



GOVERNMENT OF PUDUCHERRY
MAHATMA GANDHI GOVERNMENT ARTS COLLEGE,
MAHE



(Affiliated to Pondicherry University & Accredited (Second Cycle) with **B** grade by NAAC)

CHALAKKARA, P. O. NEW MAHE - 673 311

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***Programme Outcome, Programme Specific Outcome
and Course Outcome***



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Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcome (COs)

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Mahatma Gandhi Government Arts College, Mahe, Puducherry

P G Department of Botany

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Program Specific Outcome :

At the end of B.Sc. Botany a student would have developed:

PSO1	Ability to assess the primary literature, able to find out relevant works for a particular topic and evaluate them scientifically.
PSO2	Understand about the environment, ecosystem, Evaluate biodiversity loss, and develop conservation strategies and sustainable development.
PSO3	To create awareness about plant cultivation, importance, conservation and sustainable utilization of plant biodiversity.
PSO4	Develop skills to start nursery, mushroom cultivation, biofertiliser production, organic farming and horticultural practices. Understand the importance of plants in the field of medicine, agriculture, industry, economically important plant products on a commercial scale.
PSO3	Understand the principles of identification, classification and evolution of various plant groups and also perform laboratory techniques in morphology, anatomy, cytology, embryology, palynology, tissue culture, biochemistry, biotechnology, molecular biology.
PSO4	Understand the principles life processes, biomolecules, and heredity.
PSO5	Know the Fundamental mathematical tools like statistics and computer applications in biology.
PSO6	Able to apply techniques of plant breeding, green house technology, plant propagation and genetic engineering.
PSO7	Facilitate students to take up higher studies and also attitude towards research in Botany leading to a successful career in Botany

Course outcomes

B.Sc. Botany

UBOT 111 Thallophytes, Microbes and Plant Pathology - Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	General characters, classification, structure and life cycle of algae, fungi, lichens and their association and also economic importance/applications
CO2	Know microbes especially bacteria, virus causing diseases in plants and their mitigation
CO3	Identification of algae, fungi, lichens and able to distinguish between the species and their importance in nature
CO4	Able to dissect out and study the features of representative genera and gain knowledge to distinguish the species in the field

UBOT 112 Botany Supportive Paper I (Bacteria, Agae, Fungi, Archegoniatae, Angiosperm & Economic Botany) – Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	Understand the salient features of microbes (Bacteria and Cyanobacteria) and their applications
CO2	Comprehend the structure and reproduction of lower forms and their applications
CO3	Study the features of Angiosperm families (Annonaceae, Asclepiadaceae, Nyctaginaceae and Poaceae and their economic importance
CO4	Understand the economically important plants/products
CO5	Hands on raining on dissection of representative taxa, their identification and description
CO6	Evaluation of the utility of economically important species

PADM 113 Public Administration

At the end of this course, a student will have developed ability to:

CO1	Knowledge on evolution of Public administration, their relationship with other disciplines
CO2	Understand the administration system in Central, state and U.T.
CO3	Ethical awareness and issues in India, Public administration within the constitutional frame work
CO4	Understand the constitution of India

UBOT 121 Archegoniatae (Bryophytes, Pteridophytes, Gymnosperms and Paleobotany) – Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	Understand the characteristics, classification, structure, life cycle of Bryophytes, Pteridophytes, Gymnosperms and their economic importance
CO2	Able to distinguish between the lower groups
CO3	Understand the economically important species of lower groups
CO4	Comprehend the fossils, fossilization and their economic importance

UBOT 122 Botany Supportive Paper II (Cytology, Anatomy, Plant Physiology, Microbiology and Plant Ecology) – Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	Understand the structure and function of cell and Cell organelles – Chloroplast, Nucleus and Mitochondria
CO2	Ability to describe the different tissues
CO3	Knowledge on the primary internal structure of dicot and monocot root, stem, leaf and secondary growth in dicot stem and root
CO4	Know the metabolic pathways in plants
CO5	Knowledge on agricultural and industrial uses of microbes and food microbiology
CO6	Understand the basic concept of Ecosystem and its functions, energy flow, Food chain, food web, Ecological pyramids, forest and their importance
CO7	Hands on training on the internal morphology of plant organs, knowledge on locally available beneficial and harmful microbes and their impact

ENVS 123 **Environmental Studies**

At the end of this course, a student will have developed ability to:

