Course Title: Physical Chemistry**

Course Outcomes:
The students would be able :

- To understand the concept of fugacity of real gases, its determination, equillbrium constant, Gibbs energy, entropy, chemical potential of real solutions, thermodynamics of surfaces and bioenergetics.
- To understand the basics of Schrödinger wave equation and its applications, hydrogen atom, introduction of four quantum numbers and Huckel molecular orbital theory.
- To learn the chemical kinetics of reactions in the solid state and the reactions catalyzed by enzymes, inhibition of enzyme action and elementary reactions in solution.
- To understand the two and three component system, introduction of phase rule, structures and defects in solids.

Course Code: PSCH 202	**Course Title: Inorganic Chemistry**

Course outcomes:
The students would be able :

- To acquire knowledge of different inorganic reaction mechanisms and stereochemistry of octahedral and square planar complexes.
- To understand the preparation, properties, structure and bonding of various organometallic chemistry of transition metals.
- To know about heavy metals and its toxicity, interaction of radiation in context with the environment.
- To study various biological oxygen carriers, nitrogen fixation, copper containing enzymes, metal ion transport and storage and medicinal applications of cis-platin and related compounds.

Course Code: PSCH 203	**Course Title: Organic Chemistry**

Course outcomes:
The students would be able :

- To understand generation of carbanion, dianion and alkylation of aldehydes, ketones, esters, amides and nitriles, nitrogen analogs of enols and enolates and reaction of carbon nucleophiles with carbonyl groups.
- To acquire knowledge about various reactions and its rearrangements.
- To learn introduction to molecular orbital theory for organic chemistry,
- To get exposure to principles and applications of ultraviolet, infrared, NMR and Mass spectroscopy.

Course Code: PSCH 204	**Course Title: Analytical Chemistry**

Course outcomes:
The students would be able :

- To get exposure to the basic concepts, instrumentation and techniques of chromatography (Gas and High Performance Liquid Chromatography).
- To acquire knowledge about various electro analytical methods (electrogravimetry, coulometry, ion selective potentiometery).
- To gain knowledge about the principle, instrumentation and applications of latest surface analytical techniques.
- To learn principles and applications of X-ray spectroscopy, Mass spectrometry and radioanalytical methods.

Class: M.Sc - II (Organic chemistry)

Program Outcomes:

Specific core discipline knowledge

- Students can understand the concepts of Aromatic Substitution Reactions, i.e, electrophilic, nucleophilic, radical.
- Students can gain insights into aliphatic nucleophilic substitution reactions
- Derive knowledge about spectroscopic techniques UV, IR,NMR and Mass
- Students can learn about drug discovery, and the methods employed for drug development
- To study the chemistry of natural products, their synthesis and properties.

Communication Skills

- Students can communicate effectively using oral and written communication skills

Problem solving and research skills

Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

- To understand the Mechanistic aspects in nucleophilic and electrophilic substitution.
- To understand the reaction conditions, products formation and mechanisms of some named reactions.
- To understand the mechanisms of addition reactions of C=C and C=O bonds and elimination reactions
- To understand drug designing and development, their SAR and QSAR
- To understand the mode of action of different drugs
- To understand the role of drugs to inhibit the particular enzymes and treatment of disease
- To understand the concepts of green chemistry and the applications of green chemistry for sustainable development
- To understand photochemistry and photophysical principles with identification and characterization of transient intermediates by ultrafast modern techniques.
- To be able to develop logical thinking and apply the same for the understanding of underlining principles, proposing mechanism.
- To understand spectroscopy techniques such as UV, IR, NMR and Mass Spectroscopy for problem solving , identification of organic compounds and elucidating their structures.

SEMESTER III

Course Code: PSCHO301	**Course Title: Theoretical Organic Chemistry**

Course Outcomes:

The students would be able :

- To analyze the various features of aliphatic nucleophilc substitution and to gain knowledge on ambident nucleophiles, neighbouring group participation.
- To Interpret anchimeric effect shown by sigma, pi bonds participation in acyclic , bi- cyclic systems
- To gain insights in to generation, stability and reactions of organic intermediates
- To gain knowledge on ambident nucleophiles, neighbouring group participation
- To acquire Knowledge on Pericyclic reactions, Symmetry properties and Frontier molecular orbitals.
- To describe Electrocyclic reactions mechanism ,and the stereo aspects

- To gain knowledge on cycloaddition reactions mechanism and the stereo aspects different types of reactions.
- To describe sigmatropic reactions, mechanism and the stereo aspects
- To understand point group based on symmetry groups
- To understand the stereochemistry of eight to ten membered rings, anancomeric systems.
- To Study the photochemistry of Carbonyl compounds, alkenes, dienes,polyenes and aromatic compounds.
- To Study photo rearrangement Barton reaction, application of photochemical reaction.
- To gain knowledge about singlet oxygen and photo-oxygenation reactions.

Course Code: PSCHO302	**Course Title: Synthetic Organic Chemistry - I**

Course outcomes:
The students would be able :

- To gain insight into multicomponent reactions, name reactions, domino reactions such as Mitsonubu reaction, Yamaguchi esterification, Hantszsch synthesis, Nazerov cyclization.
- To understand the generation, stability, reactivity and structures of free radicals, persistent and charged radicals.
- To study radicals in synthesis, radical chain reactions, radical halogenation reactions
- Tp study the inter and intra molecular C-C bond formation via mercuric hydride, tin hydride, thiol donors and cleavage of C-C bond formation in aromatics
- To study the generation and applications of enamines in organic synthesis and reactivity of enamines and enolates
- To study the preparation and synthetic application of nitrogen , sulfur and phosphorus ylides with their stereochemical aspects
- To study α-C-H functionalization by nitro, sulfoxide, sulfone and phosphonate groups
- To study Bamford- Steven's reaction, Julia olefination, Stevens rearrangement
- To gain insights into use of metals and non-metals in organic synthesis and mechanism of oxymercuration and demercuration of alkenes
- To study mechanism and regiochemistry of hydroboration of alkenes and alkynes using chiral boron reagents, oxoazaborolidine , 9-BBN hydroboration.
- To study the organosilicons , preparation and important bond forming reations of alkyl silanes, alkenyl silanes, and allyl silanes
- To study organotin compounds and selenium used in organic synthesis

Course Code: PSCHO303	**Course Title: Natural Products and Spectroscopy**

Course outcomes:
The students would be able :

- To study carbohydrates, structure elucidation of lactose and D-glucosamine.\
- To gain insights into structural features and applications of inositol, starch, cellulose, chitin and heparin
- To study the general structural features, occurrence, biological importance and applications of carotenoids, anthocyanins, quinones, flavones, pterins and porphyrins

- To understand the structure elucidation of beta carotene, and synthesis of ubiquitone
- To study insect pheromones, their general features and importance
- To study the synthesis of Taxol, Juvabione, Corey synthesis of Longifoline and Griseofulvine.
- To understand classification, general classification of Prostaglandins and lipids
- To study the Insect and Plant growth regulators, their structural features and applications
- To study proton NMR spectroscopy and the spin system notations for A_2, AB, AX, AB_2, AMX spin systems
- To understand long range coupling in aromatic and heteroaromatic systems
- To study ^{13}C-NMR spectroscopy and to calculated the shifts of aromatic carbons, heteronuclear coupling of carbon to ^{19}F and ^{31}P.
- Solve spectral problems based upon UV, IR, NMR and Mass Spectroscopy
- Gain firm knowledge on the advanced spectrometric techniques such as DEPT, NOESY, COSY, HETCOR techniques

Course Code: PSCHOEC-I-304	**Course Title: Drug Discovery, Biogenesis and Green chemistry**

Course Outcomes:

The students would be able :

- To get introduced to drug discovery, design and development
- To understand the procedures in drug design
- Gain insights in terms involved in medicinal chemistry like drug assay and potency and the general factors affecting the bioactivity
- To study discovery without a lead of Penicillin, Librium and Lead discovery including random screening, non – random screening
- Understand functional group modification, structure activity relationships
- To get introduced to Quantitative structure activity relationships studies
- To know the QSAR parameters such as steric effects and the Taft equations
- To get introduced to modern methods of drug design and synthesis
- To understand the concept of drugs and pro-drugs , their functional groups and advantages
- To study the synthesis of Fluconazole, Zidovudine, Diclofenac, Esomeprazole, methotrexate, labetalol and finofibrate
- To study various pathways such as acetate pathway, shikimic acid pathway, Mevalonate pathway and their biosynthesis
- To understand what is green synthesis, basic principles of green synthesis, and the green reagents
- To understand the green catalysts, green solvents, solid state reactions, microwave assisted reactions and ultrasound assisted reactions
- To compare the traditional and green synthesis of ibuprofen, adiopic acid, 4-aminodiphenylamine, p-bromtoluene, benzimidazole
- To understand nanocatalysts , their types , advantages and disadvantages of Nanocatalysts

Class: M.Sc. Part II Organic Chemistry

Program Outcomes:

Core discipline knowledge

- Development of in-depth knowledge of theoretical organic chemistry, synthetic organic chemistry, Natural products, Heterocyclic chemistry.

Career building and growth

- Enhancement of scope for career growth in industry, academia and Government sector.
- Experience of paper presentation at seminar/conference.
- Higher proficiency in techno commercial aspects with the possibility of entrepreneurship in the field.

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context.

Program Specific Outcomes:

- Laboratory exposure and orientation towards conducting practical experiments.
- Synthesis of various class of compounds having application as intermediates in synthesis of drugs, Heterocyclic compounds, Natural products.
- Spectral data analysis.
- Experience of project work including mini dissertation and research.

SEMESTER IV

Course Code: PSCHO401	**Course Title: Theoretical organic chemistry-II**

Course Outcomes:

The students would be able :

- To study in detail the following topics of theoretical organic chemistry
  - **Physical organic chemistry-** Linear free energy relationship in determination of organic reaction mechanism, Hammett equation, Yukawa-Tsuno equation**,** Taft model, Okamoto-Brown equation, Swain-Scott equation, Edward and Ritchie correlations, Grunwald-Winstein equation, Dimroth's ET parameter, Solvatochromism Zscale.
  - **Supramolecular chemistry-**
    - Principles of molecular associations and organizations as exemplified in biological macromolecules like nucleic acids, proteins and enzymes.
    - Synthetic molecular receptors: receptors with molecular cleft, molecular tweezers, receptors with multiple hydrogen sites.
    - Structures and properties of crown ethers, cryptands, cyclophanes, calixarenes, rotaxanes and cyclodextrins.
  - **Stereochemistry- II-**
    - Mechanism of racemisation, methods of resolution.
    - Determination of enantiomer and diastereomer composition by enzymatic method, chromatographic methods, methods based on NMR spectroscopy.
    - Cotton effect and its applications.
  - **Asymmetric synthesis-**
    - Principles of asymmetric synthesis.
    - Synthesis of L-DOPA [Knowles's Mosanto process].
    - Asymmetric reactions with mechanism.

Course Code: PSCHO402	Course Title: Synthetic organic chemistry-II

Course outcomes:
The students would be able :

- To study in detail the following topics of synthetic organic chemistry
  - **Designing Organic Synthesis-I-**
    - Protection and deprotection of various functional groups.
    - Concept of umpolung.
    - Introduction to Retrosynthetic analysis and synthetic planning.
  - **Designing Organic Synthesis-II-** One and two group C-C Disconnections of compounds.
  - **Electro-organic chemistry and Selected methods of Organic synthesis-**
    - Electro-organic chemistry.
    - Electrode potential, cell parameters, electrolyte, working electrode, choice of solvents, supporting electrolytes.
    - Cathodic reduction.
    - Anodic oxidation.
    - Applications of crown ethers, cryptands, micelles, cyclodextrins, catenanes in organic synthesis.
    - Applications of Organocatalysts like Proline, Imidazolidinone.
  - **Transition and rare earth metals in organic synthesis-**
    - Introduction to basic concepts like 18 electron rule, bonding in transition metal complexes, C-H activation, oxidative addition, reductive elimination, migratory insertion.
    - Reactions with Palladium in organic synthesis.
    - Olefin metathesis using Grubb's catalyst.
    - Application of Ni, Co, Fe, Rh, and Cr carbonyls, samarium iodide, Ce(IV) in organic synthesis.

Course Code: PSCHO403	Course Title: Natural products and heterocyclic chemistry

Course outcomes:
The students would be able :

- To study in detail the following topics of Natural products and Heterocyclic chemistry
  - **Natural products-III-**
    - Steroids: General structure, classification, occurrence, biological role, important structural and stereochemical features of various classes.
    - Synthesis of 16-DPA and synthesis of various sex hormones from 16-DPA.
  - **Natural products-IV-**
    - Vitamins: Classification, sources and biological importance of vitamin B1,B2, B6, folic acid, B12, C, D1, E (α-tocopherol), K1, K2, H (β- biotin).
    - Antibiotics: Classification on the basis of activity. Structure elucidation, spectral data of penicillin-G.
    - Naturally occurring insecticides: Sources, structure and biological properties.
    - Terpenoids: Occurrence, classification.
  - **Heterocyclic compounds-I-**

- Heterocyclic compounds: Introduction, classification.
- Nomenclature of monocyclic (3-6 membered) compounds by common, systematic (Hantzsch-Widman) and replacement nomenclature.
- Structure, reactivity, synthesis and reactions of various monocyclic heterocycles.

- **Heterocyclic compounds-II-**
  - Nomenclature of bicyclic/tricyclic (5-6 membered) compounds, fused heterocycles (up to three hetero atoms) by common, systematic (Hantzsch-Widman) and replacement nomenclature.
  - Nucleophilic ring opening reactions of three and four-membered heterocyclic compounds.
  - Structure, reactivity, synthesis and reactions of bicyclic/tricyclic, fused heterocycles.

Course Code: PSCHOOC-II 404	**Course Title: Research Methodology**

Course Outcomes:

The students would be able :

- To study in detail the systematic techniques of conducting scientific research.
  - **Sources of literature-**
    - Print: Primary, Secondary and Tertiary sources.
    - Journals: Journal abbreviations, Abstracts- Introduction to Chemical Abstracts and Beilstein, Formula Index, Author Index, Substance Index, Subject Index, current titles, reviews, monographs, dictionaries, text-books, current contents.
    - Digital: Web sources, E-journals, Journal access, Table of Contents alerts, Hot articles, Citation Index, Impact factor, H-index, E-consortium, UGC infonet, E-books, Internet discussion groups and communities, Blogs, preprint servers, Search engines, Scirus, Google Scholar, ChemIndustry, Wiki-databases, ChemSpider, Science Direct, SciFinder, Scopus.
  - **Data analysis-**
    - The Investigative Approach: Making and recording Measurements, SI units and their use, Scientific methods and design of experiments.
    - Analysis and Presentation of Data.
  - **Methods of scientific research and writing-**
    - Reporting practical and project work.
    - Writing literature surveys and reviews.
    - Organizing a poster display.
    - Giving an oral presentation.
    - Writing Scientific Papers: Justification for scientific contributions, bibliography, description of methods, conclusions, writing ethics, avoiding plagiarism.
  - **Chemical safety and ethical handling of chemicals-**
    - Safe working procedure and protective environment.
    - Protective apparel.
    - First aid.
    - Laboratory ventilation.
    - Safe storage and use of chemicals.

- Procedure for working with substances that pose hazards, flammable or explosive hazards.
- Procedures for working with gases at pressures above or below atmospheric pressure.
- Disposal of waste chemicals, recovery, recycling and reuse of laboratory chemicals.

Class: MSC II (Analytical chemistry)

Program Outcomes:

- The students after completing the course would have fortified their ability in the field of chemical analysis by their exposure to the sophisticated analytical instruments.
- The advanced and updated syllabi of this course will equip the students to face the employment challenges and instill confidence to turn into entrepreneur.
- curriculum of this course kindle the students enough interest to step into the research career.
- **Communication skills**
  Students can communicate effectively using oral and written communication skills

Problem solving and research skills

Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context.

Program Specific Outcomes:

- The students will improve their competencies on par with their counterparts in premier institutions across the nation.
- The students will become technically sound to handle the advance analytical instruments.
- The students will intensify their desire to contribute to the nation in the capacity of chemist or as innovator by taking up research career afterwards.
- The students will become well versed in the all types of advance and complicated Miscellaneous techniques, Chromatographic Techniques , Spectral methods, Electroanalytical methods.
- Students can recall details and information about Quality in Analytical Chemistry , Air pollution , Potable Wate, types of pollution , Industrial materials , Pharmaceutical analysis , analysis of Drugs, Forensic science and Cosmetics , Cosmetic analysis .

SEMESTER III

Course Code: PSCHA301	**Course Title: QUALITY IN ANALYTICAL CHEMISTRY**

Course Outcomes:

The students would be able :

- To understand the Sampling process, types of sample, sampling plan, quality of sample, Sampling of raw materials, intermediates and finished products. Sample preparations – dissolution technology and decomposition, storage of samples.
- To provide knowledge about Pre-treatment of samples such as soil, food and cosmetics, Selection of the Method, sources of methods, factors to consider when selecting a method, performance criteria for methods used.

- To be able to carry out evaluation of uncertainty, putting uncertainty to use, interpretation of results and improving the quality of results.
- To study Signal to noise ratio, sources of noise in instrumental analysis. Signal to noise enhancement, hardware devices for noise reduction, software methods for noise reduction.
- To gain knowledge about drug acts, drug rules,, concept of regulatory affairs in pharmaceuticals, review of GLP and GMP and their regulations for analytical labs, roles and responsibilities of personnel, appropriate design and placement of laboratory equipment, requirements for maintenance and calibration.
- To learn about Ion exchange equilibria, breakthrough capacity, inorganic ion exchangers, synthetic ion exchangers, chelating resins and their applications for separation of inorganic and organic compounds.
- To understand principle of Ion chromatography, instrumentation with special reference to separation and suppressor columns, applications.
- To gain knowledge of Theory of Exclusion chromatography, instrumentation and applications of gel permeation chromatography, and able to determine the molecular weight of polymers.
- To learn Theory of Supercritical fluid Chromatography, concept of critical state of matter and supercritical state, types of supercritical fluids, instrumentation, applications to environmental, food, pharmaceuticals and polymeric analysis.
- To understand about principle of Affinity Chromatography, instrumentation and applications and Optimum pressure liquid chromatography (OPLC).

Course Code: PSCHA302	**Course Title: Advance Instrumental Techniques**

Course outcomes:
The students would be able :

- **T**o know about Surface Analytical Technique, Preparation of the surface, difficulties involved in the surface analysis.
- To gain knowledge of Principle, instrumentation and applications of Secondary Ion mass spectroscopy, Particle-Induced X-Ray Emission , Low-Energy Ion Scattering and Rutherford Backscattering .
- To learn about Principle, Instrumentation, and Applications of Electron Spin Resonance Spectroscopy (ESR) , Mossbauer's Spectroscopy , Atomic Emission Spectroscopy- based on plasma and electrical discharge sources .
- To acquire knowledge about Advanced Electroanalytical Techniques such as Polarography, voltammetry, Chronoamperomertry, Chronopotentiometry and to get an idea about electrodes.
- To understand Principle, Instrumentation and Applications of Chemiluminesescence techniques ,Chirooptical Methods , Photoacoustic spectroscopy , Photoacoustic spectroscopy , Spectroelectrochemistry.

Course Code: PSCHA303	**Course Title: Bioanalytical Chemistry and Food Analysis**

Course outcomes:
The students would be able :

- To know about Bioanalytical chemistry such as Body Fluids,Composition of body fluids and detection of abnormal levels of glucose, creatinine, uric acid in blood, protein, ketone bodies and bilirubin in urine leading to diagnosis of diseases.
- To understand Physiological and nutritional significance of vitamins and minerals.
- To get knowledge of Analytical techniques (including microbiological techniques) for vitamins.
- To Provide knowledge about processes of immune response, antigen-antibody reactions, precipitation reactions, radio, enzyme and fluoro-immuno assays.
- To learn about Biological values and estimation of enzymes, carbohydrates, proteins, essential amino acids and lipids.
- To study Fuel value of food and importance of food nutrients .
- To get General idea about Food processing and preservation, Chemical preservatives, fortifying agents, emulsifiers, texturizing agents, flavours, colours, artificial sweeteners, enzymes.
- To get exposure to Analysis of food products for flavoring agents and colour.
- To be able to understand Food Contaminants– Trace metals and pesticide residues, contaminants from industrial wastes, toxicants formed during food processing, , veterinary drug residues and melamine contaminants.
- To know about Food packaging and industrial requirements.
- To gain knowledge about Processing and Quality requirements of Milk and milk products, vegetables and fruits, meat and meat product.
- To be able to carry out Analysis of Milk. and Analysis of Oils and Fats.
- To understand the concept of rancidity and antioxidants, volatile oils and fixed oils and to be able to deal with Analysis of spices.

Course Code: PSCHAEC-II 304	**Course Title: Pharmaceutical and Organic Analysis**

Course Outcomes:

The students would be able :

- To get an General idea regarding the Pharmaceutical Industry, classification of drugs, pharmaceutical formulations, classification of dosage forms.
- To understand about Role of FDA in pharmaceutical industries.
- To know about Sources of impurities in pharmaceutical products and raw materials.
- To gain knowledge regarding Standardization of finished products and their characteristics, official methods of quality control.
- To be able to understand about Analysis of compounds based on functional groups, instrumental methods for analysis of drugs, assays involving chromatographic separations, proximate assays, assays of enzyme containing substances, biological and microbiological assays and tests.
- To be able know about Limit tests, solubility tests, disintegration tests, stability studies, impurity profile of drugs, bioequivalence and bioavailability studies. Polymers in pharmaceuticals and novel drug delivery systems.

- To get a general idea about Analytical Chemistry in Forensic Science and to be able to know about analysis of blood, DNA profiling, Hair analysis, Alcohol in body fluids, systematic drug identification.
- To be able to isolate, identify and determine of Analytical Toxicology such as Narcotics, Stimulants, Depressants, Hallucinogens.
- To gain knowledge about Metabolites of drugs in blood and urine of addicts and also to know about Viscera, stomach wash, vomit and postmortem blood for poisons like cyanide, arsenic, mercury, insecticides and pesticides.
- To learn about Cosmetics and Evaluation of cosmetic materials and additives.
- To know about Formulation and standards and methods of analysis of Deodorants and antiperspirants, Face powder, Hair tonic, Creams and Lotions, Lipsticks.

Class: MSc part 2 analytical chemistry

Program Outcomes:

Specific core discipline knowledge

•Students can recall the understanding and knowledge about separation, separation analysis and standardization of herbal based products, green chemistry and advanced techniques.

•Students can recall the advanced instrumental technique, separation technique, plastic and polymer and metallurgy, research methodology.

Communication skills

Students can communicate effectively using oral and written communication skills

Problem solving and research skills

Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context

Program Specific Outcomes:

• To understand various separation science like filtration, ultrafiltration and reverse osmosis dialysis and electro dialysis

• To gain the knowledge about separation, analysis and standardization of herbal products.

• To understand about green chemistry and plastic and polymers and metallurgy.

•To provide knowledge about environmental factors and natural resources and their importance in sustainable development.

• To understand about the spectral method, thermal methods and hyphenated techniques.

• To develop knowledge about research methodology like print, journals, techniques, information techniques and resource journals and data analysis.

• To understand about o provide knowledge about method of scientific research and writing of scientific papers.

• To learn about chemical safety and ethical handling of chemicals.

SEMESTER - IV

Course Code: PSCHA401	**Course Title: Quality in Analytical chemistry**

Course Outcomes:

The students would be able:

- To study membrane separation processes and applications of solvent extraction in analytical chemistry.
- To study separation, analysis and standardization of herbal products.

• To identify the principle and concept of green chemistry, organic solvents, emerging green techniques, designing greener processes. • To study the electrophoresis, techniques of electrophoresis and introduction to nanotechnology.
Course Code: PSCHA402 — **Course Title: Advanced instrumental techniques**
Course outcomes: The students would be able: • To study the principle, instrumentation and application of NMR spectroscopy. • To acquire knowledge about the principle, instrumentation and application of Mass spectroscopy. • To understand knowledge about Radiochemical and Thermal methods. • To study the concept about hyphenated techniques like GC-MS,ICP-MS etc.
Course Code: PSCHA403 — **Course Title: Selected topics in Analytical chemistry**
Course outcomes: The students would be able: • To understand about the effluent treatment, treatment and disposal of sewage, effluent parameters, permissible limits for metals. • To study about solid waste management: concept of recycle, reuse and recovery. • To acquire knowledge about classification of plastics, impurities present in plastic and impact of plastics on environment, paints and pigments. • To understand the knowledge about metallurgy, alloys and ores, chemical analysis of ores and alloys, techniques of purification.
Course Code: PSCHA404 — **Course Title: Research methodology**
Course Outcomes: The students would be able: • To understand about print, journal and digital, information technology and library resources. • To gain knowledge about data analysis, analysis and presentation data. • To study about methods of scientific research and writing scientific papers. • To acquire knowledge about chemical safety and ethical handling of chemicals

15.M.Sc. Computer Science

Name of Department: Computer Science
Class: M.Sc.(Part 1)
Program Outcomes: In order to give an impetus to research among students, course gives an overview on how to do research in Computer Science.

- Give strong foundation on core Computer Science subjects.
- Expose the student to emerging trends in a gradual and incremental way.
- Offer specialization on a chosen area.
- Create a research temper among students in the whole process.
- Prepare student community for the demands of ICT industry.

Problem solving skills

- Identify, analyse, and synthesize scholarly literature relating to the field of computer science

Program Specific Outcomes:

- Incorporate advanced and most recent trends.
- Identify and nurture research temper among students.
- Offer provision for internship with industry.
- Focus, as far as possible, only on open source software.
- Students focusing on driven research, learning will be more interesting and stimulating.

SEMESTER I

Course Code: PSCS101	**Course Title: Analysis of Algorithms and Researching Computing**

Course Outcomes:

The students would be able :

- To gain knowledge for role of algorithm in computing.
- To understand dynamic programming.
- To learn how to analysis algorithm with complexity
- To learn cryptography, NP completeness.
- To learn various applications of algorithm.
- To understand research process, internet research, Quantitative data analysis, Presentation of research.

Course Code:PSCS102	**Course Title: Advance Networking Concepts**

Course outcomes:

The students would be able :

- To Learn Network Applications like Web, HTTP, FTP and Electronic Mail in the Internet, Domain Name System
- To learn need of virtualization.
- To learn wireless technology, Bluetooth technology.
- To understand wireless sensor networks .
- To gain knowledge of Adhoc networking.
- To learn different applications on different network layer.

Course Code: PSCS103	**Course Title: Advance Database systems**

Course outcomes:
The students would be able :

- To acquire knowledge about how to Execute queries on these fragments that will Demonstrate distributed databases environment.
- To learn how to create temporal database
- To learn how to create XML database
- To understand multimedia database systems.

Course Code: PSCS104	**Course Title: Robotics and Artificial Intelligence**

Course outcomes:
The students would be able :

- To get the technique to create robot.
- To learn sensors in robotics.
- To gain knowledge about sonar, laser and cameras
- To learn navigation and path in robotics
- To learn use of algorithms in artificial intelligence.

SEMESTER II

Course Code: PSCS201	**Course Title: Advanced Operating Systems**

Course Outcomes:
The students would be able :

- To understand Linux Operating Systems booting process GRUB-I, GRUB-II. Processes, Inter process Communication, Scheduling.
- To study Memory management, virtual memory in Linux Page replacement algorithms, Design issues for paging systems, segmentation.
- To understand Input/ Output in Linux.
- To gain knowledge in Android Operating System, Android Application – Activities and Activity Lifecycle, applications such as SMS client app, Dialer, Web browser, Contact manager.

Course Code: PSCS202	**Course Title: Design and implementation of Modern Compilers**

Course outcomes:
The students would be able :

- To understand Compiler, Regular Expressions, Finite Automata , Context Free Grammar**.**
- To gain knowledge in Automatic Construction of Efficient Parsers-An automatic parser generator, Implementation of LR parsing tables, Constructing LALR sets of items.
- To learn Advanced syntax analysis and basic semantic analysis -Syntax-directed translation schemes, Tiger Compiler.
- To study Dataflow analysis and loop optimization -Dominators, Reducible flow graphs, Depth-first search, Loop-invariant computations, Induction variable elimination, Some other loop optimizations

Course Code: PSCS203	Course Title: Cyber and Information Security

Course outcomes:
The students would be able :

- To study Computer Security-Different Attacks, Types of Computer Criminals. Operating System Security. Memory address protection: Fence, Relocation, Base/Bound Registers, Tagged Architecture, Segmentation, Paging, Directory, access control list, Database Security.
- To study Network Security-Different types of network layer attacks, Firewall– IDS,IPS and its types . Web Server Security: SSL/TLS Basic Protocol-computing the keys- client authentication-PKI as deployed by SSL Attacks fixed in v3- Exportability-Encoding-Secure Electronic Transaction (SET), Kerberos
- To understand Cloud Security- Virtualization System Security Issues ESX file system security-storage considerations, backup and recovery- Virtualization System Vulnerabilities, security management standards- SaaS, PaaS, IaaS availability management- access control- Data security and storage in cloud
- To learn Mobile Security: Overview of Wireless Networks, Scanning and Enumerating 802.11 Networks, Attacking 802.11 Networks, Bluetooth Scanning and Reconnaissance, Bluetooth Eavesdropping, Attacking & Exploiting Bluetooth, Zigbee Security & Attacks.

Course Code: PSCS204	Course Title: Business Intelligence and Big Data Analytics

Course Outcomes:
The students would be able :

- To understand Business Intelligence, KDD model in detail.
- To study Business Data Warehouse -Data Warehouse model- Enterprise warehouse; Data Marts; Virtual warehouse. Populating business Data Warehousing: data integration and extract, transform, load (ETL).
- To learn Designing Business Data Warehouse-OLTP and OLAP systems, Designing business information warehouse: Principles of dimensional modeling, Data cubes, Data cube operations, data cube schemas.
- To gain knowledge in data mining-Data mining definitions and process. Association Analysis, General issues, Frequent Item sets: Apriori Algorithm, Data structures: Hash tree and FP tree.

Name of Department: Computer Science

Class: M.sc. Part II

Program Outcomes:

Specific core discipline knowledge

- Core part of course is to build strong army of building computer science researchers.
- Communicate computer science concepts, designs, and solutions effectively and professionally.
- Apply knowledge of computing to produce effective designs and solutions for specific problems.
- Student can research on cutting edge and emerging trends with lots of practical experience that will make the learning more interesting and stimulating.

- Use software development tools, software systems, and modern computing platforms.
- This program could provide well trained professionals for the technology and allied industries to meet the well trained manpower requirements.
- This program will bridge the gap between the industry and academics, and hence forming efficiently skilled computer professionals.

Communication skills

- Students can communicate effectively by using ICT.

Problem solving skills

- Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, Mobile applications.
- Identify, analyse, and synthesize scholarly literature relating to the field of computer science

Program Specific Outcomes:

- Create, select, and apply appropriate techniques, resources, and modern computer science and IT tools including prediction and modeling to complex activities with an understanding of the limitations.
- Apply problem-solving skills and the knowledge of computer science to solve real world problems.
- Understand how technological advances impact society and the social, legal, ethical and cultural of computer technology and their usage.
- Explore, query and summarize business data.
- Apply descriptive statistical measures for business decision.
- Perform progression analysis and forecasting techniques.
- Understand human–computer interaction (HCI) models.
- Analyse and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments.
- Understand and analyse social networks, social actors and their behavior.
- Explore the field of cyber security, understands the legal issues related to cyber crime.
- Perform forensic, investigation related to information, computer, mobile, network.
- Understand and solve real world and critical issues by simulating 2D and 3D models.
- Develop software solution by use learned technologies.
- Identify the working skills, industry standards, learning to do team work, achieve goals.

SEMESTER: III

Course Code: PSCS301	**Course Title: Ubiquitous Computing**

Course Outcomes:

The students would be able :

- Describe typical human–computer interaction (HCI)models, styles, and various historic HCI paradigms.
- Apply an interactive design process and universal design principles to designing HCI systems.
- Describe and use HCI design principles, standards and guidelines.
- Analyse and identify user models, user support, socioorganizational issues, and stakeholder requirements of HCI systems.
- Discuss tasks and dialogs of relevant HCI systems based on task analysis and dialog design.

- Analyse and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments.

Course Code: PSCS302	**Course Title: Social Network Analysis**

Course outcomes:
The students would be able :

- Understand a broad range of network concepts and theories.
- Appreciate how network analysis can contribute to increasing knowledge about diverse aspects of society.
- Analyse social network data using various software packages.
- critically examine the ways in which networks can contribute to the explanation of
- social, political, economic and cultural phenomena.
- use statistical software to visualize networks and analyze their properties,
- connecting these to network concepts and theories.
- explain principles underlying statistical models for social networks.

Course Code: PSCS3032	**Course Title: Cyber and Information Security- II (Cyber Forensics)**

Course outcomes:
The students would be able :

- Explain how to conduct a digital forensics investigation, including the concept of the chain of evidence.
- Report findings from digital forensic investigations.
- Perform recovery of digital evidence from various digital devices using a variety of software utilities
- Utilize a systematic approach to computer investigations.
- Utilize various forensic tools to collect digital evidence.
- Explain guidelines for investigation reporting.
- Explain anti-forensic methods/tools and their use
- indentifying of Data Interception in GSM, Mobile Phone Tricks, SMS Security, Mobile Forensic.

Course Code: PSCS3033	**Course Title: Business Intelligence and Big Data Analytics –II**

Course Outcomes:
The students would be able :

- Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.
- Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NoSQL in big data analytics.
- Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
- Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications.
- Explain data mining, neural networks, support vector machines, text analytics, text mining, sentiment analysis, web mining, web analytics, social analytics, social network analysis .

SEMESTER IV	
Course Code: PSCS 401	**Course Title: Simulation and Modeling**
Course Outcomes: The students would be able : ● To solves real-world problems safely and efficiently. ● Understand the process of representing a model which includes its construction and working which helps the analyst predict the effect of changes to the system. ● Able to address business challenges using simulation. ● To capture many more details than an analytical model, providing increased accuracy and more precise forecasting. ● Design model using animation in 2D/3D, allowing concepts and ideas to be more easily verified, communicated, and understood. ● Provide valuable solutions by giving clear insights into complex systems.	
Course Code: PSCS 4022	**Course Title: Cyber and Information Security- II** **(Cryptography and Crypt Analysis)**
Course outcomes: The students would be able : ● Able to learn number theory that would implement different algorithm. ● Understand the need of cryptanalysis. ● Identify and classify various of attacks ● Encrypt and decrypt messages using block chippers, substitution ciphers and sign. ● Create digital signature using various algorithms. ● Describe web security, intruders, viruses and fire walls.	
Course Code: PSCSP8	**Course Title: Internship with industry**
Course outcomes: The students would be able : ● Capability to acquire and apply fundamental principles of engineering. ● Become master in specialized technology ● Become updated with all the latest changes in technological world. ● Ability to communicate efficiently. ● Ability to be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills. ● Ability to identify, formulate and model problems and find engineering solution based on a systems approach. ● Capability and enthusiasm for self-improvement through continuous professional development and life-long learning	
Course Code: PSCSP9	**Course Title: Project Implementation**
Course Outcomes: The students would be able : ● To practice software analysis and design techniques ● To develop a functional application based on the software design.	

- To apply coding, debugging and testing tools to enhance the quality of the software.
- To construct new software system based on the theory and practice gained through this exercise.
- To demonstrate the knowledge, skills and attitudes of a professional engineer.
- To prepare to accept and meet challenges in the real world, mirroring what professionals do every day.

16.M.Sc. Environmental Science

Name of Department: Botany

Class: MSC Environmental Science

Program Outcomes:

- To specialize students in different areas like Biodiversity, conservation, ecology, pollution control technology and environmental chemistry.
- To prepare students with the latest knowledge about Impact Assessments.
- To prepare students with the strong knowledge about Environmental Sciences so that they can be eligible for various positions in educational institution, Industry, governmental and non-governmental organizations.
- To make the students ready for research and promoting them for higher studies.

Program Specific Outcomes:

- Students will be able to understand and gain knowledge about the impacts of development on ecosystem.
- Students will have a better understanding aspect on values and conservation of biodiversity.
- Students get involved in companies, consultancies, NGOs, teaching and research and some may go for higher education
- Student will gain knowledge on concepts and principles of EIA and EIA notification, 2006.
- Student will gain knowledge about various tools involved in environmental management.
- Student will be able to understand Environmental management systems and its significance.

SEMESTER - I

Course Code: Paper I	Course Title: Ecology and Ecosystem

Course Objective

- To understand the principle and scope of ecology
- To study the concept of Biosphere
- To read and analyze organization of Ecological system
- To understand energy and ecological succession.

Course Outcomes:

The students would be able :

- Students will be able to understand different types of ecology and types of interactions in ecosystem.

Course Code: Paper II	Course Title: Biodiversity

Course Objective

- To learn about biodiversity concept, components, biodiversity, evaluation, convention, acts and conservation.
- To understand the aspects on biodiversity and evaluation.
- To study the biodiversity convention and biodiversity act.
- To understand the importance of biodiversity conservation.

Course Outcomes

- Students will be able to understand the status related to importance of biodiversity and its conservation.

Course Code: Paper III	Course Title: Environment and Natural Resources

Course Objective

- To realize and understand relationships between man, earth, environment, mass and energy transfer.
- To contribute to the sustainable development of ecosystem by which humans could use natural and energy resources.

Course Outcomes

- Students will be able to understand overall concept and role of an individual in conservation of Natural Resources

Course Code: Paper IV	**Course Title: Environmental Pollution**

Course Objective

- To learn about types of environmental pollution, its effects and consequences.
- To convey the students regarding improvement in the quality of the environment.

Course Outcomes

- Students will be able to acquire knowledge about various sources and causes of pollution.

SEMESTER - II

Course Code: Paper I	**Course Title: Environmental Monitoring and Assessment**

Course Objective

- To know about deterioration of environmental quality with reference to anthropogenic quality, need of environmental impact assessment, remote sensing/GIS and its applications in environmental monitoring.

Course Outcomes

- Students will be able to understand the importance of environmental monitoring.
- Students will be able to identify the components on an aerial photograph.
- Students can understand the principles and applications of Remote sensing and GIS

Course Code: Paper II	**Course Title: Pollution Control Technology**

Course Objective

- To understand about pollution control technologies and devices.

Course Outcomes

- Student will understand about various steps involved in treatment of drinking water.
- Student can gain knowledge about pollution control technologies and methods to control pollution.

Course Code: Paper III	**Course Title: Green Technology**

Course Objective

- To know about concept and tools of green chemistry.
- To understand green synthetic methods, design, green nanotechnology and its applications.

Course Outcomes

- Student can understand about the concept, principle and tools of green technology.
- Student will be able to understand Nano-materials, its uses and its effects on the ecosystem

Course Code: Paper IV	**Course Title: Environmental Policies and Regulations**

Course Objectives

- To study the evolution of environmental policy, environmental movements in India, International environmental treaties and conventions.
- To understand the objectives and provisions of Acts and Rules

Course Outcomes

- The student can think about on major environmental acts and regulations.
- The student can gain knowledge on environmental movements in India and international agreements.

SEMESTER III

Course Code: Paper I	**Course Title: Advanced Pollution Control Technology**

Course Objectives

- To orient the students about the methods to control and prevent pollution and also to reduce the generation of toxic substances.

Course Outcomes

- Student will be able to understand water and waste water Pollution Control aspects.
- Student can gain knowledge about air pollution control techniques.
- Student will be able to understand the concept of Hazardous, Radioactive, Biomedical and Electronic waste management

Course Code: Paper II	Course Title: Instrumentation and Biostatistics

Course Objectives

- To understand the application of instrumentation and biostatistics to a extensive range in the subject of environment.

Course Outcomes

- Student will be able to gain knowledge about environmental monitoring, instrumental methods used in environmental analysis.
- Students will be able to understand about Statistical aspects.

Course Code: Paper III	Course Title: Environmental Toxicology

Course Objective

- To become familiar with the basic concepts of eco-toxicology, including aspects of exposures and toxicity of chemicals.

Course Outcomes

- At the time of completion of the unit a student will be able to understand the fundamental concepts of Eco-toxicology and pressure of ecological factors on the effect of toxicity.
- Student can understand about the toxic substances.
- Student can gain information about dose response relationship and principles of toxicology.

Course Code: Paper IV	Course Title: Industrial Hygiene and Chemical Safety

Course Objective

- To know about occupational environmental stress, industrial work environment, disaster management, risk assessment and safety in industry.

Course Outcome

- Student will be able understand about the significance and principles of industrial safety and safety information.
- Student will be able to gain knowledge about various kinds of occupational diseases and personal protective equipments used for safety in industries.

SEMESTER IV

Course Code: Paper I	Course Title: Ecotechnology

Course Objective

- To understand the application of ecotechnology, phytosanitation, green inhibitors, climate change mitigation, carbon sequestration, and restoration ecology and remediation technology.

Course Outcome

- Student will be able to understand the overall concept of ecotechnology.

Course Code: Paper II	Course Title: Environmental Biotechnology and Nanotechnology

Course Objective

- To learn about biotechnology in prevention and conservation of environment, organic farming and also understand the application of Nanotechnology in agriculture and food industry.

Course Outcome

- Student will be able to understand the scope, role and recent status of biotechnology and Nanotechnology.

Course Code: Paper III	Course Title: Sustainable Management

Course Objective

- To understand the basic concept of sustainable development, business strategies and sustainability, sustainable urban development and sustainability in practice.

Course outcome

- Student will gain knowledge about the concept of Sustainable Management

Course Code: Paper IV	Course Title: Environmental Management

Course Objective

- To study the principles of environmental management, its systems.
- To understand the procedure of life cycle assessment.
- To know about types of environmental audit and environmental economics.

- To study the principles of environmental design and modelling.

Course Outcome

- Student will gain knowledge on concepts and principles of EIA and EIA notification, 2006.
- Student will gain knowledge about various tools involved in environmental management.
- Student will be able to understand Environmental management systems and its significance.

17.M.Sc. – IT

Name of Department: Information Technology

Class: M.Sc.(I.T.) Part I

Program Outcomes:

- To recognize, understand and apply the language, theory and models of the field of business analysis.
- To develop in depth understanding of the key technologies in business analyst: data mining, machine learning, visualization techniques, predictive modeling and statistics.
- To learn how to use cloud Services.
- To broadly educate to know the impact of engineering on legal and societal issues involved related to cloud computing.
- To develop soft computing concepts like fuzzy logics, neural network and genetic algorithm and artificial intelligence.
- To provide an overview of an exciting growing field of big data analytics using various tools.
- To investigate novel ideas in the area of Networking via term-long research projects.
- To evaluate the techniques for image enhancement and image restoration in the field of image processing.

Program Specific Outcomes:

- To provide ability in applying the knowledge of Information Technology with recent trends aligned with research and industry.
- To provide ability in applying IT in the field of data mining, distributed system, Data analysis tools, software testing.
- To provide ability in providing socially acceptable technical solutions in the domains of Information Security, Machine Learning, Internet of Things and Embedded System, Infrastructure Services as specializations.

- To provide ability in applying the knowledge of Artificial Intelligence, Computer forensic and advanced image processing.
- To provide ability in writing effective project reports, research publications and content development and to work in multidisciplinary environment in the context of changing technologies.

SEMESTER I

Course Code: PSIT101	**Course Title: Data Mining**

Course Outcomes:
The students would be able :

- To identify the key processes of data mining
- To understand the basic principles and algorithms used in practical data mining and their strengths and weaknesses.
- To apply data mining techniques to solve problems in other disciplines in a mathematical way.

Course Code: PSIT102	**Course Title: Distributed Systems**

Course outcomes:
The students would be able :

- To understand the concepts and issues related to distributed systems.
- To design and develop the programs for distributed environment.
- To manage performance, reliability and other issues while designing in distributed environment.

Course Code: PSIT103	**Course Title: Data Analysis Tools**

Course outcomes:
The students would be able :

- To understand Lines, Variables and their declarations, Functions, The debugger , Compiling and running, Pointers , Arrays and other pointer tricks, Strings
- To work on database like Basic queries , Doing more with queries, Joins and sub queries
- To understand linear projections, Hypothesis testing with the CLT.

Course Code: PSIT104	**Course Title: Software Testing**

Course outcomes:
The students would be able :

- To list a range of different software testing techniques and strategies and be able to apply specific unit testing method to the projects.
- To Distinguish characteristics of structural testing methods.
- To discuss about the functional and system testing methods.

SEMESTER II

Course Code: PSIT201	**Course Title: Mobile Computing**

Course Outcomes:
The students would be able :

- To explain the principles and theories of mobile computing technologies.
- To describe infrastructures and technologies of mobile computing technologies.
- To list applications in different domains that mobile computing offers to the public, employees, and businesses.
- To describe the possible future of mobile computing technologies and applications.
- To effectively communicate course work through written and oral presentations.

Course Code: PSIT202	**Course Title: Advanced Computer Networks**

Course outcomes:
The students would be able :

- to identify and discuss the concepts underlying IPv6 protocol, and their main characteristics and functionality
- to understand the principles and functionality of mobile IP, explaining its concretization in IPv6
- o understand theoretical and practical concepts behind the design of multiconstained applications and services
- To describe the general principles of data communication
- To implement a simple LAN with hubs, bridges and switches.
- To decide routing entries given a simple example of network topology

Course Code: PSIT203	**Course Title: Cloud Computing and Ubiquitous System**

Course outcomes:
The students would be able :

- To analyze the cloud computing setup with it's vulnerabilities and applications using different architectures.
- To design different workflows according to requirement and apply map reduce programming model.
- To apply and design suitable virtualization concepts, cloud resource management and design scheduling algorithms.
- To create combinatorial auctions for cloud resources and design scheduling algorithms for computing cloud.
- To build Private cloud.
- To implement task scheduling algorithms.

Course Code: PSIT204	**Course Title: Advanced Database Systems**

Course outcomes:
The students would be able :

- To develop new methods in databases based on knowledge of existing techniques.
- To apply acquired knowledge for developing holistic solutions based on database systems/database techniques.
- To design, develop and implement a mid-scale relational database for an application domain using a commercial-grade RDBMS
- To identify and resolve physical database design and implementation issues
- To use the persistence framework of a chosen language to perform Object Relational Mapping
- To esearch, analyse and use emerging technologies such as Big Data, NoSQL, On-Line Analytical Processing (OLAP) and Data Warehouses

Name of Department: Information Technology

Class: MSC IT Part II

Program Outcomes:

Specific core discipline knowledge

- Remembrance about Artificial Neural Network, Embedded System, Image Processing, Information Security aspects and Audit.
- Students can recall details of programming languages, Data Processing tools, embedded assembling on simulator.
- To develop, understand and apply the theory and models for logics, different algorithm of the knowledge based system.
- To develop in depth understanding of the key concept in artificial intelligence: computations, search, representation and reasoning, machine learning and predictive modeling.
- To understand forensics and computing investigation Processes.
- To acquire a working knowledge of to identify crime, incidents, analysis and provide the reports.
- To understand the application in areas of advanced Image processing, their implementation, working with different tools and techniques.
- To evaluate the techniques for image classifications and medical image processing, feature extraction and statistical measurement.

Communication skills

- Students appear for viva voce. They can communicate effectively using oral and written communication skills

Problem solving and research skills

- Students can generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context.

Program Specific Outcomes:

- To identify and categorizegeneral Computing Systems.
- To comprehend the Security Management of IT Systems.
- To explore the key management principles in an organization.

- To understand Compliances and recovery methodologies.
- To provide knowledge about Information factors and resources and their importance in sustainable development.
- To be able to carry out Imperial process to enhance digital system.
- To be able to apply statistical tools to gain insights into significantly different data from different sources.
- To acquire recently published knowledge in Information Technology embedded systems, Image Processing, Information Security management and compliance applications.

SEMESTER III

Course Code: PSIT301	**Course Title: Embedded System**

Course Outcomes:
The students would be able :

- To understand hardware components like 8051 Microcontroller,Capacitor,ADC,DAc
- To learn Real time operation system (RTOS).
- To understand programming concept and embedded programming in c/ c++ and java.

Course Code: PSIT302	**Course Title: Information Security Management**

Course outcomes:
The students would be able :

- To define what information is
- To appreciate the value of information to the modern organization
- To understand the CIA triad of Confidentiality, Integrity and Availability
- To appreciate the difficulties that arise when valuable information needs to be shared
- To learn sniffers for monitoring network communication.

Course Code: PSIT303b	**Course Title: Artificial Neural Networks**

Course outcomes:
The students would be able :

- To understand the brain metaphor, basics of neuroscience, artificial neurons.
- To learn neural networks and architecture.
- To understand dynamic systems review, attractor neural networks
- To understand self-organizing features map, fuzzy set and fuzzy system.

Course Code: PSIT304a	**Course Title: Digital Image Processing**

Course outcomes:
The students would be able :

- To understand the image fundamentals and mathematical transforms necessary for image processing.
- To review the fundamental concepts of a digital image processing.
- To analyze images in the frequency domain using various transforms.
- To evaluate the techniques for image enhancement and image restoration.
- To categorize various compression techniques.
- To interpret image compression standards.

18. M.Sc. Physics

Name of Department: PHYSICS

Class: M.Sc.-I

Program Outcomes:

- Students can recall details of the Complex number, Differentiation, Integration and Differential equation.
- Students can recall detail of the laws of motion, central force and angular momentum.
- Students can recall detail of the Postulate of quantum mechanics, observation and operators, the time dependent Schrodinger equations.
- Students can recall the detail of the Diamagnetism and Ferromagnetism.
- Students can perform basic experiments, observation, and calculation and write their own conclusion.

Program Specific Outcomes:

- To understand the basic mathematical concepts and applications of them in physical situations.
- To develop analytical abilities towards real word problem.
- To be able to develop program solving attitude.

SEMESTER I

Course Code: PSPH101	**Course Title: MATHEMATICAL METHODS**

Course Outcomes:

The students would be able :

- To understand the concept of complex variable, limits, continuity, derivatives and integration with the problem solving techniques.
- To study about Cauchy Riemann equations, Taylor and Laurent series, residue theorem, contour integrals.
- To solve matrices, eigenvalues and Eigen vectors and understand Levi-Civita symbols.
- To evaluate second order linear differential equations with non-constant coefficients, power series solutions.
- To study about Integral transforms.

Course Code: PSPH102	**Course Title: CLASSICAL MECHANICS**

Course outcomes:

The students would be able :

- To study about laws of motion, Lagrange's equation, D'Alembert principle.
- To understand how to solve problem using Lagrange's equation.
- To understand two body central force problem
- To know about the small oscillation.
- To study about Legendre transformation and the Hamilton equations of motion
- To study about Canonical transformation, infinite canonical transformation and conservation theorems.

Course Code: PSPH103	**Course Title: QUANTUM MECHANICS-I**

Course outcomes:
The students would be able :

- To study about Postulate of quantum mechanics, observation and operators, the time dependent Schrodinger equations.
- To understand about linear vector space and operator, Dirac notation, Hilbert space, Hermitian operators and their properties, unitary transformations and Heisenberg and interaction picture.
- To know about wave packet and Schrodinger equation solutions (One dimensional problems).
- To understand about Schrodinger equation solutions (Three dimensional problems).
- To evaluate angular momentum.

Course Code: PSPH104	**Course Title: SOLID STATE PHYSICS**

Course Outcomes:
The students would be able :

- To understand about Diffraction of waves by crystals and Reciprocal Lattice
- To understand about Lattice vibration and thermal properties
- To study about Diamagnetism and Paramagnetism.
- To study about Ferromagnetism order and Ferromagnetic domains.

SEMESTER II

Course Code: PSPH201	**Course Title: Advanced Electronics**

Course Outcomes:
The students would be able :

- To compare different Microprocessors, Introduction to Microcontroller, 8051 Microcontrollers and 8051 Instruction set and Programming.
- To understand about Analog and data acquisition systems.
- To study about Data transmission, instrumentations Circuits & Designs.
- To develop Instrumentation circuits and Designs.

Course Code: PSPH202	**Course Title: Electrodynamics**

Course Outcomes:
The students would be able :

- To understand Maxwell equations, The Poynting vector, Maxwell stress tensor and Maxwell equation in covariant notation.
- To study about Electromagnetic wave in vacuum, frequency dependence of refractive index and phase velocity and group velocity.

- To study about moving charge in vacuum, Lienard-Wiechart potentials and magnetic dipole radiation.
- To know about Relativistic covariant Lagrangian formalism.

Course Code: PSPH203	**Course Title: Quantum Mechanics-II**

Course Outcomes:
The students would be able :

- To understand Perturbation theory.
- To understand Approximation method.
- To know about scattering theory.
- To study about identical particles, relativistic Quantum Mechanics, Dirac matrices and non-relativistic limit of the Dirac equation.

Course Code: PSPH204	**Course Title: Solid state device**

Course Outcomes:
The students would be able :

- To know about Semiconductor Physics.
- To understand about p-n junction.
- To understand different Schottky barrier-energy band relation, BJT and Quantum well structure.
- To study about MESFET, MOSFET, MODFET and introduction to Integrated circuits.

Name of Department: PHYSICS

Class: M.SC-II (Electronics-I)

Program Outcomes:

- Students can recall details of the Thermodynamics, Electrodynamics and mathematical tools.
- Students can recall details of the Shell model, alpha decay, beta decay and gamma decay.
- Students can recall the details of the Hydrogen atoms, Fine structures and selection rules.
- Students can recall details of the C++, VHDL, Interfacing, Microprocessor and microcontroller.
- Students can recall the details of the embedded system.
- Students can perform basic experiments, observation, and calculation and write their own conclusion.

Program Specific Outcomes:

- To understand the basic mathematical concepts and applications of them in physical situations.
- To develop analytical abilities towards real word problem.

- To be able to develop program solving attitude.

SEMESTER III

Course Code: PSPH301	Course Title: Statistical Mechanics

Course Outcomes:

The students would be able :

- To understand the statistic basis of Thermodynamics and Element of Ensemble Theory.
- To understand the Canonical Ensemble.
- To solve the Grand Canonical Ensemble.
- To know about formulation of Quantum Statistics, indistinguishable particles and function of a system of free particle.

Course Code: PSPH302	Course Title: Nuclear Physics

Course outcomes:

The students would be able :

- To understand all static properties of nuclei, deuteron problems and double scattering experiments.
- To know about nuclear models and Nuclear reactions.
- To study about alpha decay, beta decay and gamma decay.
- To study about Introduction to the elementary particle Physics.

Course Code: PSPH303	Course Title: Microprocessors ,Microcontrollers and Interfacing

Course outcomes:

The students would be able :

- To understand 8085 Interrupt, 8085 vectored Interrupt and Programmable Peripheral and Interface Devices.
- To understand 8086 Microprocessor, 8086 Instruction set and assembler directives and the Art of assembly language Programming with 8086.
- To know about 8051 Microcontroller.
- To study about 16C61/71 PIC Microcontroller.

Course Code: PSPH304	Course Title: Embedded System and RTOS

Course Outcomes:

The students would be able :

- To write Programming Using C++.
- To understand Introduction to classes and VC++.
- To study about embedded systems.
- To understand Real-time Operating system based embedded system Designs.

SEMESTER IV

Course Code: PSPH401	**Course Title: Experimental Physics**

Course Outcomes:

The students would be able :

- To understand Data analysis for physical sciences.
- To study about Vacuum Techniques.
- To understand Nuclear Detectors and Accelerators.
- To study about Characterization techniques for materials analysis.

Course Code: PSPH402	**Course Title: Atomic and Molecular Physics**

Course Outcomes:

The students would be able :

- To know about Fine structure of Hydrogen atoms, Schrodinger equation for two electron atoms.
- To understand the central field LS coupling and JJ coupling approximation and other type of coupling (GW).
- To study about dipole approximation, Einstein coefficient and selection rule.
- To study about Born-Oppenheimer approximation.

Course Code: PSPH403	**Course Title: Advanced Microprocessor, Microcontrollers and ARMS 7**

Course Outcomes:

The students would be able :

- To understand PIC 16F8XX Flash Microcontrollers.

• To interface Light emitting diode (LED), push buttons, relay, LCD with PIC. • To understand The ARM architecture and ARM Processor cores. • To write the ARM Assembly language Programming with Instruction set of ARM.	
Course Code: PSPH404	**Course Title: VHDL and Communication Interface**
Course Outcomes: The students would be able : • To study about Introduction to VHDL, Behavioral Modeling and sequential processing. • To know about Data type, subprograms and packages. • To understand USB and USB protocols. • To understand Communication Interface.	