CO1	Understand the biodiversity, inventorization, documentation, their loss and conservation strategies
CO2	Distinguish the different ecosystem, Energy resources, Kinds of pollution, impacts and control measures
CO3	Know the environmental policies, movements, public awareness and human animal conflicts
CO4	Field visit to nearby ponds, hillocks, polluted sites for live study of environmental issues

UBOT 231 – **Developmental Botany (Cell Biology, Angiosperm Anatomy and Embryology) Theory & Practicals**

At the end of this course, a student will have developed ability to:

CO1	Understand the cell structure, functions and cell cycle and its importance in growth, development and reproduction of plants
CO2	Abe to describe the different tissues, structure of dicot and monocot organs
CO3	Understand the process of secondary growth in root and stem
CO4	Understand pollination mechanism, adaptation and fertilization in Angiosperms
CO5	Understand the embryological aspects of Angiosperms
CO6	Ability to study the ultra structure of cell and stages of cell division
CO7	Understand the internal morphology of Angiosperm plants and their reproductive biology

UBOT 233 – **External Morphology of Angiosperms**

At the end of this course, a student will have developed ability to:

CO1	Understand the morphology of Angiosperm plant organs
CO2	Know the modification of different organs and their functions
CO3	Comprehend the economic importance of modified plant organs
CO4	Understand Horticultural application of flowers
CO5	Know the types of fruits, their economic importance in plant classification and for crude drug preparation

UBOT 241 **Field Botany (Ecology and Angiosperm Taxonomy) – Theory & Practicals**

At the end of this course, a student will have developed ability to:

CO1	Understand the Plant habitats and ecological factors
CO2	Know different ecosystem and concept of energy flow, food chain, food web and biogeochemical cycles
CO3	Understand basic concepts of plant taxonomy, classification, Nomenclature and identification using floras, keys, preparation of Herbarium
CO4	Understand the ICBN rules. Characteristic features of Angiosperm families and their economic importance
CO5	Training in identification, documentation & use of floras ability to distinguish between species

UBOT 243 Herbal Botany

At the end of this course, a student will have developed ability to:

CO1	Know the importance of cultivation, harvesting, processing, storage and utilization of medicinal plants
CO2	Role of medicinal plants in curing various diseases
CO3	Comprehend the secondary metabolites in plants and their role
CO4	Understand the methods of drug evaluation & biological testing of herbal drugs
CO5	Identification and utilization of local medicinal herbs
CO6	Know the methodology of common medicinal preparations, TKDL and the guide lines of WHO on standard herbal medicines
CO6	Ability to identify the locally available potential medicinal plants

UBOT 351 Genetics

At the end of this course, a student will have developed ability to:

CO1	Understand the basics of mechanism of heredity and variation
CO2	Know the concept of linkage & crossing over of genome and its application in making linkage maps
CO3	Understand the concept of gene pool and various factors affecting the equilibrium of gene pool
CO4	Comprehend the structural and functional changes of Chromosomes and its implication in the form of diseases.

UBOT 353 Plant Physiology and Biochemistry – Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	Understand the method of absorption and utilization of water and minerals by plants
CO2	Know the mechanism of photosynthesis and translocation of sugar in plants
CO3	Comprehend the structure and functions of carbohydrates, lipids, proteins and aminoacids
CO4	Understand the response of plants to the environment stimuli which influences their physiology
CO5	Knowledge of the techniques of various physiological process such as osmotic potential, transpiration, respiration, enzymatic activity, photosynthesis, paper chromatography

UBOT 354 Mushroom Culture - Theory & Practicals

At the end of this course, a student would have developed ability to:

CO1	Understand the knowledge of Mushroom both edible and poisonous
CO2	Knowledge on infrastructure and inputs needed for the mass culture of mushroom
CO3	Preparation of spawn, bed preparation, control of diseases and pests
CO4	Knowledge on harvesting and marketing of various mushroom recipes
CO5	Know the techniques of mushroom bed preparation, spawn inoculation, harvesting and marketing
CO6	Skill in developing mushroom farm at homestead as small scale industries

UBOT 356 **Biostatistics and Computer Applications in Biology – Theory & Practicals**

At the end of this course, a student will have developed ability to:

CO1	Understand the descriptive statistics such as Central tendency and variation
CO2	Knowledge on basics of Computer – software & hardware
CO3	Understand the various types of software used in biology for solving genetic lineage
CO4	Gained knowledge on various biological data bank, remote sensing & GIS
CO5	Knowledge on Statistical softwares - SPSS