FACULTY OF COMMERCE

19. B.Com

Name of Department: Commerce	
Class: FYBCom	
Program Outcomes: After completing three years for Bachelors in Commerce (B.Com) program, students would gain a thorough grounding in the fundamentals of Commerce and Finance. The Specific Programme outcomes can be enumerated as follows; • To build a strong foundation of knowledge in different areas of Commerce. • To develop the skill of applying concepts and techniques used in Commerce. • To develop an attitude for working effectively and efficiently in a business environment. • To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students. • To expose students about entrepreneurship. • To enable a student to be capable of making decisions at personal and professional level	
Program Specific Outcomes: • Students will demonstrate progressive affective domain development of values, the role of accounting in society and business. • Students will learn relevant financial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business. • Students will learn relevant managerial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business. • Students will gain thorough systematic and subject skills within various disciplines of commerce, business, accounting, economics, finance, auditing and marketing. • Learners will be able to recognise features and roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly	
SEMESTER I	
Course Code:	**Course Title: Financial Accounting & Auditing I**

Course Outcomes:

The students would be able :

- To develop conceptual understanding of fundamentals of financial Accounting system and to impart skills in accounting for various kinds of business transactions.
- To enable the students to learn principles and concepts of Accountancy.
- To understand the concept of capital and revenue expenditure
- To study the accounting for manufacturing concerns and departmental accounting
- To gain insight into the accounting aspects of hire purchase system And Stock valuation methods

Course Code:	**Course Title: Business Communication –I**

Course outcomes:

The students would be able :

- To develop communication skills and overall personality development of the students
- To study the concepts of business communication, its types and barriers
- To explore various types of business letters and statement of purpose

Course Code:	**Course Title: Commerce I**

Course outcomes:

The students would be able :

- To acquires the knowledge about the various types of business organizations, office management and related aspects
- To study the environment of business and genesis involved in setting up of a business unit
- To understand the concepts of business turnaround
- To explore the term entrepreneur and skills required for an entrepreneur

Course Code:	**Course Title: Business Economics –I**

Course Outcomes:

The students would be able :

- To acquaint the students with the business economic principles applicable in business
- To understand the forces of market demand and supply.
- To study the concept of production and cost
- To explore the production a function

Course Code:	**Course Title: Environmental studies-I**

Course outcomes:

The students would be able :

- To know the importance Conservation of natural resources,
- To understand the ecological aspects of environment
- To have insight into the types of pollution and ways controlling the pollution
- To study the social impacts of human population on the environment

Course Code:	**Course Title: Mathematical and Statistical Techniques –I**

Course outcomes:

The students would be able :

- To understand the practical applicability of mathematical and statistical tools in commerce
- To study the measure of central tendency and dispersion
- To explore the genesis in calculation of shares and mutual funds
- To study the theory of probability and decision making

Course Code:	**Course Title: Foundation Course I**

Course Outcomes:

The students would be able :

- To understand the inter-disciplinary approach of social fabric.
- To sensitize on the socio-economic concerns in India with specific focus on the issues of the youth
- To help learners articulate their views on the contemporary social issues.
- To understand factual aspects of Indian society.

SEMESTER II	
Course Code:	**Course Title: Financial Accounting and auditing -III**
Course Outcomes: The students would be able : • To impart the Knowledge in the practical applications of accounting. • To enable the students to learn the basic concepts of Partnership Accounting, and allied aspects of accounting. • To understand how consignment account and branch accounts are prepared • To explore the concept of fire insurance claims	
Course Code:	**Course Title: Business Communication -II**
Course Outcomes: The students would be able : • To understand the aspects and importance of group communication • To enhance language and writing skills • To study the formal business correspondence such as trade and sales letters	
Course Code:	**Course Title: Commerce –II**
Course Outcomes: The students would be able : • To study the concept of service marketing mix • To understand the concept of retailing , various retail formats and current retail scenario To gain insight into banking, insurance and logistics services • To explore the concept of E-Commerce	
Course Code:	**Course Title: Business Economics -II**
Course Outcomes: The students would be able : • To study the market structure under perfect competition and monopoly • To know how pricing and output decisions are taken under perfect competition • To understand various cost oriented pricing methods	

• To learn techniques and importance of capital budgeting for evaluating capital projects

Course Code:	**Course Title: Environmental Studies-II**

Course Outcomes:

The students would be able :

- To study the concept of solid waste management for sustainable society
- To explore the genesis of agricultural and industrial development and its impact on environment
- To understand the aspect of tourism and environment
- To know various environmental movements in India and its Management

Course Code:	**Course Title: Mathematical and Statistical Techniques –II**

Course Outcomes:

The students would be able :

- To understand the functions of derivatives and their applications
- To know the concept of interest and annuity
- To study the Bivariate linear correlation and regression
- To explore the time series and index numbers

Course Code:	**Course Title: Foundation Course -II**

Course Outcomes:

The students would be able :

- To enable the students to know the concept of liberalization, privatization and globalization
- To study the various concepts of Human Rights
- To understand the concept of environment, ecology and their interconnections
- To gain insight into the causes and management of stress and conflict in society

Class: S.Y.Bcom

Program Outcomes:

- To build a strong foundation of knowledge in different areas of Commerce.
- To develop the skill of applying concepts and techniques used in Commerce.
- To develop an attitude for working effectively and efficiently in a business environment.
- To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students.
- To expose students about entrepreneurship.
- To enable a student to be capable of making decisions at personal and professional level.

Program Specific Outcomes:

- Students will demonstrate progressive affective domain development of values, the role of accounting in society and business.
- Students will learn relevant financial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
- Students will learn relevant managerial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
- Students will gain thorough systematic and subject skills within various disciplines of commerce, business, accounting, economics, finance, auditing and marketing.
- Learners will be able to 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.
- Leaners will acquire the skills like effective communication, decision making, problem solving in day to day business affairs
- Learners will involve in various co-curricular activities to demonstrate relevancy of foundational and theoretical knowledge of their academic major and to gain practical exposure.

SEMESTER III

Course Code:	**Course Title: Financial Accounting & Auditing III Financial Accounting**

Course Outcomes:

The students would be able :

- To make the students understand the concept of Amalgamation , preparation of Accounts of Accounting for Amalgamation of Partnership Firms and its accounting effect.
- Students would be able to Account for Amalgamation of Partnership Firms
- To make the students understand the concept of Piecemeal Distribution and the procedure and steps involved in preparing the Statement of Distribution of Cash
- To make students understand the nittygritties of preparation of Partnership Final Accounts in case of Admission, retirement and death of a Partner
- Students would be able to prepare Final Accounts of a Partnership Firm in case of Admission, retirement and death of a Partner
- To help the students understand the need, procedure, accounting effects and treatment for Conversion of a Partnership Firm into a Limited Company
- Students would be able to Account for Conversion of a Partnership Firm into a Limited Company

Course Code:	**Course Title: Financial accounting & Auditing IV Management Accounting**

Course outcomes:

The students would be able :

- Students understand the significance of basic concept, importance & Functions of Management Accounting
- To help the students analyze and interpret the financial statements.
- To make students understand the various ratios and its interpretation
- To help the students estimate working capital with the help of data given.
- To help the students understand the budgeting of capital expenditure by using various methods

Course Code:	**Course Title: Advertising –I**

Course outcomes:

The students would be able :

- To give a conceptual understanding on the basics of advertising and its benefits to business firms
- The students will get a clarity on the basics of advertising and its importance to firms and

consumers

- To emphasize the role of ad agencies in creating successful ad campaigns for the companies
- The students will get acquainted with the different services provided by an ad agency and the strategies executed by them
- To give an essence of the various career opportunities in the field of advertising Students who wish to pursue their career in Advertising industry will get an idea about the different career options available to them
- To discuss about the ethical, social, economic and cultural aspects in advertising The students will be exposed to the various social, ethical issues facing advertising industry in the present scenario and its impact on the society

Course Code:	**Course Title: Commerce III**

Course Outcomes:

The students would be able :

· To Orient the students on the conceptual knowledge of management The students ability to manage is enhanced

· To Build awareness of the evolution of management Practical application of management styles · To enhance the management application skills of students Familiarity with management

Course Code:	**Course Title: Business economics III**

Course outcomes:

The students would be able :

- To help students to understand basic macroeconomic theories and models. Students
- To make the students understand how an economy as a whole works from the Keynesian perspective. Students would learn concepts of effective demand, investment and consumption and would be able to see the relevance of the theory in the developing countries.
- To familiarize students with theories of ISLM, Phillips Curve and its application in the real world. Students would learn the impact of supply side economics using case studies
- To equip students with the features of Students would know the effects of inflation and its remedies along with theories of demand and supply of money. public policies on the control of inflation and the various approaches to liquidity approach.

Course Code:	**Course Title: Business law I**

Course outcomes:

The students would be able :

- To provide students a brief idea about formation and validity of a contract. Students would be aware of the essentials and legal rules regarding Contract Act.
- To provide students a brief description on types of contracts and its performance. Students would learn the concept of performance, discharge and remedies on breach of contract.
- To familiarize students with special contracts. Students would be aware of the essentials, parties, rights and duties of such parties to the contract.
- To familiarize students with the formation of contract of sale of goods. Students would learn the rights of unpaid seller.
- To provide students a brief idea about various types of negotiable instruments. Students would learn the essence of such instruments and the miscellaneous provisions incidental

Course Code:	**Course Title: Foundation Course III**

Course Outcomes:

The students would be able :

- To provide a brief idea on various constitutional and legal rights of the socially under privileged Students would develop empathy and be better sensitized towards various social issues.
- To educate students on various aspects of disaster and the steps in disaster management Students would get clarity on different types of disasters and the precautions and actions to be taken when disaster hits.
- To foster interest in science and technology which is not a part of hard core commerce syllabus The topic would help to develop scientific temper in commerce students
- To help students to fine tune the various aspects of communication Students would understand the nuances of communication in formal and informal setting

SEMESTER IV

Course Code:	**Course Title: Financial Accounting and Auditing- V Financial Accounting**

Course Outcomes:

The students would be able :

- To make the students understand the concept of a Company, preparation of Company Accounts and its accounting effect. Students should be able to understand various terms related to a Limited Company
- To make the students understand the concept of Redemption of Preference Shares and the procedure and steps involved in Redemption of Preference Shares Students should be able to Account for Redemption of Preference Shares and the procedure involved.
- To make the students understand the concept of Redemption of Debentures and the procedure and steps involved in Redemption of Debentures Students should be able to account for Redemption of Debentures and the process for the same.
- To help the students understand the need, procedure, accounting effects and treatment for Profit Prior to Incorporation of a Company Students should be able to calculate Profit Prior to Incorporation of a Company

Course Code:	**Course Title: Financial Accounting and Auditing- VI Auditing**

Course Outcomes:

The students would be able :

- To introduce the concept of auditing to the students. Students would be able to understand the basic terms and concepts related to auditing.
- To make the students understand the objectives, importance and the process of audit planning, preparation of an audit program and audit working papers. Students would be able to understand the purpose, objectives and importance of planning an audit. They should also be able to understand the contents of audit working papers along with the factors to be kept in mind while preparing the audit program.
- To make students understand the various auditing techniques and the basic concepts related to internal auditing. Students would be able to understand various concepts related to auditing techniques like audit sampling, test check, materiality as well as understand the basic concepts related to internal audit.
- To help the students understand the auditing techniques of vouching and verification in detail. Students would be able to understand the auditing technique of vouching of various transactions in relation to incomes, expenses etc. and auditing technique of verification as regards balance sheet items

Course Code:	**Course Title: Commerce IV**

Course Outcomes:

The students would be able :

- To Orient the students on the conceptual knowledge of quality, production management and financial management. The students ability to comprehend concepts in quality, production and financial management is enhanced.
- To Build awareness of the trends in quality, production and financial management. The students ability to apply the concepts to practical applications is improved.
- To enhance the operating knowledge of stock markets, commodity markets and derivative markets. Decision making on vital aspects of finance gets developed.

Course Code:	**Course Title: Business Economics IV**

Course Outcomes:

The students would be able :

- To help students understand the role of Government in an economy with respect to efficiency, welfare, social advantage and provision of public goods. Students would learn the importance of Government through various theories.
- To orient students with the sources of Public Revenue and the means of shifting tax burden Students would understand the economic and redistributive impact of taxation in the economy
- To familiarize students with theories of Public Expenditure and the significance of Public Debt Students would learn the effects of Public spending on production, consumption and stabilization.
- To orient students with the principles of Fiscal finance and the Budget. Students would know about Fiscal Responsibility and other Financial Relations between the Centre and State Governments

Course Code:	**Course Title: Business Law II**

Course Outcomes:

The students would be able :

- To provide students a brief description on formation of a company and procedure of its incorporation. Students would learn the various provisions governing such companies.
- To provide a brief idea on types of meetings conducted in companies. Students would be aware of the members of the company and provisions governing convening of different types of meetings.
- To familiarize students with Indian Partnership Laws. Students would learn the formation, dissolution of partnership and provisions incidental thereto.
- To provide students an overview of laws relating to Consumer Protection and

Competition Act. Students would be aware of the rights of consumers and remedies for unfair trade practices.

- To provide students a brief idea on categorization of creativity and technical know-how under IPR laws. Students would learn the procedure for registration of IPR and to protect it from infringement of their rights.

Course Code:	**Course Title: Advertising II**

Course Outcomes:

The students would be able :

- To familiarize the learners with the different traditional and new age media used in advertising The learners would be able to understand the pros and cons of the various media used in advertising
- To give an idea about the planning process and the steps involved in planning an ad. The learners would know the process in planning an ad campaign
- To make the learners understand the role and importance of creativity in advertising The learners would understand role and various creative aspects involved in making an ad campaign
- To acquaint the learners with the execution of advertisements and discuss the techniques of evaluating an ad campaign. The learners would be well versed with the various execution styles and evaluation techniques of an ad campaign

Course Code:	**Course Title: Foundation Course IV**

Course Outcomes:

The students would be able :

- To provide a brief description on provisions governing consumer protection law Students would be aware of the rights of consumers and remedies in relation to unfair trade practices
- To sensitise students towards various ecological issues students would develop a deeper understanding of ecological issues and would motivate them to be a part of environmental conservation
- To introduce various technologies used in day to day life. Students would develop curiosity in the application of science in everyday life
- To provide necessary life skills such as time management, goal setting etc. The topics would equip them with necessary life skills.

Class: TYBCom

Program Outcomes:

Specific core discipline knowledge

- The program provides well versed manpower requirement in the area of banking, Insurance, finance and taxation, transport, marketing, human resource ec.
- Students can acquire specialization in subject of their interest such as finance and accounts, taxation, marketing, human resource etc and decide the roadmap for future studies and career **Communication skills**
- Students can communicate effectively using oral and written communication skills **Problem solving and other skills**
- Students can acquire skills regarding various aspects of Marketing, taxation, financial accounting,, human resource and overall administration abilities
- It enables the students to take decisions at professional and personal level.

Program Specific Outcomes:

- To understand the basic concepts of the commerce, management, accounting of & economics
- To develop communication skills and computer awareness and rules of income tax act.
- To enable students to gain systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer.
- Learners will be able to prove proficiency with the ability to engage in competitive exams like CA, CS, ICWA and other courses.
- To help students get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator. As well as other financial supporting services.
- To make students learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers
- To enable students to develop confidence in Self employment opportunities
- To enable students to persue their higher education and can make research in the field of finance and commerce

SEMESTER V

Course Code:	**Course Title: Financial Accounting and Auditing VII Financial Accounting**

Course Outcomes:

The students would be able :

- To acquire knowledge in preparation of final accounts of a company
- To understand the concepts and practical implications of internal reconstruction of a company To know the concept and accounting effects during buyback of shares
- To study the concept of investment accounting and accounting standards

Course Code:	**Course Title: : Financial Accounting and Auditing VIII Cost Accounting**

Course outcomes:

The students would be able :

- To gain basic knowledge of Cost Accounting.
- To understand the concepts of material cost, labour cost, and overhead costs.
- To know different classification of cost and preparation of cost sheet.
- To study the reconciliation of cost and financial accounts.

Course Code:	**Course Title: Commerce- V Marketing**

Course outcomes:

The students would be able :

- To acquaint with the basic concept of marketing.
- To understand the concept relating to marketing mix decisions viz, product, pricing, place and promotion
- To know the ethical issues in marketing and concepts of rural marketing.
- To know the challenges faced by modern marketing managers and concept of digital marketing

Course Code:	**Course Title: Business Economics V**

Course outcomes:

The students would be able :

- To get exposure to macroeconomic overview of India in light of new economic policy of 1991. To understand agricultural scenario during post reform period
- To know the industry and service sector during post reform period

- To study banking sector and financial market (money market and capital market)

Course Code:	**Course Title: computer systems and application – paper I**

Course Outcomes:

The students would be able :

- To understand concept of data communication, networking basics and infrastructure and internet. To know the concept of data base and MysQL basics,
- To understand practical applicability of spreadsheets, which includes creating and navigating work sheets, adding information, multiple spreadsheets, mathematical functions, data analysis
- To understand practical application of word processing MySQL and spreadsheets.

Course Code:	**Course Title: Direct taxation**

Course outcomes:

The students would be able :

- To acquire knowledge about definition u/s 2
- To know basis of charged and exclusion from total income.
- To understand different heads of income like salary, house property, business professions and other sources
- To analysis different deduction under section VI A
- To understand computation of total income

SEMESTER VI

Course Code:	**Course Title: Financial Accounting and Auditing- IX Financial accounting**

Course outcomes:

The students would be able :

- To gain insight into AS-14, amalgamation, Absorption & External reconstruction
- To understand the transaction of Foreign Currency
- To study various accounting aspects related to liquidation of companies
- To explore the genesis of underwriting of shares and debentures
- To know accounting for limited liability partnership.

Course Code:	**Course Title: Financial Accounting and Auditing- X Cost Accounting**

Course outcomes:

The students would be able :

- To understand the aspects of cost control accounts
- To know the genesis of contract and Process costing.
- To understand the concepts of marginal costing and standard costing
- To study some emerging trends of cost accounting

Course Code	**Course Title: Commerce VI Human Resource Management**

Course outcomes:

The students would be able :

- To know the basic terms , concepts and definitions of human resource management
- To study the aspect of human resource development viz training and development
- To analyze the importance of human relations in human resource management
- To study the recent trend in human resource management

Course Code	**Course Title: Business Economics VI-International Economics**

Course outcomes:

The students would be able :

- To study the theories of trade and terms of trade
- To understand the Commercial Policy, trade barrier and international Economic integration To explore the concept of balance of payment and

international economic organization • To know the working of foreign exchange markets

Course Code	**Course Title: Computer systems and applications -II**
Course outcomes: The students would be able : • To understand the basics of E-commerce • To know the concepts of Advanced spread sheet and its functions • To explore the genesis of visual basic • To gain insight into practical approach of presentation skills, ,advanced spread sheet and VB	

Course Code	**Course Title: Indirect Taxation**
Course outcomes: The students would be able : • To acquire knowledge about indirect taxation and GST • To know the computation and levy of GST • To study the documentation and registration required for GST • To understand input tax credit and computation of GST	

20.B. Com. [Accounting and Finance]

Name of Department: B. Com. [Accounting and Finance]
Class: F. Y. B. C. A. F.
Program Outcomes: **Specific core discipline knowledge** • Students can acquire knowledge about preparation of Accounts, elements of accountancy, Special accounting areas, elements of cost accountancy, Financial Management, Auditing. • Students can understand primary details of the Financial Accounts, Financial Management, Cost Accountancy and Auditing. • Students can understand Business environment, Innovation in Financial services and business economics.

- **Communication skills**
  Students can communicate effectively using oral and written communication skills.

Problem solving and research skills

- Students can analytically solve and record transactions in different accounting systems.

Program Specific Outcomes:

- To understand elements of financial accounting.
- To explore the special accounting areas in financial accountancy.
- To analyze different elements of cost accountancy.
- To understand need and importance of financial management.
- To provide knowledge about auditing and its planning.
- To develop good communication skills in oral and written form.
- To make aware about innovations in financial services.
- To explain business environment and its impact on world.
- To understand overview of business economics.
- To acquire knowledge of legal business regulatory framework.
- To analyze different mathematical techniques to calculate financial return and risk.
- To aware about human values and responsibility towards society.

SEMESTER I

Course Code: 1	**Course Title: Financial Accounting (Elements of Financial Accounting) - I**

Course Outcomes:
The students would be able :

- To gain knowledge about accounting standards issued by ICAI
- To understand inventory valuation.
- To Analyse final accounts of manufacturing concern.
- To prepare final accounts of proprietary concern.
- To acquire knowledge about departmental accounts.
- To learn about accounting for Hire Purchase.

Course Code: 2	**Course Title: Cost Accounting – Introduction and Elements of cost – I**

Course Outcomes:
The students would be able :

- To gain knowledge about cost accountancy.
- To understand material costing with different techniques.
- To Analyse labour costing and its methods for remuneration.
- To acquire knowledge about overheads costings and techniques of allocation.

Course Code: 3	**Course Title: Financial Management – Introduction to Financial Management - I**

Course Outcomes:
The students would be able :

- To gain knowledge about Financial Management.
- To understand Concept of valuation.
- To Analyse leverages and its applications.
- To acquire knowledge about types of financing.
- To understand concept of cost of capital.

Course Code: 4	**Course Title: Business Communication – I**

Course Outcomes:
The students would be able :

- To gain knowledge about theories of communication.
- To understand obstacles to communication in Business world.
- To acquire knowledge about business correspondence.
- To apply the language and writing skills.

Course Code: 5	**Course Title: Foundation Course – I**

Course Outcomes:
The students would be able :

- To gain knowledge about overview of Indian society.
- To understand concept of disparity.
- To acquire knowledge about Indian Constitutions.
- To understand significant aspects of political processes.

Course Code: 6	**Course Title: Business Environment – I**

Course Outcomes:
The students would be able :

- To understand business and its environment.
- To acquire knowledge about business and society.
- To analyse contemporary issues.
- To understand international environment.

Course Code: 7	**Course Title: Business Economics – I**

Course Outcomes:
The students would be able :

- To acquire knowledge about business economics.
- To understand concept of demand.
- To analyse supply and production decisions and cost of production.
- To understand market structure.
- To get knowledge about pricing practices.

SEMESTER II

Course Code: 1	**Course Title: Financial Accounting – Special Accounting Areas - II**

Course Outcomes:
The students would be able :

- To understand accounting from incomplete records.
- To acquire knowledge about Consignment accounts.
- To Prepare and analyse branch accounts.

• To understand fire insurance claims.	
Course Code: 2	**Course Title: Auditing – Introduction and Planning – I**
Course Outcomes: The students would be able : • To acquire knowledge about auditing. • To understand audit planning, procedures and documentation. • To analyse the auditing techniques. • To understand internal audit.	
Course Code: 3	**Course Title: Innovative Financial Services**
Course Outcomes: The students would be able : • To acquire knowledge about traditional financial services. • To analyse issue management and securitization. • To understand financial services and its mechanism. • To know consumer finance and credit rating.	
Course Code: 4	**Course Title: Business Communication - II**
Course Outcomes: The students would be able : • To know about presentation skills. • To understand group communication. • To get acquainted with Business correspondence. • To apply language and writing skills.	
Course Code: 5	**Course Title: Foundation Course - II**
Course Outcomes: The students would be able : • To acquire knowledge about globalization and Indian Society. • To understand human rights. • To get understanding about stress and conflicts. • To apply knowledge in managing stress and conflicts in contemporary society.	
Course Code: 6	**Course Title: Business Law – Business Regulatory framework - I**
Course Outcomes: The students would be able : • To acquire knowledge about Law of contract 1872. • To understand Sale of Goods Act 1930. • To understand Negotiable Instrument Act 1881. • To acquire knowledge about consumer protection Act 1986.	
Course Code: 7	**Course Title: Business Mathematics**
Course Outcomes: The students would be able : • To understand ratio, proportion and percentage.	

- To analyse profit and loss.
- To understand interest and annuity.
- To get knowledge about shares and mutual fund.

Class: S. Y. B. C. A. F.

Program Outcomes:

Specific core discipline knowledge

- Students can acquire knowledge about Special accounting areas, methods of costing, Direct Taxation, Management accounting.
- Students can understand Financial Market operations, functions of management, Business law and business economics.
- **Communication skills**
  Students can communicate effectively using medium of information technology.

Problem solving and research skills

- Students can understand basics of research methodology.

Program Specific Outcomes:

- To understand special areas of financial accounting.
- To know different methods of cost accounting.
- To acquire knowledge of direct taxation system of India.
- To analyse usefulness of information technology in accountancy.
- To understand business regulatory framework in India.
- To study business economics for better understanding of business environment.
- To understand the financial market operations in detail.
- To acquire knowledge of management accounting.
- To understand direct tax system related to different persons in India.
- To understand need of research methodology in accounting and finance.
- To know functions and role of management in business environment.

SEMESTER III

Course Code: EC – 1 1	**Course Title: Financial Accounting (Special Accounting areas) – III**

Course Outcomes:

The students would be able :

- To understand partnership final account with adjustment of admission or retirement / death of partner during the year.
- To acquire knowledge of piecemeal distribution of cash.
- To understand conversion or sale of a partnership firm into a Ltd. Company.
- To get knowledge about accounting of transactions of foreign currency.
- To know about procedure of amalgamation of firms.

Course Code: EC – 1 2	**Course Title: Cost Accounting (Methods of costing) – II**

Course Outcomes:

The students would be able : • To classify the costs and prepare cost sheet. • To analyse cost accounts, financial accounts and reconcile them. • To understand contract costing. • To acquire knowledge of process costing.	
Course Code: EC – 1 4	**Course Title: Taxation – II (Direct Taxes paper – I)**
Course Outcomes: The students would be able : • To acquire knowledge about definitions u/s 2. • To know basis of charge and exclusion from total income. • To understand different heads of incomes like Salary, House property, Business profession, Capital Gain, Other sources. • To analyse different deductions under chapter VI – A • To understand computation of total income.	
Course Code: AEC 2A 4	**Course Title: Information technology in accountancy – I**
Course Outcomes: The students would be able : • To acquire knowledge about computers. • To understand office productivity tools. • To understand Web and its importance. • To get knowledge about internet and other emerging technologies. • To understand electronic commerce.	
Course Code: SEC 2B 5	**Course Title: Foundation Course in commerce (Financial Market operations) – III**
Course Outcomes: The students would be able : • To know overview of the financial system. • To understand financial markets. • To acquire knowledge about financial instruments. • To know different financial services.	
Course Code: CC 3 6	**Course Title: Business Law (Business Regulatory Framework) – II**
Course Outcomes: The students would be able : • To know the Indian partnership Act 1932. • To acquire knowledge about limited liability partnership Act – 2008. • To know about factories Act 1948.	
Course Code: CC 3 7	**Course Title: Business Economics – II**
Course Outcomes: The students would be able : • To know overview of macroeconomics	

- To understand money, prices and inflation.
- To acquire knowledge about public finance.
- To analyse public revenue, public expenditure and debt.
- To understand fiscal management and financial administration.

SEMESTER IV

Course Code: EC 1 1	**Course Title: Financial Accounting (Special Accounting Areas) – IV**

Course Outcomes:
The students would be able :

- To understand preparation of final accounts of companies.
- To acquire knowledge about redemption of preference shares.
- To know about redemption of debentures.
- To understand ascertainment and treatment of profit prior to incorporation.
- To understand concept and preparation of foreign branch accounts.

Course Code: EC 1 2	**Course Title: Management Accounting (Introduction to Management Accounting)**

Course Outcomes:
The students would be able :

- To acquire knowledge about management accountancy.
- To study analysis and interpretation of accounts.
- To understand financial statement.
- To calculate and analyse different ratios of financial statements.
- To study cash flow statement and its analysis.
- To understand working capital management.

Course Code: EC 1 4	**Course Title: Taxation – III (Direct Taxes – II)**

Course Outcomes:
The students would be able :

- To understand clubbing of income.
- To acquire knowledge about set off and carry forward of losses.
- To know computation of tax liability of individual and HUF.
- To study computation of income of partnership firm in relation to section 40(b) and tax thereon.
- To understand return of income under section 139.
- To know concept of Tax deducted at source
- To calculate advance tax and interest payable.
- To acquire knowledge about DTAA U/S 90 and 91.
- To know about tax planning and ethics in taxation.

Course Code: AEC 2A 4	**Course Title : Information Technology in Accountancy – II**

Course Outcomes:
The students would be able :

- To understand business process.

- To know about computerized accounting system.
- To understand concept of MIS reports in computer environment.
- To understand relationship between information technology and auditing.

Course Code: SEC 2B 5	**Course Title : Foundation Course – Contemporary issues – IV**

Course Outcomes:
The students would be able :

- To know about significant, contemporary rights of citizens.
- To know approaches to understanding ecology.
- To understand science and technology.
- To understand competitive exams.

Course Code: CC 3 6	**Course Title : Business Law (Company Law) – III**

Course Outcomes:
The students would be able :

- To know about incorporation of companies.
- To study public offer.
- To understand private placement.
- To acquire knowledge about share capital and debentures.

Course Code: CC 3 7	**Course Title : Research Methodology in accounting and finance**

Course Outcomes:
The students would be able :

- To acquire knowledge about research.
- To understand research design in accounting and finance.
- To study data collection and processing.
- To know about interpretation and report writing.

Class: T. Y. B. C. A. F.

Program Outcomes:

Specific core discipline knowledge

- Students can acquire knowledge about financial accounting, cost accounting, Financial Management, Indirect Taxation.
- Students can understand management applications and structure of Indian economy.
- **Communication skills**
  Students can express their thoughts through research project.

Problem solving and research skills

- Students can analyse and examine data from research through testing of hypothesis.

Program Specific Outcomes:

- To understand financial accounting system in depth.
- To know different tools and techniques of cost accounting.
- To acquire knowledge of indirect taxation system of India.
- To analyse usefulness of financial management.
- To acquire knowledge about Indian economic structure.

• To understand management applications in business environment.	
SEMESTER V	
Course Code: EC 1 1	**Course Title : Cost accounting – III**
Course Outcomes: The students would be able : • To understand uniform costing and inter-firm comparison. • To study integrated system and non integrated system of accounts. • To acquire knowledge about operating costing. • To understand process costing equivalent production and inter-process profit. • To learn about activity based costing system.	
Course Code: EC 1 2	**Course Title : Financial Management – II**
Course Outcomes: The students would be able : • To understand strategic financial management. • To study capital budgeting with project planning and risk analysis. • To learn capital structure theories and dividend decisions. • To understand mutual funds and bond valuation. • To know credit management.	
Course Code: EC 1 3	**Course Title : Taxation – IV (Indirect Taxes – II)**
Course Outcomes: The students would be able : • To acquire knowledge about indirect taxation and GST. • To compute levy and collection of GST. • To understand concept of supply. • To know about documentation required for GST. • To understand input tax credit and computation of GST. • To acquire knowledge about registration under GST.	
Course Code: EC 1 6	**Course Title : Management – II (Management Applications)**
Course Outcomes: The students would be able : • To study concept of marketing management. • To understand production management. • To acquire knowledge about human resource management. • To understand financial management.	
Course Code: CC 2 5	**Course Title : Financial Accounting – V**
Course Outcomes: The students would be able : • To acquire knowledge about underwriting of shares and debentures. • To understand buy back of shares. • To know AS-14 amalgamation, absorption, external reconstruction. • To study internal reconstruction.	

• To understand liquidation of companies.	
Course Code: CC 2 6	**Course Title : Financial Accounting – VI**
Course Outcomes: The students would be able : • To understand final accounts of banking company. • To study final accounts of insurance company. • To acquire knowledge about non banking financial companies. • To compute value of Goodwill and Shares. • To understand accounting for limited liability partnership.	
SEMESTER VI	
Course Code: EC 1 1	**Course Title : Cost Accounting - IV**
Course Outcomes: The students would be able : • To acquire knowledge about budgeting and budgetary control. • To understand absorption costing and marginal costing cost volume and profit analysis. • To know about managerial decision making. • To understand standard costing and variance analysis.	
Course Code: EC 1 2	**Course Title : Financial Management – III**
Course Outcomes: The students would be able : • To acquire knowledge about business valuation. • To understand mergers and acquisitions. • To learn about corporate restructuring and takeovers. • To understand lease and hire purchase financing. • To study about Working capital financing.	
Course Code: EC 1 3	**Course Title : Taxation – Paper V (Indirect Taxes – III)**
Course Outcomes: The students would be able : • To learn about payment of tax and refunds. • To study about returns of tax • To acquire knowledge about Accounts, Audit, Assessment and records. • To understand Custom Act. • To know about foreign trade policy.	
Course Code: EC 1 6	**Course Title : Economics Paper – III (Indian Economy)**
Course Outcomes: The students would be able : • To acquire knowledge about agricultural sector. • To understand industrial sector. • To study service sector and External sector. • To acquire knowledge about money and banking.	
Course Code: CC 2 5	**Course Title : Financial Accounting – VII**

Course Outcomes:

The students would be able :

- To understand final account for electricity company.
- To study final accounts for co-operative society.
- To learn accounting standard – 13 of investment accounting.
- To acquire knowledge about mutual fund.
- To know about IFRS and Indian accounting standards.

Course Code: CC 2 6	**Course Title : project work - II**

Course Outcomes:

The students would be able :

- To understand research design.
- To learn data collection.
- To analyse collected data with different statistical techniques.
- To know project writing skills.

21.B. Com. [Banking and Insurance]

Name of Department: B. Com. [Banking and Insurance]

Class: F. Y. B. B. I.

Program Outcomes:

Specific core discipline knowledge

- Students can understand the banking services and insurance related services, its functions, regulatory mechanism.
- Students can understand the principles of management and essential of management, business economics, basics of quantitative methods
- **Communication skills**
  Students can acquire knowledge related to oral and written communication skills.

Problem solving and research skills

- Students can analytically solve and record transactions in different accounting systems.

Program Specific Outcomes:

- To understand banking and its related services and types of banking and its function
- To understand insurance and their types and its services.
- To study the role of Regulatory bodies.
- To make aware about innovations in financial services.
- To study the significant role of risk in banks
- To understand elements of financial accounting.
- To understand overview of business economics.
- To study the principles of management, areas of management and its function in detail.
- To understand the structure of banking and insurance Companies.
- To develop communication skills.
- To learn the basis of society.

- To get knowledge about the Indian constitution and their rights.
- To aware about human values and responsibility towards society.
- To study the accounting standards.
- To enhance the behaviour of the organization, stress management symptoms and tools to manage.
- To understand the importance of financial management and methods of cost accounting.

SEMESTER I

Course Code: EC 1	**Course Title: Environment and Management of Financial Services**

Course Outcomes:
The students would be able :

- To enrich students with the knowledge of the functioning of banks and insurance companies.
- To Study the mobilization of funds by banking and insurance sector.
- To study Indian financial markets, financial instruments and financial regulators
- To help students realize the quintessential role of banks and insurance in the world today

Course Code: EC 2	**Course Title: Principle of Management**

Course Outcomes:
The students would be able :

- To Study of leadership with live examples of business leaders.
- Introduction to the concept of management and its functions.
- To know concept of planning, decision making, controlling, staffing, organizing etc. and to understand new approaches in management

Course Code: EC 3	**Course Title: Financial Accounting –I**

Course Outcomes:
The students would be able :

- To have knowledge of basic accounting concepts such as journal, ledger, subsidiary book, journal proper and bank reconciliation statements.
- To gain knowledge on AS -6 (depreciation) and AS 10 (fixed assets).
- To Understand closing of accounts at the end of the year for sole trading concern and partnership firms.

Course Code: AECC 2A 4	**Course Title: Business Communication – I**

Course Outcomes:
The students would be able :

- To gain knowledge about theories of communication.
- To understand obstacles to communication in Business world.
- To acquire knowledge about business correspondence.
- To apply the language and writing skills.

Course Code: SEC 2B 5	**Course Title: Foundation Course – I**

Course Outcomes:
The students would be able :

• To sensitize learners about Indian society. • To Understand multi-cultural diversity of Indian society. • To Understand of India's political processes and the Indian constitution.	
Course Code: CC 6	**Course Title: Business Economics – I**
Course Outcomes: The students would be able : • To Enhance knowledge on demand-supply analysis, production function, break even analysis and economies of scale. • To Understand markets structures such as perfect competition, monopoly, monopolistic competition and oligopoly. • To acquaint the students with the economic principles as are applicable in business	
Course Code: CC 7	**Course Title: Quantitative Methods –I**
• To Understand index numbers and application to banking and insurance sector. • To provide fundamental basic knowledge of statistical techniques as applicable to business. • To Develop graphical presentation	
SEMESTER II	
Course Code: EC 1	**Course Title: Principles and Practices of Banking and Insurance**
Course Outcomes: The students would be able : • To Study banking sector in India • To Study Insurance sector in India.	
Course Code: EC 2	**Course Title: Business Law**
Course Outcomes: The students would be able : • To get Knowledge about the Indian Contract Act 1872 and special contracts. • Knowledge and understanding of the sale of Goods Act 1930 and Negotiable Instruments Act 1881. • Knowledge of Consumer Protection Act, 1986.	
Course Code: EC 3	**Course Title: Financial Accounting – II**
Course Outcomes: The students would be able : • To understand valuation of goodwill and shares. • To study Buyback of equity shares and redemption of Preference shares • To study Redemption of debentures	
Course Code: AECC 2A 4	**Course Title: Business Communication - II**
Course Outcomes: The students would be able : • To know about presentation skills.	

• To understand group communication. • To get acquainted with Business correspondence. • To apply language and writing skills. • To Understand of presentation skills and making of power point presentation. • Understanding of group communication – interviews, meetings, conference and public relation. • Understanding business correspondence, language and writing skills.
Course Code: SEC 2B 5 | **Course Title: Foundation Course – II**
Course Outcomes: The students would be able : • The objective of this course is to understand the concepts of liberalization, privatization and globalization. • Understanding the importance of environmental studies. • Understanding and managing stress and conflict. • Understanding the importance of environmental studies.
Course Code: CC 6 | **Course Title: Organizational Behaviour**
Course Outcomes: The students would be able : • To Study organizational behaviour with respect to motivation in banking and insurance sector. • To Understand group dynamics. • To Develop organizational culture and organizational development.
Course Code: CC 7 | **Course Title: Quantitative Methods –II**
• To know Testing of Hypothesis. • To study Calculation of Ratio, Proportion and Percentage • To understand Application of statistics in Investments

22. B. Com. [Financial Management]

Name of Department: B. Com. [Financial Management]
Class: F. Y. B. F.MG
Program Outcomes: **Specific core discipline knowledge** • Students can acquire knowledge about preparation of Accounts, elements of accountancy, Special accounting areas, Business Mathematics, Financial System, Principles Of Finance, Environmental Science, Business Environment and Computer skills. • Students can understand primary details of the Financial Accounts, Financial System.

- Students can understand Business environment, Business Communication

- **Communication skills**
  Students can communicate effectively using oral and written communication skills.

Problem solving and research skills

- Students can analytically solve and record transactions in different accounting systems.

Program Specific Outcomes:

- To understand elements of financial accounting.
- Toexplore the special accounting areas in financial accountancy.
- To analyze and understand the Indian Financial System.
- To provide knowledge about Computer Skills.
- To develop good communication skills in oral and written form.
- To make awareness of The Principles of Finance.
- To explain business environment and its impact on world.
- To understand overview of business economics.
- To analyze different mathematical techniques to calculate financial return and risk.
- To aware about human values and responsibility towards society.

SEMESTER I

Course Code: EC 1	**Course Title: Financial Accounting**

Course Outcomes:
The students would be able :

- To gain knowledge about the accounting concepts and conventions.
- To understand depreciation, its meaning and methods.
- To prepare final accounts of proprietary concern.
- To understand the single entry system of accounting.

Course Code:EC 2	**Course Title: Business Mathematics**

Course Outcomes:
The students would be able :

- To understand calculation of ratio, proportion and percentage.
- To calculate profit & loss, trade discount, cash discount, commission and brokerage.
- To gain knowledge about Interest and annuity.
- To understand about shares and mutual funds.

Course Code: EC 3	**Course Title: Indian Financial System.**

Course Outcomes:
The students would be able :

- To gain knowledge about financial system.
- To analyze and understand the various financial institutions .
- To acquire knowledge about the non banking financial institutions.
- To understand the evolution of finance companies.

Course Code: AEECC 2A 4	**Course Title: Business Communication – I**

Course Outcomes:

The students would be able :
- To gain knowledge about theories of communication.
- To understand obstacles to communication in Business world.
- To acquire knowledge about business correspondence.
- To apply the language and writing skills.

Course Code: SEC 2B 5	**Course Title:Foundation Course – I**

Course Outcomes:
The students would be able :
- To gain knowledge about overview of Indian society.
- To understand concept of disparity.
- To acquire knowledge about Indian Constitutions.
- To understand significant aspects of political processes.

Course Code: CC 6	**Course Title: Business Environment – I**

Course Outcomes:
The students would be able :
- To understand business and its environment.
- To acquire knowledge about business and society.
- To analyze contemporary issues.
- To understand international environment.

Course Code: CC 7	**Course Title: Business Economics – I**

Course Outcomes:
The students would be able :
- To acquire knowledge about business economics.
- To understand concept of demand.
- To analyze supply and production decisions and cost of production.
- To understand market structure.
- To get knowledge about pricing practices.

SEMESTER II

Course Code: EC 1	**Course Title: Financial Accounting – II**

Course Outcomes:
The students would be able :
- To understand branch accounts.
- To acquire knowledge about departmental accounts.
- To understand the hire purchase and installment system.
- To acquire knowledge of partnership accounts.

Course Code: EC 2	**Course Title: Business Statistics**

Course Outcomes:
The students would be able :
- To acquire knowledge of statistics, population, sampling.
- To understand the measures of central tendency.
- To understand measures of dispersion.
- To acquire knowledge of correlation and regression.

Course Code: EC 3	Course Title: Principles of Finance

Course Outcomes:
The students would be able :

- To acquire knowledge of finance, financial management and financial planning.
- To know capital structure and capitalization.
- To understand the external sources of finance.
- To know the internal sources of finance.

Course Code: AEECC 2A 4	Course Title: Business Communication - II

Course Outcomes:
The students would be able :

- To know about presentation skills.
- To understand group communication.
- To get acquainted with Business correspondence.
- To apply language and writing skills.

Course Code: SEC 2B 5	Course Title: Foundation Course - II

Course Outcomes:
The students would be able :

- To acquire knowledge about globalization and Indian Society.
- To understand human rights.
- To get knowledge about the ecology.
- To get understanding about stress and conflicts.
- To apply knowledge in managing stress and conflicts in contemporary society.

Course Code: CC 6	Course Title: Environmental Science

Course Outcomes:
The students would be able :

- To have an overview of environment.
- To understand the various natural resources.
- To understand environment and economic activities.
- To get acquainted with environment management.

Course Code: CC 7	Course Title: Computer skills - I

Course Outcomes:
The students would be able :

- To get knowledge of computer hardware.
- To understand windows and its features
- To get familiar with internet
- To understand word – 2013
- To understand excel - 2013

Class: S. Y. B.FMG.

Program Outcomes:

Specific core discipline knowledge

- Students can acquire knowledge about Management accounting, Corporate accounts, Cost accounting, Corporate finance.

- Students can understand Entrepreneurial development ,Taxation, Business regulatory framework, Office management, Business and company law.

- **Communication skills**
  Students can communicate effectively using medium of information technology.

Program Specific Outcomes:

- To understand Corporate accounting.
- To know different methods of cost accounting.
- To acquire knowledge of direct taxation system of India.
- To analyze usefulness of information technology in accountancy.
- To understand business regulatory framework in India.
- To study entrepreneurial development.
- To understand the business laws.
- To acquire knowledge of management accounting.
- To understand indirect tax system in India.
- To understand need of Office management.

SEMESTER III

Course Code: EC 1 (DRE)	**Course Title: Corporate Accounts -1**

Course Outcomes:
The students would be able :

- To understand partnership final account with adjustment of admission or retirement / death of partner during the year.
- To acquire knowledge of piecemeal distribution of cash.
- To understand conversion or sale of a partnership firm into a Ltd. Company.
- To know about procedure of amalgamation of firms.

Course Code: EC 2 (DRE)	**Course Title:Direct Tax - 1**

Course Outcomes:
The students would be able :

- To acquire knowledge about definitions u/s 2.
- To know basis of charge and exclusion from total income.
- To understand different heads of incomes like Salary, House property, Business profession, Capital Gain, Other sources.
- To analyse different deductions under chapter VI – A
- To understand computation of total income..

Course Code: EC 3 (DRE)	**Course Title: Cost Accounting - 1**

Course Outcomes:
The students would be able :

- To understand the cost accounting.
- To acquire knowledge about material cost
- To understand labour cost.
- To understand overheads ; classification and apportionment.

Course Code: AEC 4	**Course Title: Entrepreneurial Development.**

Course Outcomes:
The students would be able :

- To understand entrepreneur and entrepreneurship.
- To gain knowledge about entrepreneurial Development.
- To analyze the legal considerations for different forms of organizations.
- To get knowledge about Entrepreneurship Development Programme and Risk Management.

Course Code: CC 5	**Course Title:Management Accounting.**

Course Outcomes:
The students would be able :

- To get introduced to Management accounting.
- To analyze and interpret Accounts.
- To understand Ratio analysis.
- To get knowledge of Cash Flow Statement.
- To understand working capital management.

Course Code : CC 6	**Course Title: Business Law**

Course Outcomes:
The students would be able :

- To know the Indian Contract Act, 1872
- To understand Special contracts.
- To gain knowledge of The Sales of Goods Act, 1930
- To acquire knowledge about The Negotiable Instruments (Amended) Act, 2015

Course Code: CC 7	**Course Title: Business Regulatory Framework**

Course Outcomes:
The students would be able :

- To know the Laws related to Industrial Relations and Industrial Disputes.
- To understand Laws related to Health, Safety and Welfare.
- To gain knowledge of Social Legislation.
- To know laws related to Compensation Management.

SEMESTER IV

Course Code: EC 1 (DRE)	**Course Title: Corporate Accounts - II**

Course Outcomes:
The students would be able :

- To understand preparation of final accounts of companies.
- To acquire knowledge about redemption of preference shares.
- To know about redemption of debentures.
- To understand ascertainment and treatment of profit prior to incorporation.

Course Code: EC 2 (DRE)	**Course Title:Direct Tax - II**

Course Outcomes:
The students would be able :

- To understand clubbing of income.

- To acquire knowledge about set off and carry forward of losses.
- To know computation of tax liability of individual and HUF.
- To study computation of income of partnership firm in relation to section 40(b) and tax thereon.
- To understand return of income under section 139.
- To know concept of Tax deducted at source
- To calculate advance tax and interest payable.
- To acquire knowledge about DTAA U/S 90 and 91.

Course Code: EC 3 (DRE)	**Course Title: Cost Accounting - II**

Course Outcomes:
The students would be able :

- To classify Costs and Costs sheets.
- To understand reconciliation of Costs and Financial accounts.
- To gain knowledge of Contract costing
- To gain knowledge of Process costing.

Course Code: AEC 4	**Course Title : Information Technology in Management**

Course Outcomes:
The students would be able :

- To understand business process.
- To know about computerized accounting system.
- To understand concept of MIS reports in computer environment.
- To understand relationship between information technology and auditing.

Course Code: CC 5	**Course Title : Corporate Finance**

Course Outcomes:
The students would be able :

- To get an overview of Corporate finance
- To do planning of corporate financial Activities
- To understand capital structure
- To understand the sources and methods of raising corporate finance.

Course Code: CC 6	**Course Title: Corporate Law**

Course Outcomes:
The students would be able :

- To know The Indian Companies Act, 2013
- To understand The Indian Partnership Act, 1932
- To understand the Consumer Protection Act, 1986 and The Competition Act, 2002
- To know the laws related to intellectual property rights.

Course Code: CC 7	**Course Title : Office Management.**

Course Outcomes:
The students would be able :

- To know Office Accommodation and Environment.

- To know Office Automation
- To understand HRM for office Management
- To know the planning and scheduling office work

Class: T. Y. B. F.MG

Program Outcomes:

Specific core discipline knowledge

- Students can acquire knowledge about financial management, corporate accounting, auditing.
- Students can understand Financial analysis and business valuation.

Program Specific Outcomes:

- To understand corporate accounting system in depth.
- To analyze usefulness of financial management.
- To understand the need and importance of auditing.
- To analyze usefulness of financial management.
- To do financial analysis and business valuation.
- To understand organizational behavior
- To gain knowledge about security analysis and portfolio management.

SEMESTER V

Course Code: EC 1	**Course Title :Corporate accounts - III**

Course Outcomes:

The students would be able :

- To understand final accounts of Banking Company.
- To understand final accounts of Insurance Company.
- To gain knowledge of Investment accounting.
- To understand about accounting for foreign currency translation.

Course Code: EC 2	**Course Title : Auditing - I**

Course Outcomes:

The students would be able :

- To understand need and importance of Auditing.
- To do audit planning, Procedure and documentation.
- To understand various auditing techniques.
- To understand internal audit.

Course Code: EC 4	**Course Title : Business Ethics**

Course Outcomes:

The students would be able :

- To understand about ethics and areas of business ethics
- To get knowledge about Business ethics in global economy
- To study the concept of corporate social responsibility
- To understand about the functional ethics.

Course Code: EC 6	**Course Title : Financial Planning and Business valuation**

Course Outcomes:

The students would be able :

- To study analysis of financial statement and statement of shareholder's equity
- To do analysis of Income, profitability, growth and sustainable earnings.
- To understand business valuation and its models.
- To get knowledge of valuation of business for Mergers & acquisitions and Valuation of Intellectual property.

Course Code: CC 5	**Course Title : Financial Management - I**

Course Outcomes:
The students would be able :

- To get an introduction about Financial Management.
- To acquire knowledge about investment decisions
- To understand types of financing.
- To get knowledge about the cost of capital.

Course Code: CC 6	**Course Title : Research Methodology in Financial Management.**

Course Outcomes:
The students would be able :

- To get an introduction of research.
- To understand data collection and processing.
- To understand data analysis and interpretation
- To acquire knowledge of research report writing.

SEMESTER VI

Course Code: CC 5	**Course Title : Financial Management - II**

Course Outcomes:
The students would be able :

- To acquire knowledge about risk and return
- To analyze capital structure decisions
- To understand cash management.
- To understand receivable management

Course Code: EC 1	**Course Title : Corporate Accounting - IV**

Course Outcomes:
The students would be able :

- To study corporate financial statement.
- To understand internal reconstruction.
- To study AS 14- Amalgamation, Absorption.
- To study external reconstruction

Course Code: EC 2	**Course Title : Auditing - II**

Course Outcomes:
The students would be able :

- To learn about vouching
- To study verification

• To study various auditing standards. • To understand about audit of companies.

Course Code: EC 4	**Course Title : OrganisationalBehaviour**
Course Outcomes: The students would be able : • To acquire knowledge about organizational behavior • To understand inter personal relationships • To understand group behavior and team behavior • To get knowledge about stress management and change.	

Course Code: CC 6	**Course Title : Security Analysis and Portfolio Management**
Course Outcomes: The students would be able : • To understand portfolio management ; its introduction and process • To understand portfolio management valuation • To understand fundamental and technical analysis • To know the efficient market theory and CAPM	

23.B. Com. [Investment Management]

Name of Department: B. Com. [Investment Management]
Class: F. Y. B. I.M
Program Outcomes: **Specific core discipline knowledge** • Students can understand the Investment, Investment alternatives, Investment related services and regulatory mechanism. • Students can understand the basic of wealth creation and wealth management , business economics, basics of quantitative methods **Communication skills** • Students can acquire knowledge related to oral and written communication skills. **Problem solving and research skills** • Students can analytically solve and record transactions in different accounting systems.

Program Specific Outcomes:

- To understand Investment and its related services and types of Investment and its importance.
- To study the role of Regulatory bodies.
- To make aware about innovations in investment services.
- To study the significant role of risk in Investment.
- To understand elements of financial accounting.
- To understand overview of business economics.
- To study the principles of wealth creation and wealth management in detail.
- To understand the structure of capital market in India.
- To develop communication skills.
- To learn the basis of society.
- To get knowledge about the Indian constitution and their rights.
- To aware about human values and responsibility towards society.
- To study the accounting standards.
- To study the role of financial intermediaries and Investment Banking.
- To understand the importance of financial management and methods of cost accounting.

SEMESTER I

Course Code: EC 1	**Course Title: Basic of Investment & Wealth Creation**

Course Outcomes:
The students would be able :

- To enrich students with the knowledge of the basics of Investment and Wealth creation.
- To Study the deployment of funds in different sectors by way of Investment.
- To study Investment alternatives.
- To help students realize the importance of investment and wealth creation in the today developing economy.

Course Code: EC 2	**Course Title: Introduction to Accounting- I**

Course Outcomes:
The students would be able :

- To have knowledge of basic accounting concepts such as journal, ledger, subsidiary book, journal proper and bank reconciliation statements.
- To gain knowledge on AS -1 (Disclosure of Accounting Policies), AS 2 (Valuation of Inventories (Stock)) and AS – 9 Revenue Recognition.
- To understand manufacturing trading account, profit and loss account and Balance sheet (final account).
- To understand the concept of Hire Purchase System.

Course Code: EC 3	**Course Title: Introduction to Financial System**

Course Outcomes:
The students would be able :

- To understand the financial system in India.
- To understand the types of financial market in India.
- To understand the importance of financial institutions.

- To have knowledge of financial services and financial regulators.
- To have knowledge of different financial instruments.

Course Code: AECC 2A 4	**Course Title: Business Communication – I**

Course Outcomes:
The students would be able :
- To gain knowledge about theories of communication.
- To understand obstacles to communication in Business world.
- To acquire knowledge about business correspondence.
- To apply the language and writing skills.

Course Code: SEC 2B 5	**Course Title: Foundation Course – I**

Course Outcomes:
The students would be able :
- To sensitize learners about Indian society.
- To Understand multi-cultural diversity of Indian society.
- To Understand of India's political processes and the Indian constitution.

Course Code: CC 6	**Course Title: Business Economics – I**

Course Outcomes:
The students would be able :
- To Enhance knowledge on demand-supply analysis, production function, break even analysis and economies of scale.
- To Understand markets structures such as perfect competition, monopoly, monopolistic competition and oligopoly.
- To acquaint the students with the economic pricing practices as are applicable in business.

Course Code: CC 7	**Course Title: Quantitative Techniques**

- To Understand Financial mathematics. Simple interest, compound interest-nominal rate effective rate and continuous compounding and EMI calculation.
- To provide fundamental basic knowledge of statistical techniques as applicable to business.
- To understand Concept of real functions and Derivatives.

SEMESTER II

Course Code: EC 1	**Course Title: Introduction to Wealth Management**

Course Outcomes:
The students would be able :
- To Study overview of wealth management.
- To study the role of Insurance in wealth management.
- To Study Insurance sector in India.
- To gain the knowledge of retirement planning and estate planning.

Course Code: EC 2	**Course Title: Introduction to Accounting-II**

Course Outcomes:
The students would be able :

- To understand the concept of Investment Accounting w.r.t AS 13.
- To study Foreign currency transactions w.r.t AS 11
- To study Accounts of Non–Trading Institutions & Service Industries.
- To understand the concept of Issue of Shares and Debentures, Redemption of Preference shares.

Course Code: EC 3	**Course Title: Introduction to Financial Markets**

Course Outcomes:
The students would be able :

- To understand Structure of financial markets in India.
- To study Capital market and money market.
- To study Foreign exchange markets, Commodity markets and Derivative markets.
- To understand Market exchanges and Market regulators.

Course Code: AECC 2A 4	**Course Title: Business Communication – II**

Course Outcomes:
The students would be able :

- To know about presentation skills.
- To understand group communication.
- To get acquainted with Business correspondence.
- To apply language and writing skills.
- To understand of presentation skills and making of power point presentation.
- Understanding of group communication – interviews, meetings, conference and public relation.
- Understanding business correspondence, language and writing skills.

Course Code: SEC 2B 5	**Course Title: Foundation Course – II**

Course Outcomes:
The students would be able :

- The objective of this course is to understand the concepts of liberalization, privatization and globalization.
- Understanding the importance of environmental studies.
- Understanding and managing stress and conflict.
- Understanding the importance of environmental studies.

Course Code: CC 6	**Course Title: Introduction to Financial Intermediaries**

Course Outcomes:
The students would be able :

- To Study Basics of Financial Intermediaries.
- To Understand Taxonomy of Financial Intermediaries.
- To understand Theories and Management of Financial Intermediation.
- To study Future and Challenges in Financial Intermediaries.

• To study Financial Intermediaries – Global Perspective.	
Course Code: CC 7	**Course Title: Investment Banking**
• To understand the concept of Investment Banking. • To understand the concept Risk and Return. • To study Investment Banking Activities	

24. B. Com. [Financial Market]

Name of Department: B. Com. [Financial Market]		
Class: F. Y. B. FM		
Program Outcomes: • After completing the three years Bachelor of Commerce (Financial Markets) program the students will be able to Understand the fundamental & operations of financial market, to apply & evaluate the financial & investment theories. • To focus deep in basics of trading & its regulations market forces etc. • To gain knowledge about risk, wealth, economics as well as legal framework of financial market. • To pursue masters degree in the field finance such as MFM, MBA(Finance) PGDFM etc. • To achieve highly paid jobs as finance manager Research analysis, financial consultant, project Co Ordinator, wealth manager etc.		
Program Specific Outcomes: • To give an idea about fundamentals of financial services and players in financial sectors, key concept from environment studies, political, and social analysis as they pertain to the design, about different trade policy on export and import, Preparing financial statements in accordance with appropriate standards. • To understand the law of demand, supply forecasting , consumer durable, Understand the mechanics and conventions of the foreign exchange market. • To examine forwards and futures contracts for equity indexes, commodities, and currencies, Enabling the students to understand the about the Equity Market , Derivative market, commodity market, Capital market. Financial market, Debt market, Venture capital & private equity, to understand the basic concept of direct and indirect tax.		
Course Outcome		
SR NO	**SUBJECT**	**OBJECTIVES**
SEM 1		

1	**Financial Accounting 1**	• To enable students to learn principles and fundamental concepts of Accountancy
		• Prepare ledger accounts using double entry bookkeeping and record journal entries accordingly
2	**Introduction to Financial System**	• To learn the fundamentals of financial system in economy.
3	**Business Mathematics**	• To enable students to learn the basic concepts of mathematics and its application in finance.
4	**Business Communication**	• To develop the ability of the students to communicate professionally and correspond correctly.
		• To understand effective interpersonal communications skills that maximize team effectiveness.
5	**Foundation Course**	• Course taken at colleges gives wide range of subjects or in one subject at a basic level, preparing students for more advanced study it teaches us about social values, moral values in students

6	**Business Environment**	• To provide knowledge of the environment in which business operate, understand the concept, significance and changing dimensions of business environment.
7	**Business Economics**	• To understand the basic framework of modern economy in which business operates.
Semester 2		
1	**Financial Accounting 2**	• Preparing financial statements in accordance with appropriate standards. Interpreting the business implications of financial statement information. Preparing accounting information for planning and control and for the evaluation of finance. Prepare Bank reconciliation statement from incomplete statement. Explain the purpose of double entry system to understanding the accounting system properly. Preparation of ratification errors.

2	**Principles of Management**	• Term management refers to the coordination of work activities through and with other people to accomplish the goals of an organization. • Learner will explore the various functions of management. Management involves not only coordination, but also planning, organizing, leading, and controlling.
3	**Business Statistics**	• To impact the basis in Statistics to help students acquire new skills on the application of statistical tools and techniques in Business decision-making.
4	**Business Communication**	• Upon completion of the course, students can demonstrate a good understanding of effective business writing and effective business communications. To acquire the skills of report writing and Modern forms of communication: email, videoconference, internet, websites and their importance.

5	**Environmental Science**	• Understand key concepts from environment studies, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions. Learners can acquire knowledge on ecosystem, Food Chains, and historical context of environmental issues and the links between human and natural systems • To understand appreciate concepts and methods from renewable and nonrenewable sources and their application in environmental problem solving. • Students understand critically on Biodiversity, threats for Biodiversity and their roles and identities as citizens, consumers.
6	**Computer Skills**	• To introduce the students about basics of computer. • To provide practical knowledge exposure to MS- Word. • To provide practical knowledge exposure MS-Excel. • To provide practical knowledge exposure MS- Power.

7	**Foundation Course**	• It prepares students for more advanced study it teaches us about social problems about the society and to tackle the problem
Sem 3		
1	**Portfolio Management**	• To help them to understand security analysis. • To create an awareness about risk and return of different investments • To enlighten the evolution of securities and derivatives
2	**Management Accounting**	• To make them understand the investment decisions and portfolio performance • To enlighten the students on management Accounting. Helps to give proper idea on financial statement analysis in practical point of view. • To introduce the concept of fund flow and cash flow statement. To provide knowledge about budget control keeping in mind the scope of the concept.

		• To develop the know-how and concept of marginal costing with practical problem.
3	**Business Law**	• Make the students understand about business and corporate law • Develop knowledge on contract and various types of contracts. • To help the students to understand the concept of sale of. • Make the students understand about Negotiable Instruments.
4	**Debt Market 1**	• The debt market is the market where debt instruments are traded. • Debt instruments are assets that require a fixed payment to the holder, usually with interest. • Examples of debt instruments include bonds (government or corporate) and mortgages
5	**Computer Skills**	• Basic computer literacy. • The ability to back-up • Experience of online project work. • The ability to nurture creativity – and mark it. • Social networking skills.

6	**Foundation Course - Money Market.**	The Financial Markets Foundation Qualification (FMFQ) is an introductory level Programme intended for anyone entering a career in the financial markets. The interaction between cash and derivative markets. The key features of both equity and debt products
7	**Equity Market**	• The equity market (often referred to as the stock market) is the market for trading equity instruments. • Stocks are securities that are a claim on the earnings and assets of a corporation. • An example of an equity instrument would be common stock shares, such as those traded on the overseas Stock Exchange.
Sem 4		
1	**Equity Market 2**	• The stock market refers to the collection of markets and exchanges where regular activities of buying, selling, and

		issuance of shares of publicly held companies take place. • Such financial activities are conducted through institutionalized formal exchanges or over-the-counter (OTC) marketplaces which operate under a defined set of regulations. • There can be multiple stock trading venues in a country or a region which allow transactions in stocks and other forms of securities.
2	**Debt Market 2**	Investments in debt securities typically involve less risk than equity investments and offer a lower potential return on investment. Debt investments by nature fluctuate less in price than stocks. Even if a company is liquidated, bondholders are the first to be paid

3	**Business Law 2**	Upon completion of this course, students will be able to: • Know about the Corporate Laws in general. • Become aware of legal aspects of Company law. • Understand company contracts and become confident therein. • Deal with corporate and Securities law
4	**Merchant Banking**	A merchant bank is a company that conducts underwriting, loan services, financial advising, and fundraising services for large corporations and high net worth individuals. Unlike retail or commercial banks, merchant banks do not provide services to the general public
5	**Business Economics-Ii**	• Economics is a social science concerned with the production, distribution, and consumption of goods and services. It studies how individuals, businesses, governments, and nations make choices on allocating resources to satisfy their wants and needs and

		tries to determine how these groups should organize and coordinate efforts to achieve maximum output.
6	**Corporate Finance**	• Corporate finance is an area of finance that deals with sources of funding, the capital structure of corporations, the actions that managers take to increase the value of the firm to the shareholders, and the tools and analysis used to allocate financial resources
7	**Foreign Exchange Markets Foundation Course**	• The foreign exchange market (Forex, FX, or currency market) is a global decentralized or over the counter (OTC) market for the trading of currencies. • This market determines the foreign exchange rate. It includes all aspects of buying, selling and exchanging currencies at current or determined prices.
Sem 5		

1	**Corporate Accounting**	It deals with accounting for company, preparation of their Final accounts and cash flow statement analysis and interpretation of company financial results.
2	**Technical Analysis**	It helps us to understand trading discipline employed to evaluate investment and identify trading opportunities in price trends and pattern seen on charts.
3	**Marketing in Financial Services**	It refers to collective use of marketing tactics employed by marketers in financial services sector
4	**Financial Derivatives**	The course describes and examines financial derivatives such as Forward, Future and option, drawing real world financial market experience and application.
5	**Tax Direct and Income Tax**	To introduce the basic concept of Income Tax .In order to familiarize the different know-how and heads of income with its components .It helps to build an idea about income from house property as a concept

		.It give more idea about the income from business or profession .Tax saving investments.
6	**Business Ethics and Corporate Governance**	It helps to identify the key players involved in corporate governance, discuss the rightful role of various authorities. To understand the emerging need and growing importance of good governance and CSR by organizations To study the ethical business practices, CSR and Corporate Governance practiced by various organizations
Sem 6		
1	**Risk Management**	• It helps the student to identify and address the risk facing your business and in doing so increases the like hood of successfully achieving your business objective. • To understand issues pertaining to pricing and hedging with options on individual stocks and indexes, to examine forwards and

		futures contracts for equity indexes, commodities, and currencies, and to analyze second generation derivative products such as interest rates and the management of credit risks • Understanding and managing risk, introduces financial risk management. • The processes of risk identification, risk measurement and risk management are explored. The course then goes on to examine reputational risk and operational risk. • It concludes with an examination of the subject of behavioural finance and what this can contribute to our understanding of risk taking and risk management.
2	**Venture Capital and Private Equity.**	Both private equity and venture capitalist invest in companies, both recruit former Investment Bankers, and they both make money from investments rather than advisory fees.

		But if you take a closer look at them, you'll see that they're significantly different.
3	**Mutual Fund Management**	• A mutual fund collects money from investors and invests the money on their behalf. • It charges a small fee for managing the money. • Mutual funds are an ideal investment vehicle for regular investors who do not know much about investing. Investors can choose a mutual fund scheme based on their financial goal and start investing to achieve the goal.
4	**Strategic Corporate Finance**	Strategic Corporate Finance translates principles of corporate finance theory into practical methods for implementing them. Filled with in-depth insights, expert advice, and detailed case studies, Strategic Corporate Finance will prepare you for the issues involved in raising, allocating and managing capital, and its associated risks.

5	**Indirect Tax GST**	• People have taken note of the GST or the Goods Services Tax law. A new law has been proposed which is set to reform how people do business and the way goods and services are taxed in India. Whether it makes goods cheaper for the common man like you and me, nobody can tell. But this is going to impact our lives in our jobs, our businesses and the overall economic environment. Reason enough for us to learn something about it!
6	**Project.**	• Project Work is a learning experience which aims to provide students with the opportunity to synthesize knowledge from various areas of learning, and critically and creatively apply it to real life situations. • This process, which enhances students' knowledge and enables them to acquire skills like collaboration, communication and independent learning, prepares them for lifelong learning and the challenges ahead.

25. M.Com

Name of Department: Commerce
Class: MCom - I
Program Outcomes: **Specific core discipline knowledge** • The program develops decision making skills through application of management and entrepreneurial development. • To enable students in – depth understanding of all core areas. **Communication skills** • Students are capable for well versed in national as well as international trends. Problem solving and other skills • Students are able for conducting business, role of regulatory bodies in corporate and financial sectors of various financial instruments. • Students can impart basic knowledge, principles and latest applications in business.
Program Specific Outcomes: • To create awareness in application-oriented research through business decisions. • To enhance horizon of knowledge in various fields of commerce through strategic management, economics, business ethics, accounting, research and e – commerce. • To inculcate the knowledge of business and the techniques of managing the business with special focus on marketing, banking theory law and practices, accounts. • To develop knowledge on organizational dynamics. • To develop the skills in application of research methods.
SEMESTER I

Course Code: N.A.	**Course Title: Strategic Management**
Course Outcomes: The students would be able : • To acquaint with the basic concept of management. • To understand the strategic formulations, implementation and evaluation. • To understand the strategical concepts, importance of strategies in the global competition. • To know the challenges faced by modern management and the strategies to overcome the industrial sickness in India.	

Course Code: N.A.	**Course Title: Economics for Business Decisions**

Course outcomes:

The students would be able :

- To understand the exposure of economics in business decisions
- To understand the importance of market forces.
- To know the importance of factors of production and its usage.
- To analyze the various types of market such as perfect competition, monopoly, monopolistic competition and oligopoly.

Course Code: N.A.	**Course Title: Cost and Management Accounting**

Course outcomes:

The students would be able :

- To understand the concept of cost and management accounting and its importance.
- To learn the techniques of standard costing.
- To understand the types of budget.
- To enable the learners how to present financial reports.

Course Code: N.A.	**Course Title: Business Ethics and Corporate Social Responsibility**

Course Outcomes:

The students would be able :

- To understand the concept of business ethics.
- To analyze the importance and the regulatory framework of corporate governance.
- To learn the importance of CSR and role of NGO.
- To understand CSR, its stakeholders, policy and the involvement of UNDP towards CSR.

SEMESTER II

Course Code: N.A.	**Course Title: Research Methodology for Business**

Course outcomes:

The students would be able :

- To understand the meaning and objectives of research.
- To study the stages of research process.
- To learn data processing and various statistical analysis.
- To analyze the format of writing a report, layout and other details.

Course Code: N.A.	**Course Title: Macro Economics Concepts and Applications**

Course outcomes:

The students would be able :

- To study the application of macroeconomics at corporate level.
- To analyze the importance of application of economic concepts in short run and long run.
- To understand the usage of economic policies to adjust the economy through IS-LM Models.
- To learn the importance of international aspects of macroeconomic policies to overcome the Balance of Payments (BOPs).

Course Code: N.A.	**Course Title: Corporate Finance**

Course Outcomes:

The students would be able :

- To understand the implications of financial management.
- To study value of money and its concepts.
- To acquire knowledge about the applications of ratios for taking financial decisions.
- To analyze and take financial decisions based on the financial statements to overcome business risk and financial risk.

Course Code: N.A.	**Course Title: E-Commerce**

Course Outcomes:

The students would be able :

- To learn the history of E – commerce, its benefits, models and significance.
- To understand the web-based commerce and how to assess the business.
- To obtain knowledge how to use the electronic payment system and E – marketing and its

scope.
- To study the legal and regulatory security issues of E – commerce.

Name of Department: Commerce

Class: M. Com. Part II (Accountancy Specialization) Group A

Program Outcomes:

Specific core discipline knowledge

- Students can acquire knowledge about Advance financial accounting, Financial Services, Advance cost accounting, Indirect taxation and Financial Management.
- Students can understand application of financial accounting, cost accounting in business environment.

Communication skills

- Students can express their thoughts through research project.

Problem solving and research skills

- Students can analyze and examine data from research through testing of hypothesis.

Program Specific Outcomes:

- To understand elements of advance financial accounting.
- To explore the special accounting areas in advance financial accountancy.
- To analyze different elements of advance cost accountancy.
- To understand need and importance of Indirect Tax.
- To explore different methods of calculating risk and return in financial management.
- To acquire knowledge about financial Management.
- To understand financial services in business environment.

SEMESTER III

Course Code: 1	Course Title: Advance Financial Accounting

Course Outcomes:
The students would be able:

- To gain knowledge about Foreign currency conversion.
- To understand final accounts and statutory requirements for banking companies.
- To analyze accounting and statutory requirement of Insurance Companies.
- To acquire knowledge about accounting and statutory requirements of co operative societies. `

Course Code: 3	**Course Title: Advance Cost Accounting**

Course Outcomes:
The students would be able:

- To learn about process costing.
- To understand cost allocation and activity-based costing systems.
- To acquire knowledge about responsibility accounting.
- To understand strategic cost management.

Course Code: 5	**Course Title: Financial Services**

Course Outcomes:
The students would be able:

- To acquire knowledge about financial services and merchant Banking.
- To understand venture capital and securitization.
- To learn about hire purchase finance and housing finance.
- To get knowledge about stock broking and depository services.

Course Code: 4	**Course Title: Project work – I**

Course Outcomes:
The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skills.

SEMESTER IV

Course Code: 1	**Course Title: Corporate Financial Accounting**

Course Outcomes:
The students would be able:

- To get knowledge about corporate financial reporting.
- To understand international financial reporting standards and Indian Accounting Standards.
- To learn about valuation of business for amalgamation and merger.
- To acquire knowledge about consolidated financial statement.

Course Code: 2	**Course Title: Indirect Tax – Introduction of Goods and service tax**

Course Outcomes:
The students would be able:

- To acquire knowledge about Goods and service tax.
- To understand registration process under GST.
- To learn about collection of tax under integrated Goods and Services tax Act 2017.
- To understand place of supply of goods or services under GST.
- To compute payment of GST.

Course Code: 3	**Course Title: Financial Management**

Course Outcomes:
The students would be able:

- To understand types of financing.
- To learn about investment decisions with help of capital budgeting.
- To acquire knowledge about management of working capital.
- To understand financial planning.
- To learn about financial planning and corporate strategy.

Course Code: 4	**Course Title: Project work – II**

Course Outcomes:
The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skills.

Class: M. Com –II (Business Management Specialization) Group B

Program Outcomes:

Specific core discipline knowledge

- To acquaint a student with conventional as well as contemporary areas in the discipline of Business Management
- To provide in-depth understanding of core areas of business management such as HR, Marketing, Advertising, Retail, Organization Behaviour, Relationship Management etc.

Communication skills

- To know and develop the process of carrying out research in commerce

Problem solving and research skills

- Students can analyze and examine data from research through testing of hypothesis.
- To inculcate the knowledge of business and the techniques of managing the business

Program Specific Outcomes:

- For pursuing research in their chosen areas.
- To work as managers in the field of marketing, HR, Sales, Advertising, retail, PR
- To develop managerial skills, decision making skills and entrepreneurship skills.

SEMESTER III

Course Code: 1	Course Title: Human Resource Management

Course Outcomes:

The students would be able:

- To understand the concepts of Human Resource Management human resource planning recruitment and selection of managerial personnel
- To get the inside of training and development process performance appraisal career advancement and succession planning
- To understand latest development in HRM And Labour legislation
- To know the emerging issues in HRM related to health and safety work life balance and talent management

Course Code: 4	Course Title: Marketing Strategies and

	Practices

Course Outcomes:

The students would be able:

- To understand the basic concept of marketing and new marketing strategies
- To explore the ways in which marketing strategies and plans can be designed
- To get insight into market environmental Trends and building customer value
- To analyze recent trend in marketing strategies such as e marketing and social marketing

Course Code: 5	**Course Title: Organizational Behaviour**

Course Outcomes:

The students would be able:

- To understand the basic concept of organizational setting, organizational design and evolution of OB
- To gain insight into how the foundations of individual behaviour are laid
- To study the group dynamics and behavior, conflicts at workplace and workplace behaviour determinants
- To understand emerging challenges in stress management and workforce diversity management

Course Code:	**Course Title: Project work – I**

Course Outcomes:

The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skills.

SEMESTER IV

Course Code: 2	Course Title: Advertising and Sales Management

Course Outcomes:

The students would be able:

- To know the basics of advertising ad agency and media management • To know the concepts of creativity and understand the social and regulatory framework of advertising
- To analyze sales Management concept
- To have an insight into sales planning sales controlling and recent trends in sales management

Course Code: 3	Course Title: : Retail Management

Course Outcomes:

The students would be able:

- To study the concepts of retailing recent trends in retailing and retail sector in India
- To understand the Genesis of retail marketing strategy and consumer strategies
- To study the concept of retail location layout and merchandising
- To analyze the use of technology in retailing that is irritating and retailing as a career option

Course Code: 5	Course Title: Management of Business Relations

Course Outcomes:

The students would be able:

- To understand the need and importance of business relation role of business relation manager and principles of business relation
- To explore the Genesis of customer and channel relationship management
- To understand the concept of employee relationship management
- To analyze and study supplier relation, investor relation and stakeholder's relationship management

Course Code:	Course Title: Project work – II

Course Outcomes:

The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skills.

Class: M. COM PART II (Banking & Finance Specialization) Group C

Program Outcomes:

Specific core discipline knowledge

- The program develops commerce professionals with specialization skill and applied competencies in theoretical and practical knowledge of banking and finance.
- Students can acquire various approaches towards banking and finance sector in modern globalized world.

Communication skills

- Students are prepared for depth analysis of investment, portfolio management and liquidation in banking sector and financial institutions.

Problem solving and other skills

- Students can evaluate business financial operations with conceptual requirement.
- Students are prepared to appraise the structure and operations of banking system.

Program Specific Outcomes

- To help the students to a clear idea of banking and finance sector.
- To provide in-depth understand of core areas such as financial markets, commercial banks, investment management, international finance, financial services and accounts in banking sector.
- To inculcate the knowledge of business with special focus on banking and financial institutions.
- To prepare students for applying proficient use of tools for analysis of business data.
- Impart the students with higher level of knowledge and understanding contemporary trends in banking sector.

• To prepare the students for in depth analysis of banking industry.
SEMESTER III
Course Code: 1 / **Course Title: Commercial Bank Management**
Course Outcomes: The students would be able: • To learn overview of commercial banks, their customer relationship management and services to different customers in India. • To study banks credit management and investment policy. • To acquire knowledge about human resource management in banks. • To evolve trends in modern banking and financial inclusion.
Course Code: 2 / **Course Title: Financial Markets**
Course Outcomes: The students would be able: • To learn an overview of financial system and its theories. • To study about capital market, ownership and creditorship securities. • To understand money market and its instruments. • To analyze derivative markets and globalization of financial markets.
Course Code: 3 / **Course Title: Accounting of Banking Sector**
Course Outcomes: The students would be able: • To understand about banking companies, types, its products services and cash management services. • To study accounting systems and provisions in banking companies. • To learn calculation of interest rates, instalment and annuities. • To study preparation of final accounts, financial statements and reporting.

Course Code:	**Course Title: Project Work - I**
Course Outcomes: The students would be able: • To understand research design. • To learn data collection. • To analyze collected data with different statistical techniques. • To know project writing skill.	
SEMESTER IV	
Course Code: 1	**Course Title: International Finance**
Course Outcomes: The students would be able: • To understand about international finance with reference to Balance of Payments and global changes. • To study IMF and its working. As well as various foreign exchange rates, • To analyze currency futures and options. • To learn about international instruments as well as multi development banks.	
Course Code: 2	**Course Title: Financial Services**
Course Outcomes: The students would be able: • To understand about financial services and its regulatory framework. • To acquire knowledge of various financial products and treasury management. • To study about mutual fund concepts, UTI mutual fund scheme and merchant banking. • To learn about portfolio management and other financial services.	
Course Code: 4	**Course Title: Investment Management**

Course outcomes:

The students would be able:

- To study about portfolio management, its analysis and selection.
- To understand portfolio revision, evaluation and bond valuation with practical problem.
- To learn fundamental analysis and technical analysis.
- To analyze efficient market theory and CAPM.

Course Code:	**Course Title: Project Work - II**

Course outcomes:

The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skill.

26. Bachelor of Management Studies

Name of Department: DEPARTMENT OF MANAGEMENT STUDIES (BMS)

Program Outcomes:

- Develop Effective Business Communication Skills & Presentation Skills.
- Develop Research Abilities to Collect, Organize & Analyze Data & take appropriate Decisions to Solve Business Problems.
- Develop Generic Business Management Skills & also Specific Functional Skills pertaining to their respective Functional Area (i.e. Finance / Marketing / HR).

Program Specific Outcomes:

- Understand the Importance of Business Ethics, Corporate Governance & CSR.
- Understand Basics of Operations Management (i.e. Logistics, Supply Chain Management & Operations Research).
- Understand Basics of Financial Accounting & Cost Accounting for making Managerial Decisions.
- Understand Basics of Marketing, Human Resource & Financial Management.
- Develop ability to conduct a Business Research Project.
- Have a Basic knowledge of Business Economics.
- Have a Basic knowledge of Business Law & Industrial Law.

- Becoming acquainted with important techniques of Business Statistics & Business Mathematics.
- Becoming aware of various Macro & Micro Environmental issues that affect the Business.
- Develop Competence, In-depth Knowledge & Employability in their selected Specialization (i.e. Finance / Marketing / HR).

Class: F.Y.B.M.S

SEMESTER I

Course Code: 1	**Course Title: INTRODUCTION TO FINANCIAL ACCOUNTS**

Course Outcomes:
The students would be able :

- This subject is designed to equip the students with accounting principles and standards used in the corporate sector.
- This helps in gaining broad view with respect to financial system adopted in companies.

Course Code: 2	**Course Title: BUSINESS LAW**

Course outcomes:
The students would be able :

- The curriculum helps in gaining a in-depth knowledge of various laws applied in business at large.
- This curriculum covers various legal aspects related to businesses which are used in real life with practical examples.

Course Code: 3	**Course Title: BUSINESS STATISTICS**

Course outcomes:
The students would be able :

- This curriculum introduces core business statistics and fundamental aspects of decision-making with the help of statistical analysis of data.
- The given subject helps to reach a decision with respect to business and its execution.

Course Code: 4	**Course Title: BUSINESS COMMUNICATION – I**

Course Outcomes:
The students would be able :

- This curriculum covers the basic soft skills for communication- listening, oral and written as per industry standards.
- It presents communication as an integral element to management strategy and as a critical component for success in the work place.

Course Code: 5	**Course Title: FOUNDATION COURSE – I**

Course outcomes:

The students would be able :

- This course is designed to enable the students to understand the process for conflict resolution in a team
- This curriculum also helps to make aware about the various types of negotiation while working in team.

Course Code: 6	**Course Title: FOUNDATION OF HUMAN SKILLS**

Course outcomes:
The students would be able :

- To enable the students to learn about understanding human nature, group behavior, organizational culture, motivation at workplace.
- This curriculum helps in gaining the desired knowledge of human skills to be applied in organization.

Course Code: 7	**Course Title: BUSINESS ECONOMICS – I**

Course Outcomes:
The students would be able :

- The curriculum introduces economic concepts and principles which are useful in understanding the general economic environment within which businesses and other organizations operate.
- It examines how consumers and firms make decisions and how they interact with each other in markets.

SEMESTER II

Course Code: 1	**Course Title: PRINCIPLES OF MARKETING**

Course Outcomes:
The students would be able :

- To understand the basic concepts of marketing, analyzing marketing environment i.e. micro and macro environment.
- This curriculum also helps in learning importance of market research, understanding marketing mix – product, price, place and promotion, analyzing trends in marketing

Course Code: 2	**Course Title: INDUSTRIAL LAW**

Course Outcomes:
The students would be able :

- To make students understand crucial rules and regulations listed under following acts: Industrial Disputes Act 1947, The Trade Union Act 1926, The Factories Act 1948, The Workmen's Compensation Act 1923, Employee State Insurance Act 1948, Payment of Wages Act 1948, Payment of Bonus Act, 1965 and Payment of Gratuity Act 1972

Course Code: 3	**Course Title: BUSNIESS MATHEMATICS**

Course Outcomes:

The students would be able :

- To make students learn mathematical calculations with regards to Simple and Compound Interest,
- This curriculum also gives in-depth of Depreciation of Assets, Algebraic functions used in business.

Course Code: 4	**Course Title: BUSINESS COMMUNICATION – II**

Course Outcomes:
The students would be able :

- To enhance students' presentations skills, promoting group communication, importance of interview and meetings, learning trade letters like inquiry letter, complaint letter, RTI letter, grievance letter, sales letters etc.

Course Code: 5	**Course Title: FOUNDATION COURSE – II**

Course Outcomes:
The students would be able :

- To make students knowledgeable with the Human Rights, understanding concepts of Liberalisation, Privatisation and Globalisation and its impact on employment, understanding environment and its causes of degradation, promoting sustainable development, promoting socialization, reducing stress and conflicts in the society.

Course Code: 6	**Course Title: BUSINESS ENVIRONMENT**

Course Outcomes:
The students would be able :

- To enable students to understand micro and macro environment, understanding political, legal, social, cultural, technological, competitive and international environment affecting businesses (Major part in PEST)

Course Code: 7	**Course Title: PRINCIPLES OF MANAGEMENT**

Course Outcomes:
The students would be able :

- The curriculum focuses on critical thinking and problem solving, using logic and Analysis with the help of application oriented learning and case studies as well as caselets with role playing activities.

Class: S.Y.B.M.S

SEMESTER III

Course Code: 1	**Course Title: INTRODUCTION TO COST ACCOUNTING**

Course Outcomes:
The students would be able:

- To enable the students to understand the principles and procedure of cost accounting and to apply them to different practical situations
- This course exposes the students to the basic concepts and the tools used in Cost Accounting.

Course Code: 2	Course Title: CORPORATE FINANCE
Course outcomes: The students would be able: • The course aims at explaining the core concepts of corporate finance and its importance in managing a business and its aspects. • The objectives of develop a conceptual framework of finance function and to acquaint the participants with the tool's techniques and process of financial management in the realm of financial decision making. • This course and its studies help in decision making process in corporate industries.	
Course Code: 3	**Course Title: ADVERTISING**
Course outcomes: The students would be able : • This course highlights the increasing importance of consumers as the driving force in today's advertising strategies, social media, and the Internet evolution.	
Course Code: 4	**Course Title: CONSUMER BEHAVIOUR**
Course Outcomes: The students would be able : • The course gives an understanding of how a consumer selects, purchases, uses and disposes of products and services is pertinent to successfully managing the marketing function and also learn the role of CONSUMER BEHAVIOUR within marketing.	
Course Code: 5	**Course Title: RECRUITMENT AND SELECTION**
Course outcomes: The students would be able : • To familiarize the students with current trends in Recruitment and selection. • Understand the links between Recruitment and selection and other HRM activities. • To understand Recruitment and selection policies and procedures that are said to characterize the high- performance organization.	
Course Code: 6	**Course Title: MOTIVATION AND LEADERSHIP**
Course outcomes: The students would be able : • The learners receive a solid grounding in leadership approaches, theories & Motivation concepts. • It also discusses the importance of rewards & recognition, grievances& discipline procedure. • To acquaint the students about practical approaches to Motivation and leadership and its application in Indian context.	
Course Code: 7	**Course Title: INFORMATION TECHNOLOGY – I**
Course Outcomes: The students would be able :	

- To learn basic concepts of Information Technology, its support and role in Management, for managers
- It comprises of practical hands on training required for office automation. It is expected to have practical sessions of latest MS-Office software
- To understand basic concepts of Email, Internet and websites, domains and security therein
- To recognize security aspects of IT in business, highlighting electronic transactions, advanced security features

Course Code: 8	**Course Title: FOUNDATION COURSE – III**

Course Outcomes:
The students would be able :

- To enable students to understand causes for environmental degradation, various concepts of environment, promoting sustainability and innovations in business. To promote waste management and disaster management. To promote eco-friendly practices

Course Code: 9	**Course Title: BUSINESS PLANNING AND ENTREPRENURSHIP**

Course Outcomes:
The students would be able :

- Entrepreneurship is one of the major focus areas of the discipline of Management. This course introduces Entrepreneurship to budding managers.
- To develop entrepreneurs & to prepare students to take the responsibility of full line of management function of a company with special reference to SME sector

Course Code: 10	**Course Title: ACCOUNTING FOR MANAGERIAL DECISION**

Course Outcomes:
The students would be able :

- To acquaint management learners with basic accounting fundamentals
- To develop financial analysis skills among learners.
- The course aims at explaining the core concepts of business finance and its importance in managing a business.

Course Code: 11	**Course Title: STRATEGIC MANAGEMENT**

Course Outcomes:
The students would be able :

- The objective of this course is to learn the management policies and strategies at every Level to develop conceptual skills in this area as well as their application in the corporate world.
- The focus is to critically examine the management of the entire enterprise from the Top Management viewpoints.

Class: S.Y.B.M.S

SEMESTER IV

Course Code: 1	Course Title: AUDITING
Course Outcomes: The students would be able: • To ensure students understand and practice the various techniques of auditing while managing their finances. • To enable students get acquaint with the various concepts of auditing. • To enable students, understand vouching & its procedure. Also, to understand verification as a procedure.	
Course Code: 2	**Course Title: FINANCIAL INSTITUTION AND MARKETS**
Course outcomes: The students would be able: • To inculcate understanding relating to managing of financial system • The Course aims at providing the students basic knowledge about the structure, role and functioning of financial institutions and markets in the financial system in India.	
Course Code: 3	**Course Title: INTEGRATED MARKETING COMMUNICATION**
Course outcomes: The students would be able : • To understand the key concepts of planning and execution of an effective Integrated Marketing Communications (IMC) Program. • To study the various tools of IMC and the importance of an effective marketing communications program.	
Course Code: 4	**Course Title: RURAL MARKETING**
Course Outcomes: The students would be able : • The students will understand the concepts and techniques of marketing and their application in rural marketing.	
Course Code: 5	**Course Title: TRAINING AND DEVELOPMENT IN HRM**
Course outcomes: The students would be able : • To identify how effective Training and Development contributes to organizational development & enables strategic Achievement of organizational Goals. • To familiarize students with concepts and practices of Training and Development. • To understand the process of designing a training Program and its Evaluation.	
Course Code: 6	**Course Title: CHANGE MANAGEMENT**

Course outcomes:
The students would be able :

- To understand foundational aspects of Change Management & the critical role that manager play in the change process.
- To understand that adapting to change is not technical but attitudinal.
- To provide leaders and managers with clear insight on how to effectively motivate Employee through organizational change.
- The objective is to prepare students as organizational change facilitators using the knowledge and techniques of behavioural Science.

Course Code: 7	**Course Title: INFORMATION TECHNOLOGY – II**

Course Outcomes:
The students would be able :

- To understand managerial decision-making and to develop perceptive of major functional area of MIS
- To provide conceptual study of Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, Key issues in implementation. This module provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.
- To learn and understand relationship between database management and data warehouse approaches, the requirements and applications of data warehouse
- To learn outsourcing concepts. BPO/KPO industries, their structures, Cloud computing

Course Code: 8	**Course Title: FOUNDATION COURSE – IV**

Course Outcomes:
The students would be able :

- To understand significance of ethics and ethical practices in businesses which are indispensable for progress of a country
- To learn the applicability of ethics in functional areas like marketing, finance and human resource management
- To understand the emerging need and growing importance of good governance and CSR by organizations
- To study the ethical business practices, CSR and Corporate Governance practiced by various organizations

Course Code: 9	**Course Title: BUSINESS ECONOMICS – II**

Course Outcomes:
The students would be able :

- To enable the students to understand concepts with regards to demand in business, supply and pricing from the point of view of the businesses, Understanding various types competitions in the market.

Course Code: 10	**Course Title: BUSINESS RESEARCH METHODS**

Course Outcomes:
The students would be able :

• The course is designed to inculcate the analytical abilities and research skills among the students.	
Course Code: 11	**Course Title: PRODUCTION AND TOTAL QUALITY MANAGEMENT**
Course Outcomes: The students would be able : • To acquaint learners with the basic management decisions with respect to production and quality management • To make the learners understand the designing aspect of production systems • To enable the learners, apply what they have learnt theoretically.	
Class: T.Y.B.M.S	
SEMESTER V	
Course Code: 1	**Course Title: COMMODITY AND DERIVATIVES MARKET**
Course Outcomes: The students would be able: • To understand concepts related to Commodity & Derivative Mkt. • This curriculum is designed to make students aware of different financial products such as forwards, futures and options and also how to hedge the portfolio against the price risk.	
Course Code: 2	**Course Title: WEALTH MANAGMENT**
Course outcomes: The students would be able: • This curriculum is designed to make students understand various methods to create and manage wealth through investment planning, insurance planning, tax planning, retirement and estate planning	
Course Code: 3	**Course Title: RISK MANAGEMENT**
Course outcomes: The students would be able: • This curriculum is designed to familiarize with fundamental aspects of risk Management & control. • To give comprehensive overview of risk governance & assurance. • To understand risk management with reference to Insurance sector.	
Course Code: 4	**Course Title: INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT**
Course Outcomes: The students would be able:	

- This curriculum is designed to guide the students to select the right portfolio through security analysis and do the proper asset allocation.
- To understand various models and techniques of security and portfolio Analysis
- To understand Portfolio Mgt.

Course Code: 5	**Course Title: E-COMMERCE& DIGITAL MARKETING**

Course outcomes:
The students would be able :

- This curriculum will provide an understanding of how the digital economy works which will help develop the critical insights necessary to succeed in E-Commerce and Digital Marketing.

Course Code: 6	**Course Title: SALES AND DISTRIBUTION MANAGEMENT**

Course outcomes:
The students would be able :

- The course is designed to develop understanding and appreciation of the Sales & Distribution processes in organizations. It includes the familiarization of concepts, approaches and the practical aspects of the key decision making variables in sales force and distribution channel management

Course Code: 7	**Course Title: SERVICES MARKETING**

Course Outcomes:
The students would be able :

- This curriculum is designed to help students learn the fundamentals of services marketing from a practical point of view focusing on the needs of the customers, who are to be kept satisfied and delighted for a business to prosper

Course Code: 8	**Course Title: STRATEGIC MARKETING MANAGEMENT**

Course Outcomes:
The students would be able :

- This curriculum is designed to help students learn the fundamentals of Strategic Marketing from a practical point of view focusing on the needs of the company, and different strategies to be adopted in for different companies for different environment.

Course Code: 9	**Course Title: PERFORMANCE MANAGEMENT**

Course Outcomes:
The students would be able :

- To understand the dynamics of performance Appraisal and performance Management to develop criteria and standards for performance Assessment.

- To familiarize students about the concepts of performance Management.
- To understand the importance of career planning and practices.

Course Code: 10	**Course Title: STRESS MANAGEMENT**

Course Outcomes:
The students would be able :

- To identify common stressors.
- To understand the techniques to cope with stress.
- To define what stress is and start to recognize the signs of stress.
- To enable learners to adopt some personal stress management strategies & techniques to deal with stress.

Course Code: 11	**Course Title: STRATEGIC HUMAN RESOURCE MANAGEMENT**

Course Outcomes:
The students would be able :

- To understand the significance of Strategic Human Resource Management.
- To brief out the Emerging Roles of HR Professionals in Strategic Human Resource Management.
- To familiarize students about the theories, approaches &application of Strategic Human Resource Management
- To understand the purpose & process of developing HR Policy.

Course Code: 12	**Course Title: FINANCE IN HUMAN RESOURCE MANAGEMENT**

Course Outcomes:
The students would be able :

- To learn basic compensation concepts & context of compensation practices.
- To understand the various compensation plans.
- To learn some of the implication for strategic compensation & employer approaches to manage legal required benefits.

Course Code: 13	**Course Title: LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

Course Outcomes:
The students would be able :

- To provide students with basic understanding of concepts of logistics and supply chain management.
- To introduce students to the key activities performed by the logistics function
- To provide an insight in to the nature of supply chain, its functions and supply chain systems.

• To understand global trends in logistics and supply chain management.	
Course Code: 14	**Course Title: CORPORATE COMMUNICATION AND PUBLIC RELATION**
Course Outcomes: The students would be able : • The student will learn the role of effective communication strategies and public relations in the corporate environment	

FACULTY OF ARTS

27. BA - Economics

Name of Department: ECONOMICS
Class: F.Y.B.A., S.Y.B.A. AND T.Y.B.A.
Program Outcomes: • **Critical Thinking Skills:** Students are expected to be able to apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals and to evaluate the role played by assumptions in arguments that reach different conclusions to a specific economic or policy problem. • **Quantitative Reasoning Skills:** Students are expected to understand how to use empirical evidence to evaluate the validity of an economic argument, use statistical methodology, interpret statistical results and conduct appropriate statistical analysis of data. • **Problem-Solving Skills:** Students are expected to be able to solve problems that have clear solutions and to address problems that do not have clear answers and explain conditions under which these solutions may be correct. • **Specialized Knowledge and Application of Skills:** Students are expected to develop critical and quantitative thinking skills specific to business and accounting. • **Communication Skills:** Students are expected to be able to communicate effectively in written, oral and graphical form about specific issues and to formulate well-organized written arguments that state assumptions and hypotheses supported by evidence
Program Specific Outcomes: • Explain the function of market and prices as allocative mechanisms. • Apply the concept of equilibrium to both microeconomics and macroeconomics. • Identify key macroeconomic indicators and measures of economics change, growth, and development. • Identify and discuss the key concepts underlying comparative advantage.

- Identify and explain major types of market failures.
- Discuss the application of marginal analysis.
- Explain the use of benefit/cost analysis.
- Explain the contribution of economics to the analysis of non-market social issues.
- Assess the role of domestic and international institutions and norms in shaping economies.
- Describe how economic trade-offs and social values impact public/private social policy, and the success or failure of policies to achieve intended outcomes.
- Distinguish between normative and positive economics.
- Identify the limits of economic analysis.
- Compare and contract efficiency and equity.
- Recognize how to use scientific method in economics.
- Formulate empirically testable hypotheses.

SEMESTER – I

Course Code:	**Course Title: MICROECONOMICS**

Course Outcomes:
The students would be able :

- To understand price determination of factors
- To understand various theories of factors
- To understand concept of profit & Interest
- To understand market equilibrium of firm in monopolistic market.

SEMESTER II

Course Code: PAPER-I	**Course Title: MACROECONOMICS**

Course Outcomes:
The students would be able :

- This course is designed to introduce the student to the basic building blocks of macroeconomics

using an open economy framework.

- The course develops an understanding of the constituents of the open economy.
- The student should be able to build on these constituents in the later years so as to be able to analyses macroeconomic policies

SEMESTER III

Course Code: PAPER-II	**Course Title: MICROECONOMICS**

Course Outcomes:
The students would be able :

- To understand individual agents of market
- To understand consumer behaviour
- To understand concept of cost

SEMESTER IV

Course Code: PAPER-II	Course Title: MACROECONOMICS

Course Outcomes:

The students would be able :

- Identifying the basic concepts and theories of Macro economics.
- Awareness about changing macro economics policies and theories.
- Understanding various concepts such as; GDP, GNP NNP, Personal Income, Disposable Income, Per Capita Income, and National Income.
- Identifying the factors determining gross domestic product, employment, the general level of prices, and interest rates.
- Realizing the law of markets, consumption function and investment function.

SEMESTER III

Course Code: PAPER-III	Course Title: INDIAN ECONOMY

Course Outcomes:

The students would be able :

- To understand nature of Indian economy
- To understand economic planning in India
- To understand recent structural changes in economy
- To understand Demonetization, Fiscal policies.
- To understand the upcoming policy of Universal Basic Income

SEMESTER IV

Course Code: PAPER-III	Course Title: INDIAN ECONOMY

Course Outcomes:

The students would be able :

- To understand nature of Maharashtra's economy
- To understand economic planning in Maharashtra
- To understand recent structural changes in economy
- Issues Maharashtra's economy
- To understand the condition of Tribal population in Maharashtra.
- To understand the issues in Infrastructural development in Maharashtra

SEMESTER III

Course Code:	Course Title: DEMOGRAPHY

Course Outcomes

- Understand the basics of demography.
- Understand the core social demographic variables, and how these variables influence population growth, composition, and structure
- Use demographic tools in understanding public health issues Knowledge attitude and practices.
- Discuss global demographic regimes and impact on public health.
- Identify appropriate sources of data, perform basic demographic analyses using various techniques and ensure their comparability across populations.

SEMESTER IV

Course Code:	Course Title: DEMOGRAPHY

Course Outcomes:
The students would be able :

- Central theoretical and practical concepts underpinning the study of demography including principles of research design and strategy, the choice of research method, and the impact of measurement, collection and analysis strategies on the validity and generalisability of research outputs.
- Application and evaluation of core demographic theory and understanding of population trends in both developed and developing countries.
- Modern methods for obtaining and analysing demographic data.
- The use of appropriate statistical modelling techniques, qualitative methods and population projections.

SEMESTER V

Course Code: ECOMIC501	Course Title: MICROECONOMICS

Course Outcomes
The students would be able :

- To able to understand the theory of oligopoly & duopoly
- To able to understand the new theories of oligopoly market
- To able to understand theory of distribution
- To able to understand general equilibrium & economic efficiency & welfare

Course Code: ECODEV502	Course Title: ECONOMICS OF DEVELOPMENT

Course Outcomes:
The students would be able :

- To understand conceptualizing development
- To understand theories of economic development
- To understand concept of poverty & development
- To understand population & human development

Course Code: ECOILEC503	Course Title: INDUSTIRAL AND LABOUR CONOMICS :

Course Outcomes:
The students would be able :

- To familiarize with the role of management and unions in the promotions of industrial relations.
- Examine the labour relation issues and its management.
- To acquire skills in handling employer-employee relations.

Course Code: ECORMB504	Course Title: RESEARCH METHODOLOGY

Course Outcomes:
The students would be able :

- Understanding the basic framework of research process
- Defining various research designs and techniques.
- Identifying various sources of information for literature review and data collection.
- Discussing the ethical dimensions of conducting applied research.
- Appreciating the components of scholarly writing and evaluate its quality.
- Knowing various aspects of Research in Economics.
- Understanding various data analysis techniques (Mean, Mode, Median, Range, Standard Deviation, Karl person coefficient of correlation).

• Ability to interpretation of data and report writing.	
Course Code: ECOENVC505	**Course Title: ENVIRONMENTAL ECONOMICS**
Course Outcomes: • Have a detailed understanding of the discipline of environmental economics, including its key principles and methods. • Be able to use economic techniques to analyse environmental problems and to assess environmental policies. • Have developed research skills in the field of environmental economics.	
Course Code: ECOHET506	**Course Title: HISTORY OF ECONOMIC THOUGHT**
Course Outcomes: The students would be able : • Acquaintance with the economic thoughts of Classical, Nationalist and Socialist Thinkers. • Judging the development of economic thoughts. • Realizing the economic concepts and theories of Neo-classicals and Indian thinkers. • Evaluating the development of Indian economic thoughts.	
SEMESTER VI	
Course Code: ECOMA601	**Course Title: MACROECONOMICS**
Course Outcomes: The students would be able : • To able to understand working & operation of RBI • To able to understand international aspects of the Indian financial system • To able to understand the Indian capital market • To able to understand international instructions & regional economic cooperation • To able to understand concept of devaluation & convertibility of rupees • To able to understand Euro currency market	
Course Title: INTERNATIONAL ECONOMICS	
Course Outcomes: The students would be able : • To understand theories international trade. • To understand gains from international trade & their measurements • To understand theory of intervention in trade • To understand the theory of regional blocks	
Course Title: INDUSTIRAL AND LABOUR ECONOMICS	
Course Outcomes: The students would be able : • To familiarize students with the basic concepts of industrial relations, its philosophy, origin and Development. • To develop knowledge on trade unions and its formation, structure, functions and legal Framework. • To gain insight into the process of collective bargaining, its origin and development. • To gain understanding on industrial disputes, its causes, manifestation and effects.	

Course Title: RESEARCH METHODOLOGY

Course Outcomes:

The students would be able :

- Students should understand a general definition of research design.
- Students should know why educational research is undertaken, and the audiences that profit from research studies.
- Students should be able to identify the overall process of designing a research study from its inception to its report.
- Students should be familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research.
- Students should know the primary characteristics of quantitative research and qualitative research.
- Students should be able to identify a research problem stated in a study.
- Students should be familiar with how to write a good introduction to an educational research study and the components that comprise such an introduction.

Course Title: DEVELOPMENT THEORY AND EXPERIENCE

- **Course Outcomes:**

The students would be able :

- Understanding the concept and aspects of economic Development.
- Knowing the theories of economic growth & Development.
- Measuring the concept and issues of economic planning.
- Discussing the need, types and necessary conditions of economic planning.

Course Title: INTERNATIONAL TRADE, POLICY AND PRACTICE

- **Course Outcomes:**

The students would be able :

- Elaborating the importance of the study of International Economics.
- Finding similarities and dissimilarities in inter-regional and international trade.
- Knowing the changes in the import-export policies of India.
- Evaluating various types of exchange rates and its merits and demerits.
- Discussing the types and effects of tariffs and quotas.
- Judging the function, merits and demerits of Foreign Capital, and
- International Corporation (IMF, IBRD, WTO and SAARC).

28. BA - English

Name of Department: English	
Class: FYBA	
Program Outcomes: ● To enhance language proficiency by providing adequate exposure to reading and writing skills ● To orient the learners towards the functional aspects of language ● To increase the range of lexical resource through a variety of exercises ● To acquaint students with the characteristics of various literary genres ● To develop analytical skills and critical thinking through close reading of literary texts ● To cultivate appreciation of language as an artistic medium and to help them understand the importance of forms, elements and style that shape literary works ● To enable students to understand that literature is an expression of human values within a historical and social context	
Program Specific Outcomes: ● Students can communicate effectively using oral and written communication skills ● To write clearly, coherently and effectively about various genres of literature ● To recognize the culture and context of the work of literature ● To develop sensitivity to nature and fellow human beings	
SEMESTER - I	
Course Code: - :UACS101	**Course Title:** Communication Skills in English
Course Outcomes: ● To enhance language proficiency by providing adequate exposure to reading and writing skills ● To orient the learners towards the functional aspects of language ● To increase the range of lexical resource through a variety of exercises	
Course Code: : UAENG 101	**Course Title:** :FYBA in English (Optional) Elective Introduction to Literature Paper I
Course outcomes: The students would be able :	

- To acquaint students with the characteristics of various literary genres
- To develop analytical skills and critical thinking through close reading of literary texts
- To cultivate appreciation of language as an artistic medium and to help them understand the importance of forms, elements and style that shape literary works
- To enable students to understand that literature is an expression of human values within a historical and social context

Class: S.Y.B.A. English (Ancillary)

Program Outcomes:

- To introduce learners to the uniqueness of Indian Literature in English
- To acquaint learners to the pluralistic dimensions of Indian Literature in English
- To help them understand the different genres of Indian Literature in English
- To familiarise learners with different perspectives of approaching this literature
- To make learners aware of prominent Indian Writers in English
- To acquaint the learners of literature with the various genres and literary terms of twentieth century American Literature
- To sensitize them to the themes and styles of American Literature
- To introduce them to the socio-cultural milieu of twentieth century America through literary texts
- To enhance their understanding of American, African American and Multicultural sensibilities by introducing them to the literary works representing them
- To facilitate cross-cultural perspectives and discussions on American Literature
- To introduce the students to some major aspects of communication and mass communication.
- To develop among the students a broad perspective of the past and the present status of Mass Media in India.
- To develop among the students a critical understanding of the Mass Media with regard to their presentation formats, roles and audiences in Indian context.
- To develop among the students a critical understanding of some special roles of different Mass Media in India.
- To help the students to assess the contribution of Indian mass media to national development.
- To acquaint the students with some issues and laws related to mass media in India.
- To introduce the students to various job and career opportunities in the media industry.

Program Specific Outcomes:

- By the end of the course the students should be able to receive and analyse various media products critically and become interested in jobs or career in the Media Industry.

SEMESTER - III

Course Code: - UAENG301	**Course Title:** Indian Literature in English Paper II

Course Outcomes:

- To introduce learners to the uniqueness of Indian Literature in English
- To acquaint learners to the pluralistic dimensions of Indian Literature in English
- To help them understand the different genres of Indian Literature in English
- To familiarise learners with different perspectives of approaching this literature
- To make learners aware of prominent Indian Writers in English

Course Code: UAENG302	**Course Title:** American Literature, Paper III

Course outcomes:

The students would be able :

- To acquaint the learners of literature with the various genres and literary terms of twentieth century American Literature
- To sensitize them to the themes and styles of American Literature
- To introduce them to the socio-cultural milieu of twentieth century America through literary texts
- To enhance their understanding of American, African American and Multicultural sensibilities by introducing them to the literary works representing them
- To facilitate cross-cultural perspectives and discussions on American Literature

Course Code: UAMASSCOM301	**Course Title:** Mass Communication

Course outcomes:

The students would be able :

- To introduce the students to some major aspects of communication and mass communication.
- To develop among the students a broad perspective of the past and the present status of Mass Media in India.
- To develop among the students a critical understanding of the Mass Media with regard to their presentation formats, roles and audiences in Indian context.
- To develop among the students a critical understanding of some special roles of different Mass Media in India.
- To help the students to assess the contribution of Indian mass media to national development.
- To acquaint the students with some issues and laws related to mass media in India.
- To introduce the students to various job and career opportunities in media industry.

SEMESTER IV

Course Code: UAENG401	**Course Title:** Indian Literature in English Paper II

Course Outcomes:

The students would be able :

- To introduce learners to the uniqueness of Indian Literature in English
- To acquaint learners to the pluralistic dimensions of Indian Literature in English
- To help them understand the different genres of Indian Literature in English
- To familiarise learners with different perspectives of approaching this literature
- To make learners aware of prominent Indian Writers in English

Course Code: UAENG402	**Course Title:** American Literature, Paper III

Course Outcomes:

The students would be able :

- To acquaint the learners of literature with the various genres and literary terms of twentieth century American Literature
- To sensitize them to the themes and styles of American Literature
- To introduce them to the socio-cultural milieu of twentieth century America through literary texts
- To enhance their understanding of American, African American and Multicultural sensibilities by introducing them to the literary works representing them
- To facilitate cross-cultural perspectives and discussions on American Literature

Course Code: UAMASSCOM401	**Course Title:** Mass Communication

Course Outcomes:

The students would be able :

- To introduce the students to some major aspects of communication and mass communication.
- To develop among the students a broad perspective of the past and the present status of Mass Media in India.
- To develop among the students a critical understanding of the Mass Media with regard to their presentation formats, roles and audiences in Indian context.
- To develop among the students a critical understanding of some special roles of different Mass Media in India.

- To help the students to assess the contribution of Indian mass media to national development.
- To acquaint the students with some issues and laws related to mass media in India.
- To introduce the students to various job and career opportunities in the media industry.

Name of Department: English

Class: TYBA

Program Outcomes:

- To introduce students to English Literature of the 16th, 17th and 18thcenturies.
- To show them how background influences shaped the writer's thinking.
- To present them to the literary masters who dominated the scene
- To familiarize students with different writing styles that each age adopted.
- To introduce the learners to important critical terms
- To make them aware of the nature and function of literature and criticism
- To impart the technique of close reading of literary texts
- To enable them to understand various literary theories and critical approaches
- To familiarize the learners with the tenets of practical criticism
- To develop amongst learners an insight into the process of word formation and transformation
- To develop amongst them an insight into the sounds, stress patterns and intonations in the English language to improve their speaking skills
- To develop among them an insight into the structure of the English language and to provide knowledge of the rules of grammar
- To help them learn grammatical analysis and description and the skills of sentence transformation
- To introduce the mechanics of writing for effective writing for various domains

Program Specific Outcomes:

- To understand the distinctive features of English literature of the 16th, 17th and 18th centuries
- To comprehend how background influences shaped the writer's thinking.
- To recognize and appreciate the literary masters who dominated the scene.
- To grasp the different writing styles that each age adopted.
- use some important critical terms
- become aware the nature and function of literature and criticism
- impart the technique of close reading of literary texts
- understand the various literary theories and critical approaches
- be familiar with the tenets of practical criticism
- Gain a basic understanding of phonetics, morphology and word transformation
- Have improved speaking skills

- Have developed adequate knowledge of the rules of grammar, grammatical analysis and sentence transformation
- Write effectively in various domains.

SEMESTER - V

Course Code: - UAENG501	**Course Title:** Paper IV- 16th to 18th Century English Literature – I

Course Outcomes:

The students would be able :

- To understand the distinctive features of English literature of the 16th, 17th and 18th centuries
- To comprehend how background influences shaped the writer's thinking.
- To recognize and appreciate the literary masters who dominated the scene.
- To grasp the different writing styles that each age adopted.

Course Code: UAENG502	**Course Title:** Paper V- Literary Criticism-I

Course outcomes:

The students would be able :

- use some important critical terms
- become aware the nature and function of literature and criticism
- impart the technique of close reading of literary texts
- understand the various literary theories and critical approaches
- be familiar with the tenets of practical criticism

Course Code: UAENG503A	**Course Title:** Paper VI -- Grammar and the Art of Writing-I

Course outcomes:

The students would be able :

- Gain a basic understanding of phonetics, morphology and word transformation
- Have improved speaking skills
- Have developed adequate knowledge of the rules of grammar, grammatical analysis and sentence transformation
- Write effectively in various domains.

SEMESTER VI

Course Code: UAENG601	**Course Title:** Paper IV- 16th to 18th Century English Literature - II

Course Outcomes:

The students would be able :

The students would be able :

- To understand the distinctive features of English literature of the 16th, 17th and 18th centuries
- To comprehend how background influences shaped the writer's thinking.
- To recognize and appreciate the literary masters who dominated the scene.
- To grasp the different writing styles that each age adopted.

Course Code: UAENG602	**Course Title:** Paper V- Literary Criticism - II

Course Outcomes:

The students would be able :

- use some important critical terms
- become aware the nature and function of literature and criticism
- impart the technique of close reading of literary texts
- understand the various literary theories and critical approaches
- be familiar with the tenets of practical criticism

Course Code: UAENG603A	**Course Title:** Paper VI -- Grammar and Art of writing – II

Course Outcomes:

The students would be able :

- Gain a basic understanding of phonetics, morphology and word transformation
- Have improved speaking skills
- Have developed adequate knowledge of the rules of grammar, grammatical analysis and sentence transformation
- Write effectively in various domains.

29. BA – History

Name of Department: HISTORY

Class: F.Y.B.A., S.Y.B.A. & T.Y.B.A.

Program Outcomes:

- To teach students basics in history with a view to promote historical research.
- To understand the various kinds of sources of history and its interpretation.
- To acquaint students with the new trends and approaches in history writing.
- To teach students basics of research methodology in history.
- To understand various resources of Heritage in India
- To introduce students to the Cultural Heritage of Maharashtra
- To develop an understanding of Heritage Tourism amongst students.
- To acquaint the students with the relevance and scope of Heritage Tourism
- To introduce the students to new trends in Heritage Tourism.

Program Specific Outcomes:

Degrees and Diplomas that can be pursued post Bachelor of Arts in History

M.A. History	Diploma in Archival Science
M.A. Museulogy	B.A. Library Science
M.A. Archaeology	Union Public Service Examinations (UPSC)
Diploma in Numismatics	Bachelor of Education (B.Ed.)
Diploma in Epigraphy	Bachelor of Laws (LLB)

Students can opt for the following careers after Bachelor of Arts in History

- Archaeologist
- Museum Curator
- Librarian
- Heritage Tourism
- Research Assistant
- Art Restorer
- Teacher
- Archivist
- Numismatician
- Journalist
- Copywriter
- Civil Services
- Conservationist

SEMESTER I

Course Code: UAHIS 101	Course Title: History of Modern India (1857-1947)

Course Outcomes:
The students would be able :

- The course is designed to make the student aware about the making of modern India
- To acquaint with the Political history of Modern India
- To learn India's freedom struggle.

SEMESTER II

Course Code: UAHIS 201	Course Title: History of Modern India: Society and Economy

Course Outcomes:
The students would be able :

- The course is designed to make the student aware about the making of modern India
- To acquaint with the Social Economic history of Modern India.
- To teach the students the positive & negative aspects of the British Empire.

SEMESTER III

Course Code: UAHIS 301	Course Title: Landmarks in World History, 1300 A.D.-1919 A.D.

Course Outcomes:
The students would be able :

- To comprehend the transition of Europe from medieval to modern times and Learn its impact on the world.
- To provide accurate knowledge of the most significant events and personalities of the period
- To encourage understanding of the making of the modern world

Course Code: UAHIS 302	Course Title: : Ancient India from Earliest Times to 600 B.C.

Course Outcomes:
The students would be able :

- To acquaint with different sources of Ancient Indian History.
- To understand the political, socio-economic and cultural developments in the period under study
- To appreciate the rich cultural heritage in India

SEMESTER IV

Course Code: UAHIS 401	Course Title: Landmarks in World History, 1919 A.D.-1945 A.D.

Course Outcomes:

The students would be able :

- To acquaint with the major landmarks in World history
- Understand events that inspired India's Freedom Struggle
- To study the establishment of various governments such as Democracy, dictatorship, communism

Course Code: UAHIS 402	**Course Title: Ancient India 300 B.C. to 1000 A.D.**

Course Outcomes:
The students would be able :

- To acquaint with different sources of Ancient Indian History.
- To understand the political, socio-economic and cultural developments in the period under study
- To appreciate the rich cultural heritage in India

SEMESTER V

Course Code: UAHIS 501	**Course Title: History of Medieval India (1000CE- 1526CE)**

Course Outcomes:
The students would be able :

- To acquaint with the history of early Medieval India that laid the foundation of the Sultanate in India.
- To study the contribution of Vijaynagar and Bahamani kingdoms to Medieval Indian History.
- To examine the administrative, socio-economic and cultural aspects of Medieval India.

Course Code: UAHIS502	**Course Title: History Of Modern Maharashtra (1818CE – 1960CE)**

Course outcomes:
The students would be able :

- To acquaint with regional history of Maharashtra
- To understand political and socio-economic developments during the 19th and 20th centuries
- To create understanding of the movement that led to the formation of Maharashtra**.**

Course Code: UAHIS503A	**Course Title: Introduction To Archaeology**

Course outcomes:
The students would be able :

- To understand the basic facets of Archaeology.
- To evaluate the importance of Epigraphy.
- To study the importance of Numismatics as an important source of history.

SEMESTER VI

Course Code: UAHIS 601	**Course Title: History of Medieval India**

	(1526CE- 1707CE)
Course Outcomes: The students would be able : • To acquaint themselves with the history of India since the emergence of the Mughal rule. • To understand administration of the Mughal Empire. • To study the rise of the Maratha Power.	
Course Code: UAHIS602	**Course Title: History Of Contemporary India (1947-2000)**
Course Outcomes: The students would be able : • To understand the process of making the Constitution and the Integration and Reorganization of Indian States. • To acquaint the students with the political developments in India after Independence. • To comprehend the socio-economic changes and progress in science and technology in India.	
Course Code: UAHIS603A	**Course Title: Introduction To Museology and Archival Science**
Course Outcomes: The students would be able : • To understand the role of Museums in the preservation of Heritage. • To recognize the importance of Archival Science in the study of History. • To encourage students to pursue careers in various Museums and Archives in India and abroad.	

30. BA Political Science

Name of Department: POLITICAL SCIENCE
Class: FYBA
Program Outcomes: **BA in Political Science - Program Objectives** The Political Science undergraduate program was born out of a recognition of the increasing significance of cross-disciplinary studies in the social sciences. The program is organized around the combined perspectives and analytical tools of Sociology, Political Science, International Relations, and History. The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and/or for careers in the public and the private sector.

1. Understand the world, their country, their society, as well as themselves and have awareness of ethical problems, social rights, values and responsibility to the self and to others.
2. Understand different disciplines from natural and social sciences to mathematics and art, and develop interdisciplinary approaches in thinking and practice.
3. Develop knowledge of theories, concepts, and research methods in humanities and social sciences.
4. Assess how global, national and regional developments affect society.
5. Know how to access and evaluate data from various sources of information.

Program Specific Outcomes:

1. Understand and follow changes in patterns of political behavior, ideas and structures.
2. Develop the ability to make logical inferences about social and political issues on the basis of comparative and historical knowledge.

SEMESTER 1

Course Code: UAPOL101	**Course Title:** Political science-1 Indian Political System (The Constitutional Framework)

Course outcomes:
The students would be able :

1. Modules in this course are critical to the broad grasping of the subject. Sufficient time is planned to ensure that the learner has a critical look at the topics assigned for the Semester.
2. Learners should be found to be acquainted with the technical details of the topics therein.
3. Learners should understand the institutions better through case studies and relevant contemporary issues.

SEMESTER 2

Course Code: UAPOL201	**Course Title:** Politics Paper I: Indian Political System Semester II: Indian Political Process

Course outcomes:
The students would be able :

- The students are presently started into an investigation of genuine working of the political framework in the nation. Notwithstanding sacred references and contextual investigations, a lot of similar viewpoint is likewise taken right now familiarize the students with the Indian political framework concerning other political frameworks over the world. The course examines the government structure, its working and difficulties lately. Ideological group framework in India, the races that have been led throughout the years and the slow move towards the alliance governmental issues is thought upon in detail. Quirks of the Indian financial and political framework counting station, locale, religion and sex which mean character legislative issues are different themes in thought in the course. Contemporary difficulties to the framework, for example, criminalisation of legislative issues, psychological oppression and Naxalism are concentrated in extraordinary profundity at this phase to comprehend the patterns in the framework

1.Intricacies of Centre-State relations should be found to be understood and looked at in a new light by the learners.

2.Learners should be found to be capable of analysing significant variables shaping the Indian political system objectively.
3.Although basically known, these topics need theoretical attention for conceptual understanding.

Class: SYBA

Program Outcomes:

BA in Political Science - Program Objectives

The Political Science undergraduate program was born out of a recognition of the increasing significance of cross-disciplinary studies in the social sciences. The program is organized around the combined perspectives and analytical tools of Sociology, Political Science, International Relations, and History. The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and/or for careers in the public and the private sector

- Providing opportunities to students to understand the knowledge about political system and functions of the government at International, National, State and local levels.
- Producing the next generation of leaders in research, teaching and in the applications of political science with special reference to Indian political system.

Program Specific Outcomes:

- It has assumed an inter-disciplinary character. The subject matter of Political science has been changing according to the need of the society. The proposed undergraduate course in Political Science is designed to fulfill the need of the society.
- understand the concepts and principles of Political Science and structure, powers and functions of the Government in India and other nations.
- Enlighten the students to understand basic rights and duties of the citizen and help in process of development of the nation

SEMESTER 3

Course Code: UAPOL301	**Course Title:** Politics Paper II: Political Theory (Principles and Concepts of Political Theory

Course Outcomes:
The students would be able:
This course is fundamental since students are familiar with the working of political frameworks when all is said in done over their First Year and this course gives a reasonable establishing to the equivalent. How a state becomes makes, what separates a state from a country and why there develop difficulties to the equivalent are

a portion of the thoughts which are hypothetically talked about right now.

- Learners should have an improved understanding and new insight into the political concepts commonly referred to
- Conceptual base to the study of Politics should be laid

Course Code: UAPOL302	**Course Title:** Politics Paper III: Public Administration (Public Administration)

Course outcomes:
The students would be able :

- The Second Year Politics Paper III course familiarizes students with a field of study in Politics which manages organization. It deals with the speculations of organization and how administration can be molded better with the comprehension of organization and the board. Encounters of organization over the world towards authority, organization and inspiration are concentrated in this course. This course is naturally helpful for better faculty the board and for an unmistakable comprehension of the procedure of administration, advancement and arrangement making.
- This course chips away at the students' comprehension of open organization, hypotheses of the board, human relations, initiative and inspiration and the working of chain of importance, appointment also, decentralization. It likewise focuses on the contemporary strategies and practices of organization.
    - to set the tone towards learning administration
    - to understand the newer developments in the field of Public Administration
    - to create informed students of issues of administrative concern

SEMESTER IV

Course Code: UAMAPOL401	**Course Title:** Politics Paper II: Political Theory Semester IV: Political Values and Ideologies

Course outcomes:
The students would be able :

- Semester IV schedule for the Political Theory course covers significant political qualities and belief systems. Students study the idea of rights, their development, hypotheses and characterization of rights. They deal with political estimations of freedom, balance and equity. Students are acquainted with different types of government before the point by point investigation of popular government. Political belief systems, their significance and the impact they have all inclusive are taken a gander at in the last module which will cover a few philosophies, for example, Marxism, Fascism and Feminism.
- to ensure a nuanced study of the Political Theory and to make them relatable on the basis of contemporary issues.
- to equip the student with an understanding of why political systems across the world shape in certain ways over a period of time depending upon the choices they make and the effects they have.

Course Code: UAMAPOL402	**Course Title:** Politics Paper III: Public Administration Semester IV: Indian Administration

Course Outcomes:
The students would be able :

- Semester IV prospectus for the Public Administration course investigates the Indian Administration. The rise of organization in India, its development, improvement, changes that it has experienced are fundamental for the students' comprehension of how India has functioned over the a long time. Work force organization in India, for example, enlistment

and preparing of faculty, the procedure of money related organization in the nation as likewise the developing issues and difficulties to organization are a piece of the examination right now this course

- to have an incisive view of administration in India and its changing nature.
- to learn the nuances of personnel administration in India.
- to get acquainted with the budgetary and financial processes

sClass: TYBA

Program Outcomes:

BA in Political Science - Program Objectives

- The Political Science undergrad program was conceived out of an acknowledgment of the expanding criticalness of cross-disciplinary investigations in the sociologies. The program is sorted out around the joined viewpoints and expository apparatuses of Sociology, Political Science, International Relations, and History. The Political Science certificate outfits the understudies with a one of a kind multidisciplinary approach in sociologies and sets them up for additional scholarly examination as well as for professions in people in general and the private part.

1. Educate students about political processes, theories, and governments in the United States and other countries and about international relations between those countries.
2. Prepare students for a variety of careers or graduate and professional degree programs in fields such as law, government, education, politics, policy, and business.
3. Offer students the analytical and research skills needed to understand and explain politics, government, and international relations.

Program Specific Outcomes:

1. Understanding of the institutions, processes, constitutional background, and policy outcomes of government and the ability to compare our government to other countries around the world
2. Knowledge of key theories and concepts, historical developments, organizations, and modern issues in international relations
3. Understanding of government institutions, electoral processes, and policies in a variety of countries around the world and the ability to compare the effectiveness or impact of differing political arrangements across countries
4. Knowledge of some of the philosophical underpinnings of modern politics and government and the legal principles by which political disputes are often settled
5. Ability to use the comparative case study method of analysis, quantitative forms of analysis, and legal analysis in oral communication and in written research

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SEMESTER V

Course Code: UAPOL501	**Course Title:** Politics Paper l V: International Relations Semester V: World Politics
Course Outcomes: The students would be able : Global Relations (IR) stays one of the most famous and looked for after fields of study in Legislative issues. Students come to be familiar with all parts of how IR developed as a control, the ways to deal with IR and how power, clashes, harmony and security turn out in the evolving worldwide conditions throughout the years. The course additionally centers around universal political economy especially regarding the globalization procedure. • to acquaint the students with the recent developments across the world and their impact • to study the developments in the global scenario through new decisions & policies	
Course Code: UAPOL502	**Course Title:** Politics Paper V: Political Thought Semester V: Western Political Thought
Course outcomes: The students would be able : • Concentrating on explicit political ideas and philosophies with an understanding from crafted by explicit Western Political Thinkers makes for an extremely fascinating and viable examination. The ideas of State, thoughts on freedom and equity, insurgency and authority are both essential and amazingly valuable for the comprehension of the students. Women's activist and multicultural thoughts additionally contribute enormously to the field of study. • to acquaint the learners with theoretical understanding of political concepts • to understand existing, contemporary and emerging trends in Politics with reference to how thinkers viewed them in the context of their times.	
Course Code: UAPOL503	**Course Title:** Politics Paper Vl: Political Process in Modern Maharashtra Semester V: Politics of Modern Maharashtra
Course outcomes: The students would be able : • Political Process in Modern Maharashtra begins with the study of the emergence of the linguistic State of Maharashtra and the role that the region has played in the nationalist and social reform movement. Inherent challenges of the State are discussed in this course. Political institutions of Maharashtra and the dynamics of caste politics also form an essential part of the study in this • to acquaint students with the political backdrop in the State as a basis for further studies • to study the regional disparities and the peoples' movements in the State • to understand objectively the politics working on emotive issues	
SEMESTER Vl	
Course Code: UAPOL601	**Course Title:** Politics Paper IV: International Relations Semester VI: India in World Politics
Course Outcomes:	

The students would be able :

- In continuation with Semester V, the course in International Relations (IR) finds India in worldwide legislative issues. India's relations with significant forces of the world, for example, the US, Russia and China as moreover with neighboring states, for example, Pakistan and Bangladesh with the changing measurements and conditions are concentrated with enormous intrigue. Students likewise increase a knowledge into critical proportions of keeping up global relations through discretion. The forming of India's international strategy over the years and India's job in global and provincial associations, for example, the UN, SAARC and ASEAN are likewise different parts of study right now.
- to analyse India's standing in the international community
- to help learners in Politics understand the contexts and developments and to take a clinical view towards the relations in the Indian sub-continent

Course Code: UAPOL602	**Course Title:** Politics Paper V: Political Thought Semester VI: Indian Political Thought

Course outcomes:
The students would be able :

In continuation with Semester V, the Political Thought course in Semester VI introduces the learners to modern Indian political thought. Specificities of the Indian experiences and the relevance to the times that they lived in, come to be reflected through these thought processes.

- to make learners aware of the various strands of thoughts with Indian perspective
- to recognise and analyse the relevance and applicability of these thought processes to the present times.

Course Code: UAPOL603	**Course Title:** Politics Paper IV: Political Process in Modern Maharashtra Semester VI: Determinants of Politics of Maharashtra

Course outcomes:
The students would be able :

- In continuation with Semester V, the Political Process in Modern Maharashtra course in Semester VI works towards the learners' understanding of the specific political economy of the State of Maharashtra, land issues, political parties functioning in the State and emerging and contemporary issues.
- to acquaint the learner with the emerging trends in a progressive state of Maharashtra and how the political economy of the region has defined it.
- to recognise and analyse the present political scenario in the State.

31. BA Psychology

Name of Department: Psychology

Class: FYBA

Program Outcomes:

Specific core discipline knowledge :

- Students have knowledge of the basic concepts and modern trends in Psychology.

Problem solving and research skills

- Students have information to create interest in the subject of Psychology and to create a foundation for further studies in Psychology.

Communication skills

- Students are aware of the applications of Psychological concepts in different areas of day to day life and are able to communicate about it. .
- Students are able to understand psychology of themselves and others and be able to realise, acknowledge and communicate their emotions in socially acceptable manner.

Program Specific Outcomes:

- Students are aware about history of Psychology.
- Students know the contribution of earlier researchers in the field of Psychology.
- They know scientific methods of conducting research.
- Students are able to conduct research that are ethical in nature.
- Students have learned the biological basis of psychology - neuron, nervous system, brain and endocrine glands.
- Students have studied the classical and contemporary approaches to the process of learning.
- They know the process of memory.
- They know the reasons of forgetting.

SEMESTER - I

Course Code: UAPSY 101	Course Title: Fundamentals of Psychology (Part I)

Course Outcomes:

The students would be able :

- To know the history of Psychology.
- To be aware of the Fields of Psychology Today.
- To learn the various methods of Scientific research in psychology.
- To adhere to Ethics of Psychological Research.
- To learn the Biological basis of psychology - Neurons and Nerves and the Nervous System.
- Role of the Endocrine Glands.
- Role and function of Brain.
- To learn the process of Learning.
- Two major ways of learning - Classical conditioning and Operant conditioning
- Newer methods that received recognition as theories of learning like Cognitive learning Theory, Observational Learning.
- What is memory.
- The Information Processing Model of memory.
- The reasons of Forgetting.
- To learn the Neuroscience of memory.
- Applying Psychology to Everyday life.

SEMESTER - II

Course Code: UAPSY201	**Course Title: Fundamentals of Psychology (Part II)**

Course Outcomes:

The students would be able :

- To Learn How People think
- Classical and contemporary approaches to Intelligence.
- To learn the process of learning Language.
- To learn approaches to understand motivation.
- To learn the psychology behind hunger
- To learn about Emotion.
- To know relationship between Culture and Emotions.
- To know the Psychodynamic Perspective to personality
- To know the development of Psychoanalysis in the East .
- To study the Behavioural and Social Cognitive View of Personality.

- To learn about the Third Force :Humanism and Personality.
- To study the Trait Theories of personality. Like The Big Five and current thoughts on the trait Perspectives.
- To study the influence of Genetics and Culture on personality.
- To learn the various methods of Assessment of Personality.
- To know What Statistics are.
- To study and practice Descriptive Statistics and Inferential Statistics and it's application in psychology.

32. BMM

Name of Department: BMM

Class: FYBMM

Program Outcomes:

Specific core discipline knowledge

- Literature can enable students to involve into more thinking and sensitive human being as well as to deepen and widen their understanding of themselves and of life.
- Students can understand political, social, psychological, marketing, economical and management related concepts.
- Students can come to know the Indian and world historical issues and affairs.
- Students can understand the importance and signification of computer, internet and networking in media.

Communication skills

- Students can communicate effectively using oral and written communication skills.
- Students can develop/enhance their communication skill along with that they can be aware about the different barriers to communication.

Program Specific Outcomes:

- It helps one to develop communication skills not everyone is from the same page this subject help you to put your own view and learn a jargons and technicality of the media industry.
- To understand how media works and how we can reach to masses with different mediums.
- In the fast running world, one cannot stick to the traditional media, so computer introduces to the digital world and how it is beneficial for students to proceed further in the media industry.
- It helps to understand how our media has evolved in the past years and how far we came. Different techniques to propagate political parties, agendas, how media covered different events in the history.
- To explain living in the society from various background, different religion, caste, food-habits, language and what not is different? to study society the sociology is the subject.
- It helps to develop the analytical power in monetary terms.to understand the consequences and causes of unemployment, inflation and economic growth.
- Helps to understand the subject in depth as the processing further the communication skill is must.

- It gives knowledge to advertising world how client and advertising agency work, how consumers react on certain factor of marketing, how as a marketer or an advertiser one can target their audiences.
- It helps to manage their stress, coping up with different problems in life and how marketers, studies psychology to study consumer behavior.
- It gives brief idea about how our nation works, the constitution, political process in the country. The political science enhances the world of journalism. it makes them understand how media plays an important role in political affairs.
- It explains how one should work in a team. how business should be communicated to the others in media.
- In media field one has to know the basic concept of literature helps to develop their writing and reading skills which helps them in future.
- It gives idea and knowledge to WORK ON DIFFERENT ASPECTS IN THE MEDIA FIELD.

SEMESTER I

Course Code: UABMM101	**Course Title: Effective Communication skill -I**

Course Outcomes:
The students would be able:

- To make students aware of functional and operational use of language in media.
- To equip or enhance students with structural and analytical reading, writing and thinking skills.
- To introduce key concepts of communication.

Course Code: UABMM102	**Course Title: Fundamental of Mass Communication**

Course outcomes:
The students would be able:

- To introduce students to the history, evolution and the development of Mass Communication in the world with special reference to India.
- To study the evolution of Mass Media as an important social institution.
- To understand the development of Mass Communication models.
- To develop a critical understanding of Mass Media.
- To understand the concept of New Media and Media Convergence and its implications.

Course Code: UABMM103	**Course Title: Introduction to Computers**

Course outcomes:
The students would be able:

- To gain knowledge about computing system and learn to basic computer program.
- To understand computer networking and Internet structure.
- Learn to various graphics software and their uses in multimedia.

Course Code: UABMM104	**Course Title: History**

Course Outcomes:
The students would be able:

- Help the students understand the role of media in history
- Help them to get spans from global event.
- Role of the media in the history of Africa, refugee problems, humanitarian work, human rights violation.

• To overlap some topics which are scheduled in other papers like politics and journalism.	
Course Code: UABMM105	**Course Title: Introduction to Economics**
Course outcomes: The students would be able: • To introduce the concepts of micro and macro Economics and their correlation • to sensitize students on economic issues relevant to India considering the importance of media in highlighting and debating such concerns • To ensure that students understand economics from the point of view of everyday implementation and media usage.	
Course Code: UABMM106	**Course Title: Introduction to Sociology**
Course outcomes: The students would be able: • To acquaint the students with the basic foundation of Sociology. • To establish the relationship between Sociology and Mass Media • To discuss Mass Media from a sociological perspective. • To highlight the need and relevance of sociology in Mass Media.	
SEMESTER II	
Course Code: UABMM201	**Course Title: Effective Communication skill - II**
Course Outcomes: The students would be able: • To hone the writing skills of the students from media perspective. • To build a practical approach towards professional writing skills. • To introduce students the essential part of media industry and advertisements.	
Course Code: UABMM202	**Course Title: Introduction to Literature**
Course Outcomes: The students would be able: • To give exposure to media students to various forms of literature. • To make them understand how literature reflects contemporary period. • To identify relation between literature and media.	
Course Code: UABMM203	**Course Title: Introduction to Media Psychology**
Course Outcomes: The students would be able: • To impart knowledge of the basic concepts and modern trends in psychology. • To provide an interdisciplinary study of concepts in the field of media, communication and psychology. • To expose students to a multicultural understanding, use, influence and impact of media.	

- To prepare students for a future filled with opportunities in the field of media and communication.

Course Code: UABMM204	**Course Title: Political Concepts and the Indian Political system**

Course Outcomes:
The students would be able:

- To acquaint the student with Fundamental political concepts essential for understanding political systems and theories.
- To orient the students to the Indian constitution and the functioning of the Indian political system.
- To Provide the student with a strong base in the Indian political system and to expose them to its dynamics and complexities.
- To establish a link between politics and media.

Course Code: UABMM205	**Course Title: Principles of Marketing**

Course Outcomes:
The students would be able:

- To introduce Students to the basic concepts of marketing and recent trends in marketing in India.
- Developing the concept of marketing mix, managing the product.
- To help students understand the marketing strategies.
- To understand the structure of and factors contributing to the growth of IMC.
- Understand types of marketing Concept & components of a Marketing Information System.

Course Code: UABMM206	**Course Title: Principles of management**

Course Outcomes:
The students would be able:

- To study the concepts of Management.
- To study various Managerial functions.
- To understand the concept of Decision Making.
- To understand Group Dynamics and Team formation.

Class: SYBMM

Program Outcomes:

Core Subject learning

- Students get to learn media specific subject.
- Students get inside of media subject with specification to media industry.

Communication skills

- Students get to learn and understanding of writing skills required for journalistic writing.
- Students get to learn about the various aspect of writing style with specific subject like creative writing, journalism, understanding cinema, R&T.

Research skills

- Students get the knowledge about the media research and its impact on society.
- Students also learn through various past theory to understand the working of media industry and ideology.

Program Specific Outcomes:

- To learn about the working of media industry as in whole with specific subject which cater the different part of media industry.
- To empower themselves by communication, professional and life skills required specially for public relation, advertising, journalism.
- To make them knowledgeable about advance software required specifically in media industry for online marketing, animation, website designing, audio video editing.
- To make them learn jargons of media industry to develop the professional language in students
- To make them understand how to read newspaper, how to analysis the advertisement.
- To make them understand difference between the various news based on real stories, paid advertisement(advertorials), PR stories.
- To acquire them with basics of photography skills, parts of camera, photography development in print and production.
- To impart knowledge of organizational working and culture in the media industry and develop management skills, decision making, leadership, and handling of stress.
- To help students understand the structure of ad agency, Role of advertising in marketing, advertising budget, Client servicing.
- To introduce students to research approaches and its application in mass media industry with reference to data collection, designing questionnaire, measurement technique, sampling process, content analysis.
- To understand the difference of writing, reading, understanding between print electronic, new media and citizen journalism with reference to history of journalism, writing style, coverage, principles, process, criteria, role, trends.
- To provide an overview of broadcast industry with orientation to radio format, television format, script writing, AIR, satellite, story board, broadcast production.
- To create mindfulness on various cultural and media theories and its significance in the media
- To adopt analytical skills to view media critically by understanding the notions of globalization, diaspora, political culture, racism, popular culture.
- To expose students to world, Indian regional cinema, and its facet, genres film making process

SEMESTER III

Course Code: UABMM301	**Course Title: Introduction to Creative Writing**

Course outcomes:
The students would be able:

- To encourage students to read stories, poems, plays.
- To develop further and build upon the writing and analytical skills acquired in semester I and II
- To prepare students to write for media.

Course Code: UABMM302	**Course Title: Introduction to Cultural Studies**

Course outcomes:
The students would be able:

- To create awareness on cultural theories and its relevance in media.
- To discuss the importance of cultural studies and its role in mass media.
- To understand the cultural concepts and its impact on the media.
- To understand the association between the media, gender, and culture in the society.

Course Code: UABMM303	**Course Title: Introduction to Public Relations**

Course outcomes

The students would be able:

- To prepare students for effective & ethical public communication on behalf of organisations.
- To help students acquire basic skills in the practical aspects of Media Relations & Crisis management.
- To equip students with basic skills to write & develop press release& other PR communication.
- To design a PR campaign.

Course Code: UABMM304	**Course Title: Introduction to Media Studies**

Course Outcomes:

The students would be able:

- To expose students to the well-developed body of media theory and analysis
- To foster analytical skills that will allow them to view the media critically

Course Code: UABMM305	**Course Title: Understanding Cinema**

Course outcomes:

The students would be able:

- Acquainting the students with conceptual understanding of various aspects used in world cinema.
- Providing a holistic approach and giving sufficient insight to the students seeking diverse careers and certain specific knowledge of films.
- Sensitize the learner towards cinema as a medium of mass communication and help them to become critical viewers of movie today from a:
  1. Personal point of view
  2. Social point of view
  3. Business point of view (In context to box office)
- To make student diverse film genres.
- To make students aware about the similarities and differences with both Indian and western traditions of art and culture.
- To develop research and analytical skills to the learners by watching through list of open-ended lists of movies.
- To make students aware of difference between feature film, documentary, short film and expose them to a diverse variety of films.
- To make students understand the news reels, public service ads, corporate films and expose them to varied features of film making.

Course Code: UABMM306	**Course Title: Advance Computer**

Course outcomes:

The students would be able:

- To gain knowledge about social media marketing.
- To understand advantages of various social media platform
- Learn to online marketing tools.
- Learn to web designing (programming languages)
- Learn to Video production and animation software.

SEMESTER IV

Course Code: UABMM401	**Course Title: Introduction to Advertising**

Course Outcomes:

The students would be able:

- To provide students with basic understanding of advertising growth, importance and types.
- To introduce students to the basic steps in advertising.
- To help students understand the creations of an ad agency.
- To understand the students of an ad agency.

Course Code: UABMM402	**Course Title: Introduction to Journalism**

Course outcomes:
The students would be able:

- To understand of the history and development of journalism in the global and the Indian context.
- To understand concepts, related to news and journalistic practice.
- Learn to write reports.
- To understand print, electronic and new age media.

Course Code: UABMM403	**Course Title: Print, production and photography**

Course outcomes:
The students would be able:

- To help students understand the principles and practice of photography.
- To enable students to enjoy photography as an art.

Course Code: UABMM404	**Course Title: Radio and Television**

Course outcomes:
The students would be able:

- Introduction to basic terms and concepts of broadcasting.
- To provide students an overview of the structure and functions of the broadcasting industry,
- Awareness of the development of changing media trends.
- Students will learn the two powerful mediums radio and television. This is useful for both advertising and Journalism students in order to further their careers in their respective fields
- To make students distinguish between various types of radio services.
- To create scripts for television and radio news/program.
- To make students understand various stages of broadcast and skills used at different level of responsibilities associated with production.

Course Code: UABMM405	**Course Title: Mass media research**

Course Outcomes:
The students would be able:

- To introduce students to debate in research approaches and equip them with tools to carry on research.
- To understand the scope and techniques of media research, their utility and limitations.

Course Code: UABMM406	**Course Title: Organizational Behavior**

Course outcomes:
The students would be able:

- To highlight the role of psychological aspects within an organization.
- To create awareness among the students about basic personal and professional challenges that surround organization.

- To foster management skills among students.
- To import knowledge of basic concepts and facets of organizational behavior.

Class: TYBMM (ADVERTISING)

Program Outcomes:

- Students can identify and respond to clients' advertising and marketing needs by applying principles of marketing and advertising ethics.
- Students can prepare and perform various industry related faucets
- Students can identify the brand's target market/audience and define the consumer Behavior of each segment.
- Students can develop potent communication skills to construct understanding of clients and consumer needs.
- Students can undertake research activities to evaluate pre and post testing research in advertising.
- Students can understand the contemporary advertising environment and its impact on the economy.

Program Specific Outcomes:

- To develop an integrated advertising and marketing communications plan and persuasively present, modify and defend it.
- To provide analytical tools for evaluation of financial implications of marketing decisions.
- To develop advertising and marketing communications material in compliance with current Indian legislation, industry standards and business practices.
- To construct creative solutions to address advertising and marketing communications challenges.
- To analyze accurately the stand of liberalization, privatization and globalization in advertising and its importance.
- To complete all work in a professional, ethical and timely manner.
- To contribute in evaluating the effectiveness of advertising and marketing communications initiatives.
- To implement contemporary methods of communication and modern solutions in the area of consumer reach and brand building respectively.
- To update themselves as an advertising personality and adapt to on-going trends and practices.
- To obtain recent information and knowledge in the area of advertising and use it effectively for individual and industry growth.

SEMESTER V

Course Code: UABMMA501	**Course Title: Copywriting**

Course outcomes:

The students would be able:

- To familiarize themselves with the concept of copywriting as selling through writing.
- To learn the process of creating original strategies, compelling copy for various media.
- To receive training to generate develop and express ideas effectively.

Course Code: UBMMA502	**Course Title: Consumer Behavior**

Course outcomes:

The students would be able:

• To understand role of marketing in influencing consumer Behavior. • To analyze the role of marketer& the consumer in advertising. • To sensitize the students to the changing trends in consumer Behavior.	
Course Code: UABMMA503	**Course Title: Brand Building**
Course outcomes: The students would be able: • To study the concepts of Brands • To study the process of Building Brands • To understand the awareness and growing importance of Brand Building	
Course Code: UABMMA504	**Course Title: Advertising in Contemporary Society**
Course Outcomes: The students would be able: • To understand the environment of Advertising in Contemporary Society. • To Understand Liberalization and it's impact on the economy. • To Compare and analyze the advertising environment of different countries. • To study contemporary advertising and society.	
Course Code: UABMMA505	**Course Title: Advertising Design**
Course outcomes: The students would be able: • To understand the process of planning &production of advertisement. • To highlight the importance of visual communication. • To provide practical training in the field of advertising.	
Course Code: UBMMA506	**Course Title: Media Planning and Buying**
Course outcomes: The students would be able: • To develop knowledge of various characteristics of media. • To understand procedure, requirements, and techniques of Media Planning and Buying. • To learn various media mix and its implementation. • To understand budget allocation for a media plan.	
SEMESTER VI	
Course Code: UABMMA 601	**Course Title: Financial Managements for Marketing and Advertising**
Course outcomes: The students would be able: • To provide a brief over view of the basic concepts, goal function and types of finance available for new and existing business and marketing units. • To understand the need for financial planning through budgets and their benefits. • To evaluate the financial implications of marketing decision via simple analytical tools.	
Course Code: UABMMA602	**Course Title: The Principle & Practice of Direct Marketing**
Course outcomes: • The students would be able: • To understand the concept and importance of Direct Marketing. • To understand the various techniques of direct marketing and its advantages. • To understand the data management and CRM.	

• To understand the Life Time Value of Customers.	
Course Code: UABMMA603	**Course Title: Agency Management**
Course Outcomes: The students would be able: • To explore the concepts, techniques for developing an effective advertising campaign. • To get familiarized with the different aspects of running advertising agency. • To inoculate competencies to undertake professional work in the field of advertising.	
Course Code: UABMMA 604	**Course Title: Advertising marketing Research**
Course Outcomes: The students would be able: • To inculcate the analytical abilities and research skills among the students. • To understand research methodologies – Qualitative vs Quantitative. • To discuss the foundations of Research and audience analysis that is imperative to successful advertising. • To understand the scope and techniques of Advertising and Marketing research, and their utility.	
Course Code: UABMMA605	**Course Title: Legal Environment and Advertising Ethics**
Course Outcomes: The students would be able: • To acquaint themselves to the legal environment of Advertising in contemporary India. • To appreciate the role of advertising in consumer awareness and consumer protection. • To emphasize and reiterate the importance of ethical practices in the field of media both in India and Internationally.	
Course Code: UABMMA606	**Course Title: Contemporary Issue**
Course Outcomes: The students would be able: • To sensitize themselves and keep them grounded, with the exposure to various issues that influences and change contemporary society. • To understand and analyze socio-economic, cultures and social concerns of present-day challenge. • To be aware and sensitize them to understand laws concerning women, child and implications of same for community development. • To understand and respect human rights and its implementation in India through current examples.	
Course Code: UABMMA607	**Course Title: Digital Media**
Course Outcomes: The students would be able: • To gain knowledge about digital media. • To understand advantages of various digital platforms. • To understand the key goal and stages of digital media campaign. • To understand the use of the digital marketing tools • Learn to develop digital marketing plan.	
Class: TYBMM (JOURNALISM)	
Program Outcomes: **Specific core discipline knowledge**	

- The program considers media industries and their relationship to culture and society, and the understanding of how communication works. The program emphasizes the development of critical thinking, professional writing skills and effective oral communication.
- The Communication and Media Studies major prepares students for a wide variety of careers in business and industry, advertising, public relations and journalism, or advanced study.
- This program will equip the learners with professional skills essential for making career in Entertainment industry, Cinema, Television, OTT Platforms, social media platforms etc.
- Students would demonstrate the ability to apply rhetorical principles in a variety of creative, cinematic, organizational, professional and journalistic venues.
- Knowledge, skills, and values that prepare them for future careers in our interconnected society, whether in mass media or advanced study.
- Learners would develop a global awareness of political, social and corporate issues influenced by communication sensitivity and skills.
- Learners will understand mass media as a system of interrelated forces, including historical foundations, technological advances, economic dynamics, regulatory constraints, and ethical concerns.
- This program will also give them an improved sense of self-confidence and self-efficacy and an awareness of their responsibilities as professionals in their field.
- Learners will be able to create and design emerging media products, including blogs, digital audio, digital video, social media, digital photography, and multimedia.
- Learners will acquire the knowledge and skills required to pursue a career in the specialization of their choice.

Program Specific Outcomes:

- This program will equip the learners with fundamental knowledge of Journalism in Mass Media
- Specialization major prepares students for a wide variety of careers in business and industry, of journalism, Public relations, News channels or advanced study in these areas.
- Exhibit knowledge of various types of media including traditional and digital media and be equipped with essential communication skills.
- Students apply knowledge and expertise to real-world situations and/or research questions.
- The learner will have acquired competency and skills for increased employability in the media sector and be adequately motivated to contribute to the development of society.
- Students develop an understanding of diversity and cultural perspectives in local, regional, and global society.
- Learners can excel in their choice of specialization and excel in a write a variety of mass media products, including news stories, press releases, writing content for media, blogs etc.
- Students will be able to create and design emerging media products, including blogs, digital audio, digital video, social media, digital photography, and multimedia.

SEMESTER V

Course Code: UABMMJ501	**Course Title: Reporting**

Course Outcomes:

- To prepare them to write or present the copy in the format of news.
- To develop nose for news.
- To train them to acquire the skills of news gathering with traditional as well as modern tools.
- To inculcate the skills for investigative journalism.
- To make them understand the basic structure/ essential knowledge to various beats.

• To make them responsible reports and the face of media.	
Course Code: UABMMJ502	**Course Title: Editing**
Course outcomes: • As an important segment of newspaper production, editing is vital function. • The syllabus lays stress on language skill improvement. • Its aims at creating students to gain more practical knowledge in the print media scenario. • The syllabus encompasses the current trends of digital media as well as writing for edition of papers. • The syllabus tackles editing from various beats Point of View. • Editing of editorials, columns etc. is included to acquaint the students about responsible journalism. • With global media and changing advertising concepts lay-outs in modern times can be imparted.	
Course Code: UABMMJ503	**Course Title: Journalism and Public Opinion**
Course outcomes: The students would be able: • To assess the Importance of media vise a vis the public. • To project a fair idea of the role of the media in creating and influencing Public opinion. • To analyze the impact of the media and public opinion on socio political issue. • To understand the importance of media in the society. • Comprehend the role of media in shaping public opinion. • Studying and applying the various theories of public opinion. To understand how media covered the various issues and conflict in the society.	
Course Code: UABMMJ504	**Course Title: Feature and Opinion**
Course outcomes: • The study of the skills to write features for a magazine or newspaper and to write an opinion piece. • To make students understand difference between reporting and feature writing, Lead, snippets, Hard news and Soft news and Art of interviewing. • To understand the other types of soft stories and how to write follow up. • To make students aware how to express public opinion and the art of penning it down. • To differentiate between various elements of journalism.	
Course Code: UABMMJ505	**Course Title: Indian Regional Journalism**
Course Outcomes: The students would be able: • Study of the history and the role of the Indian press other than in English. • To understand the contribution and role of certain publication and stalwart. • The study of the regional press and television of today.	
Course Code: UABMMJ506	**Course Title: Newspaper and Magazine Making**
Course outcomes: The students would be able: • To study the design, elements of the newspaper and magazine. • To study space distribution. • To get exposure on design software.	

- To study the process of planning and production of newspaper and magazine
- To understand the process of print, media production from the content collection to the final print layout.
- To decide news weightage as well as article relevancy and the visual treatment of the text block
- To study importance of the appearance of the various text blocks in the print
- To reconstruct headlines according to space, keeping the core meaning and intensity intact.
- To develop relevant software skills of Industry, such as Quark express or Adobe in Design
- To develop the aesthetic vision and understand the discipline behind a layout.

SEMESTER VI

Course Code: UABMMJ601	**Course Title: Press Laws and Ethics**

Course outcomes:
The students would be able:
- To study media laws
- To understand media

Course Code: UABMMJ602	**Course Title: Internet & Issues in Global Media**

Course outcomes:
The students would be able:
- To study the evolution, role, structure and impact of the global media.
- To develop a critical eye for global media coverage and comparison with regional media
- To study the role of new media specially social media.

Course Code: UABMMJ603	**Course Title: Broadcast Journalism**

Course outcomes:
The students would be able:
- To help student understand the nuances of content creation for radio and television.
- To help student become professional content writer and producers in broadcast media
- To write in Broadcast style confirming to the ethical and practical principals that guide it
- To learn the skills and techniques to investigate for news stories.

Course Code: UABMMJ604	**Course Title: Business and Magazine Journalism**

Course outcomes:
The students would be able:
- To understand the tools of business journalism and an overview of the economy
- To study the magazine sector and its specialization
- To make students aware about the general view of Indian Financial system

Course Code: UABMMJ605	**Course Title: News Media Management**

Course Outcomes:
The students would be able:
- To make student aware about the responsibility, structure and functioning of responsibilities of an organization
- Students will be able to analyze Individual media business and understand the economics drivers of the Media economy
- Students will have developed hands-on experience as content marketers using Journalistic and Digital techniques
- Students will have gained a perspective on the evolution of Media in the last 25 years and on key current trends.

Course Code: UABMMJ606	**Course Title: Contemporary Issue**

Course outcomes: The students would be able: • To Sensitized students and keep them grounded, with the exposure to various issues that influences and change contemporary society • To make students understand and analyze socio-economic, culturalism and social concerns of present-day challenge • To make students and sensitize them to understand laws concerning to women, child and implications of same for community development • To make students understand and respect Human Rights and its implementation in India through current examples.

Course Code: UABMMJ607	**Course Title: Digital Media**
Course outcomes: The students would be able: • To gain knowledge about Digital Media. • To understand advantages of various digital media platforms. • To understand key goals and stages of digital campaigns. • To understand using key of the digital marketing tools. • Learn to develop digital marketing plans.	

33. BA - Film TV and New Media Production

Name of Department: Film Tv and New Media Production
Class: FY
Program Outcomes: • To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe. • To develop creative temperament and mindset needed in the content production segment of media industry. • To provide an active industry interface by way of co-learning.
Program Specific Outcomes: • To inculcate competencies thereby enabling to undertake professional work. • To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the

correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 101	**Course Title:** Effective Communication Skills

Course Outcomes:

The students would be able :

- To ensures everyone understands their duties and responsibilities,
- To help build quality client and employee relationships and keeps employees engaged and productive.
- To lean good communication skills and will also improve relationships, both with employees and in their personal life with friends and family members. This, in turn, will nurture mutual respect among each of them.

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.

Program Specific Outcomes:

- Students should be exposed to the canonical text of Natya shastra from where all the traditional performing arts have emerged.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 102	**Course Title:** : Introduction to History of Art/ Storytelling through other forms of Art

Course Outcomes:

The students would be able :

- To understand the basics and genres of Music, dance and theatre.
- To learn the basics of various acting schools and the art of drama.
- To learn the evolution of visual techniques from painting to cinema.
- To learn the basic relationship between music and dance in relation to Film making.

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To provide an active industry interface by way of co-learning.

Program Specific Outcomes:

- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 103	**Course Title:** : Initiation to Literature & Creative Writing

Course Outcomes:

The students would be able :

- To introduce basic tenets of Indian literature including regional literature
- To introduce and appreciate various forms of literature (Novel, Poetry, Drama, Essay)
- To help build skills for creative writing
- To help understand the structure of Story, poetry and drama To introduce writing for internet.

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry

Program Specific Outcomes:

- To inculcate competencies thereby enabling to undertake professional work.
- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 104	**Course Title:** Basics of Photography

Course Outcomes:

The students would be able :

- To learn the basics of art of Photography.
- To understand the basic intricacies involved in taking a photograph.

- To understand what makes a good picture. To develop basic photographic sense and knowledge

Class: FY

Program Outcomes:

- To develop creative temperament and mindset needed in the content production segment of media industry.
- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.

Program Specific Outcomes:

- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.
- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 105	**Course Title:** Film Appreciation – Genres

Course Outcomes:

The students would be able :

- to understand structural conventions: expectations of plot, character, setting, or style.
- To understand thematic codes: subtext embedded within genres and subgenres, often based in historical context.

- To understand iconography: objects that instantly identify a genre or subgenre.

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.

Program Specific Outcomes:

- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – I

Course Code: 106	**Course Title:** Graphic Designing (Photoshop, Illustrator, etc.

Course Outcomes:

The students would be able :

- The learners are exposed to the industry of graphic design.
- The domain of skills and tools is largely devoted to learning graphic reproduction methods using both modern, that is electronic, as well as old school techniques. These inputs enable learners to solve simple problems of visual communication related to corporate identity or social communication.
- Learners use software like Adobe Photoshop and Adobe Illustrator

Class: FY

Program Outcomes:

- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

Program Specific Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.

SEMESTER – II

Course Code: 207	**Course Title:** Basics of Post Production

Course Outcomes:

The students would be able :

- An editor's job is to decide, 24/25/30 times a second, where the audience needs to be. Do we stay in a shot or transition to another, and if so, what shot and how do we get there? Working side-by-side with the director to craft the movie that ultimately hits the screen – or your phone – editing is really about manipulating the audience, in the best possible way, all in the service of storytelling. In this class, we will study terminology and concepts, learning both the rules and how to break them, as we look at the aesthetics choices and the technological workflow for both picture and sound editing.
- We will examine the historical role of editing, from the earliest silent film through the digital revolution that has transformed movie making today.

Class: FY

Program Outcomes:

- Be familiar with key periods in the history of non-fiction film and video from 1895 to the present.
- Be able to recognize and write about various forms and conventions of documentary storytelling, including the basic grammar of documentary moving images.
- Explore central questions surrounding the representation of reality and truth, including voice, authority, evidence and point of view.

Program Specific Outcomes:

- Explore key issues in the ethics of documentary representation, including maker-subject relationships, informed consent, fairness, and evidence.
- Be familiar with efforts to create more democratic systems of media production and distribution.
- Learn how to watch earlier films both as an audience THEN (with understanding of the film's social, cultural, historical context), and NOW (with understanding of your own future goals and with critical, analytical eyes to study history).
- Students will be able to think – and write — critically about non-fiction media.

SEMESTER – II

Course Code: 208	**Course Title:** History of Non- fiction Film

Course Outcomes:

The students would be able :

- This course explores the history and theory of non-fiction film and video, with an emphasis on work that falls under the rubric of "documentary." Documentary is a unique form of non-fiction moving image media that claims a special relationship to reality and truth. Through screenings, readings and class discussion, we will explore such questions as:
- How does documentary relate to narrative fiction filmmaking? To other non-fiction forms of television like reality TV or news reports?
- How "real" are documentary representations, and how much does it matter?

- What are some different formal approaches documentary, and how does each mediate the representation of real life it offers?
- How has documentary image-making changed over time? What can we learn from this history that is relevant to media-making today?
- What are the particular ethics of representing others in a medium like video or film?
- What responsibility do documentarians have to their subjects, to the form, and to society at large?
- How do people watch documentaries, and what is the impact of these films on the world they aim to represent? Screen and analyze a wide range of documentaries, exploring the genre as narrative, journalism, propaganda, rhetoric, activism, diary, art, archive, and entertainment.

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.

Program Specific Outcomes:

- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – II

Course Code: 209	**Course Title:** Writing for Visual Media

Course Outcomes:

The students would be able :

- To understand the basic structure of screenplay
- To introduce to the basic skills for screen writing
- To understand the intricacies of screen writing
- To learn the build characters and write meaning full dialogues

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
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Program Specific Outcomes:

- To provide an active industry interface by way of co-learning.
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SEMESTER – II

Course Code: 210	**Course Title:** Importance of Sound and Sound SFX

Course Outcomes:

The students would be able :

- To learn about the basic of sound

- To understand the nature of sound and recording devices
- To learn the basics of sync sound, mixing console, analog v/s digital workflow
- To understand the need for sound and importance of sound in film
- To learn to record a song

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.

Program Specific Outcomes:

- To provide an active industry interface by way of co-learning.
- To take the students through the entire pipe line of production process with regards to the content creation for various media pads, providing the students an insight in to the correlation that exists between content creation and associated commercial aspects of media business.

SEMESTER – II

Course Code: 211	**Course Title:** Basics of Cinematography-1

Course Outcomes:

The students would be able :

- To understand the importance of cinematography in film making
- To enhance the basic knowledge about lighting and its use
- To understand various equipments required for various form of lighting

- To understand the basics of various camera, lenses and digital cinematography

Class: FY

Program Outcomes:

- To prepare students in the production aspects of Film Television & New Media, as required by the present media environment all across globe.
- To empower the students in the production & managerial aspects of the media business with due emphasis on latest production techniques, along with marketing and branding management of various media products and associated services.
- To develop creative temperament and mindset needed in the content production segment of media industry.
- To inculcate competencies thereby enabling to undertake professional work.

Program Specific Outcomes:

- The students will undergo the process of making a non-fiction film.
- The students will be exposed to Semi professional camera cameras & software.
- The students will also undergo same basic exercises such as 3 shot and 6 shot to give them a basic sense of framing, composition, movement and editing.
- The final project will be a non-fiction film with the duration of 5-10 minutes

SEMESTER – II

Course Code: 212	**Course Title:** Practical Film Making 1 (Only non-fiction film)

Course Outcomes:

The students would be able :

- To understand the film making process for multiple locations in non fiction films
- To understand the entire workflow To gain exposure on various cameras and software used for production

34. MA Economics

Name of Department: Economics

Class: M.A. Economics PART I

Program Outcomes:

Specific core discipline knowledge

- The program provides well versed manpower requirement in the area of banking, insurance, finance and taxation, co-operative sector, Junior/Senior college lectureship etc.
- Students can acquire M. Phil. and Ph.D. in the subject of economics or Applied economics, which decide the roadmap for future studies and career.

Communication skills

- Students are capable to undertake applied work and research projects in economics.

Problem solving and other skills

- Students can acquire skills regarding various aspects economic activities of planning, budgeting, human resource and overall administration abilities.
- It enables the students to take decisions at professional and personal level.

Program Specific Outcomes:

- To understand the basic concepts of the macro economics, micro economics, statistical and mathematical methods for economist, development economics and public economics.
- To analyze how markets for goods and services function and how income is generated and distributed.
- To enable students to gain systematic and subject skills within various disciplines of microeconomics, macroeconomics, statistical methods for economist and mathematical methods for economist, developmental economics, public economics.
- To make students to learn relevant basic statistical and mathematical skills, applying both quantitative and qualitative knowledge to their future careers
- To enable students to develop confidence in self-employment opportunities
- To enable students to pursue their higher education and can make research in the field of social sciences.

SEMESTER I

Course Code: N.A.	Course Title: Microeconomics - I

Course Outcomes:

The students would be able:

- To understand consumer behavior with axioms of rational choice, revealed preference approach, indirect utility function and its properties.
- To study production, cost and supply, profit function.
- To analyze perfect competition market with its features, short run and long run equilibrium, welfare economics, theory of the second best.
- To learn monopoly and its features, welfare effects of monopoly, price degree discrimination, nature and regulation of monopoly.

Course Code: N. A.	Course Title: Macroeconomics - I

Course outcomes:

The students would be able:

- To gain the knowledge of macroeconomic accounting, stock and flow, saving and investment, real and nominal income in open economy.
- To understand determinants of national income and price level, Keynes model, Fiscal and monetary policy, AS -AD model.
- To know different concept of balance of payment, capital mobility and IS-LM –BP model.
- To study micro foundations of macroeconomics, consumption, investment, demand for money, seigniorage.

Course Code: N. A.	Course Title: Statistical Methods in Economics

Course outcomes:

The students would be able:

- To acquaint with the concept of random variable, mean and variance of random variable, basic laws of probability, covariance and correlation, and law of large number.
- To understand test of hypothesis, standard nominal distribution and its application, t distribution, F distribution and its application and central theory of limits.
- To study simple linear regression, estimation, properties of estimators, R square, F test in regression, interpreting regression coefficients.
- To study problem in simple linear regression model, its consequences and multicollinearity and its consequences.

Course Code: N. A.	Course Title: Economics of Development - I

The students would be able:

- To know the development in economic thought, economic growth and structural change, measurement of inequality and poverty, role of market and state.
- To study modern theories of growth and distribution like Harrod - Domar model, Solow model, approaches of technical change, endogenous growth model, Romer and Lucas human capital.
- To understand segment of rural land, labour, capital and credit market, microfinance, household fertility decisions.
- To analyze environment and development, environmental problems, sustainable development, trade and foreign exchange, role of international financial institute, structural adjustment and stabilization.

SEMESTER II

Course Code: N. A.	Course Title: Microeconomics - II

Course outcomes:

The students would be able:

- To study game theory, Prisoner's dilemma, Nash equilibrium, uncertainty and choice.
- To learn oligopoly and its features, Cournot Model, Bertrand model, backward and Stackelberg model.
- To analyze moral hazard and adverse selection, market for lemons, principal agent model, screening and signaling applications.
- To understand alternative theories of the firm, Morris model, Willamson's model, behavioral theories, know based and transaction-based theories.

Course Code: N. A.	Course Title: Macroeconomics - II

Course outcomes:

The students would be able:

- To know the imperfect flexible prices, price setting under imperfect market, quadratic price adjustment.
- To analyze new classical economies, the DSGE model, wealth effect, money/bond finances, budget deficit, Ricardian equivalence.
- To study the new Keynesian economics, multiple equilibria, Keynesian multiplier and NK model of inflation.
- To learn macroeconomic policy, dynamic inconsistency of banks, financial intermediaries and unconventional monetary policy, inflation targeting and exchange rate.

Course Code: N. A.	**Course Title: Mathematical Techniques for Economics**

Course outcomes:

The students would be able:

- To study the set and its elements, De Morgan law, slope, logarithmic and exponential and limit of sequence.
- To understand the derivative function, application of derivative in economics, partial derivatives and their application. Integration and its application in economics.
- To analyze constrained optimization in economics, Lagrange multiplier and equality, constrained optimization with application in economics
- To know the matrices, transpose and invers of a matrix, solving simultaneous equations with matrix.

Course Code: N. A.	**Course Title: Public Economics**

Course outcomes:

The students would be able:

- To understand theorems of welfare economics, state intervention, market failure and externalities, arrow impossibility theorem.
- To know public goods, Lindahl's voluntary exchange approach, preference revelation mechanism, evaluation of government expenditure, elements of cost benefit analysis.
- To learn basic concept of tax theory, commodity taxation, pricing income taxation and tax evasion basic model.
- To gain knowledge of fiscal rules rationale, decentralization theorem, India's federal structure and VAT, GST.

Class: M.A. ECONOMICS PART II

Program Outcomes:

Specific core discipline knowledge

- This program provides theoretical and practical understanding in the area of international trade, economics of labour markets, monetary institutions, trade unions, industrial relations, banking, international finance, demography, etc.
- Students can acquire specialization in the subjects mentioned above and decide the roadmap for further studies.

Communication skills

- Students can communicate effectively using oral and written communication skills in the area of economics.

Problem solving and other skills

- Students will get the opportunity to under the practical world of economics and the applicability with overall dimensions.
- It enables the students to take decisions at professional and personal level.

Program Specific Outcomes:

- To understand the basic concepts of the economics with a subjective approach.
- To develop various skills to understand the economy with domestically as well as internationally.
- To enable students to gain a rational and holistic approach in order to develop an exposure towards the economy in terms of trade, labour, industries, banking and monetary capabilities.
- To make provision for students to have practical skills to work as economist, research analyst, research associate, market research, etc.
- To enhance students in both areas i.e. quantitative and qualitative knowledge for their future careers
- To enable students to develop confidence in Self-employment opportunities
- To enable students to pursue their higher education and can make research in the field of various core areas of economics.

SEMESTER III

Course Code: N. A.	**Course Title: International Trade: Theory and Policy**

Course Outcomes:

The students would be able:

- To study classical trade theory about absolute and comparative advantage of trade, reciprocal demand and Revealed comparative advantage.
- To understand neo – classical theory which includes Hecksher – Ohlin, leonontief and Rybczynski Theorem
- To analyze modern trade theory with the help of various models.
- To evolve trade policy with the help of various theorems.

Course Code: N.A.	**Course Title: Economics of Labour Markets**

Course Outcomes:

The students would be able:

- To learn concept, types, features of labour market as well as human capital cost and investment and its benefits.
- To analyze various approaches in labour market such as labour demand theory, labour supply curve.
- To understand wage theories, different wage markets, structure of wage components, contract labour, wage and output relation in India.
- To study linkage in labour market, migration of labour, minimum wages, impact of liberalization and globalization.

Course Code: N.A.	**Course Title: Theory of Monetary Institution**

Course Outcomes:

The students would be able:

- To study market mechanism, one period trade, fractional reserve system, fiat money and incomplete markets.
- To understand multi period trade, commodity money and credit, transactions and float, money and transaction cost,
- To learn banking agreement, ideal banking system, narrow banking and universal banking.
- To analyze open market operations, monetary policy, management of aggregate risk.

Course Code: N.A.	**Course Title: Trade Unions and Industrial Relations in India**

Course Outcomes:

The students would be able:

- To understand concept and role of trade union, wage theory, approach to origin of trade union, impact of union.
- To study scope and various approaches of industrial relations.
- To learn about trade union and workers, growth, structure, employer's organization, industrial conflicts.
- To analyze labour policy in India, impact of globalization, workers participation in management, India and ILO.

Course Code: N.A.	**Course Title: Banking Theory and Policy**

Course Outcomes:

The students would be able:

- To evaluate financial system, sources and uses of funds, banking in general equilibrium theory. To study the competition in banking and its effects.
- To understand banking regulations, prudential regulation, deposit insurance and universal banking.
- To analyze structure of banking system, public sector performance, recent developments in banking, financial inclusion.

SEMESTER IV

Course Code: N.A.	Course Title: International Finance

Course Outcomes:

The students would be able:

- To understand foreign exchange rates types, purchasing power parity and interest parity, types of exchange markets, risk and exposure,
- To learn structure of balance of payments and various approaches to balance of payments.
- To study cash management, portfolio investment, capital budgeting, growth and concern of multinationals.
- To analyze international financial institutions, IMF, theory of international currency areas, currency crisis and international debt.

Course Code: N.A.	Course Title: Demography: Theory and Basic Analysis

Course Outcomes:

The students would be able:

- To study population and economic development, implication of population growth, population theory and demographic transition theory.
- To learn basic concepts of nuptiality and fertility, analysis of martial data, fertility determinants. To understand basic concepts and analysis of morbidity, concept and standardization of mortality.
- To analyze concept, pattern and measures of migration and its theories, importance and methods of population projection.

Course Code: N. A.	Course Title: Project Work -I

Course Outcomes:

The students would be able:

- To understand research design.
- To learn data collection.
- To analyze collected data with different statistical techniques.
- To know project writing skill.