UBOT 357 (GE I) - **Intellectual Property Rights**

At the end of this course, a student will have developed ability to:

CO1	Understand the IPR rules
CO2	Awareness of infringements of the IPR such as turmeric, Neem
CO3	More focused on Indian Traditional knowledge including AYUSH
CO4	Ability to search and document traditional knowledge using TKDL
CO5	Provided a critical thinking about the biological items which cannot be patented
CO6	Knowledge on the concept of the novelty of IPR & moral issues in IPR
CO7	Aware of farmers rights for protection of plant varieties

UBOT 361 **Horticulture and Plant Breeding**

At the end of this course, a student will have developed ability to:

CO1	Understand the cultivation of different horticultural crops, their economic importance & management practices
CO2	Ability to establish kitchen gardening and organic farming
CO 3	Understand the horticultural techniques of vegetative propagation
CO4	Understand the basics of improvement of crop plants by selection, hybridization and mutation breeding

UBOT 362 **Plant Biotechnology - Theory & Practicals**

At the end of this course, a student will have developed ability to:

CO1	Ability to establish Tissue culture lab, suitable culture media for growth of different explants
CO2	Understands the production of various secondary metabolites through tissue culture
CO3	Gain knowledge on micropropagation of meristem, anthers and protoplast
CO4	Understands the techniques of Genetic Engineering and various cloning vectors
CO5	Knowledge of transgenic plants, bioethics and biosafety measures to be followed in lab
CO6	Skill in Micropropagation techniques

UBOT 365 **Plant Tissue Culture - Theory & Practicals**

At the end of this course, a student will have developed ability to:

CO1	Understand the various Tissue culture techniques and the preparation of Tissue Culture media
CO2	Knowledge on <i>in vitro</i> Culture techniques for Callus induction, somatic embryogenesis, nodal meristem, androgenesis
CO3	Know the application of Tissue Culture for medicinal and aesthetic purposes and also in agriculture.
CO4	Skill to establish Tissue culture lab, mass production of explants on a commercial scale

UBOT 366 **Ethnobotany**

At the end of this course, a student will have developed ability to:

CO1	Understands ethnobotany as a multidisciplinary science
CO2	Knowledge on tribal groups of India, their culture, food and medicine
CO3	Understand various sources of ethnobotanical studies such as archaeological findings, sacred places, ancient literatures and herbarium
CO4	Understand the ethnobotanical role in modern medicine with examples
CO5	Knowledge on IPR and patenting of TK and conservation of various plant genetic resources
CO6	Gains knowledge on tribals, ethnobotanical resources and their applications

UBOT 367 (GE II) - **Green House Technology**

At the end of this course, a student will have developed ability to:

CO1	Sound knowledge on the fundamentals of Green house technology
CO2	Recognize the various types of Green houses – poly houses, net house, glass house
CO3	Comprehend about the fertigation of green house plants
CO4	Knowledge on the measures of green house plant protection from microbes and the nematodes
CO5	Understand the application of Green house technology, its advantages and disadvantages

M.Sc. Botany

Program Specific Outcome:

At the end of M.Sc. Botany a student would have developed:

PSO1	Ability to assess the primary literature, able to find out relevant works for a particular topic and evaluate them scientifically.
PSO2	Understand about the environment, ecosystem, Evaluate biodiversity loss, and develop conservation strategies and sustainable development.
PSO3	To create awareness about plant cultivation, importance, conservation and sustainable utilization of plant biodiversity.
PSO4	Develop skills to start nursery, mushroom cultivation, biofertiliser production, organic farming and horticultural practices. Understand the importance of plants in the field of medicine, agriculture, industry, economically important plant products on a commercial scale.
PSO3	Understand the principles of identification, classification and evolution of various plant groups and also perform laboratory techniques in morphology, anatomy, cytology, embryology, palynology, tissue culture, biochemistry, biotechnology, molecular biology, microbiology and immunological assay.
PSO4	Understand the principles life processes, biomolecules, and heredity.
PSO5	Know the Fundamental mathematical tools like statistics and computer applications in biology.
PSO6	Able to apply techniques of plant breeding, green house technology, plant propagation and genetic engineering.
PSO7	Facilitate students to take up higher studies and also attitude towards research in Botany leading to a successful career in Botany

Course outcomes

M.Sc. Botany

411 Plant Diversity - I

At the end of this course, a student will have developed:

CO1	Ability to identify and classify algae & evaluate the significance of habitats in economic terms
CO2	Recognise the economic importance of fungi-identification and classification
CO3	Master the knowledge in collecting lichens and their significance as food and ecological indicator
CO4	Competent in identifying the lower forms and primitive plants by its morphological features and reproductive structures and can effectively handle them in use for human welfare
CO5	Ability to collect and compare features of lower forms of plants and draws insights on past and present ecological crisis

412 Plant Diversity - II

CO1	Ability to identify Bryophytes from virtual habitats and classify them
CO2	Know the classification and identification of Pteridophytes and their significance
CO3	Understand the strategies involved in greening of world & infer the evolution of seed plants
CO4	Gain knowledge on characteristic features of gymnosperms and understands their evolution and ecological adaptations.
CO5	Capacity to trace the origin and evolution of various groups of plants
CO6	Ability to identify major groups of Bryophytes, Pteridophytes, Gymnosperms and know their academic and applied utility

413 Cell & Molecular Biology

CO1	Understands microscopic and nanoscale diseases of plant life
CO2	Ability to handle modern microscopic and molecular tools
CO3	Skill in handling biological tools to identify and characterize plant cell organelles
CO4	Ability to interpret events like cell diseases, abnormal growth etc.
CO5	Understands the function of nucleus and extra nuclear genomes

416 – Application of Algae, Environment and Human welfare

CO1	Ability to identify and compare different algal forms
CO2	Understands the classification of algae and also isolation of bioactive compounds and algal products
CO3	Applications of algae and mass culture by tissue culture and aqua culture
CO4	Understands the recent developments and future of algal Biotechnology
CO5	Understands the role of algae in combating Global warming

421- Plant Morphogenesis

CO1	Ability to look at plant development from holistic view point
CO2	Understands the types of tissues and the importance of their forms and functions in relation to the plant body
CO3	Have the ability to probe the growth of plant cells & organs and identify the principles involved in co-ordination with reference to plant growth substances
CO4	Understands the process of reproduction in plants with a professional and entrepreneurial mindset
CO5	Understands the ultra structure of plant tissues in relation to development and function

422 – Taxonomy of Angiosperms

CO1	Understands the fundamental concepts of Plant Ecology & study of plants and their interactions with environment
CO2	Ability to identify and classify and name plants leading to documentation of floral wealth
CO3	Skill in distinguishing dicot and monocot families and engage in scientifically evaluating nature and planet earths treasure
CO4	Get to know the economically important plants
CO5	Critically analyze the structure of flower using the key characters and assumes the evolutionary relationship among the families

423 – Ecology and Biodiversity Conservation

CO1	Ability to identify different plant communities and categorize plant biomes and identify RET species
CO2	Understands the vegetative pattern and diversity
CO3	Recognise the local plant diversity and its socio-economic importance
CO4	Recognizes the polluted areas and seek remedies to mitigate and rectify
CO5	Capability to utilize the plant resources in a sustainable manner & conserve them

526 – Economic Botany

CO1	Understands and identify the different crops such as Cereals, millets, Pulses, Plantation crops, Tuber crops, Fruit crops, medicinal plants, spices and vegetables
CO2	Detailed study of occurrence, mode of cultivation, process, product and biochemical & nutritional value
CO3	Venture into cultivation, process and harvest economically important crops
CO4	Gain confidence in pursuing entrepreneurial projects

511 – Plant Physiology & Biochemistry

CO1	Understands the physiological process in plants
CO2	Understands the structure and functions of organs of plants
CO3	Get to know the biomolecules and its classification
CO4	To interpret the functional significance of organic molecules and metabolites
CO5	Acquires knowledge on functioning of life process of plants and their applications

512 – Microbiology & Immunology

CO1	Understands the fundamental principles of basic and applied Microbiology
CO2	Gain Knowledge on how the immune system works and its response in humans to foreign antigens
CO3	Know about the microbes and their life in order to hire them in applications
CO4	Understanding immunological processes and use and interpret their significance in daily walks of life
CO5	Knowledge on immunological and microbiological techniques starting from microbial culture to antibody assay

513 – Instrumentation and Research Methodology

CO1	Realise the importance of Research in knowledge acquisition
CO2	Students adapt to few research methodologies and also use of instruments to research analysis
CO3	Ability to collect, analyze and interpret data
CO4	Provides an overview on modern instrumentation, gain confidence to commence research career and venture into entrepreneurial programs
CO5	Capability of writing research paper and how to publish it in journals and go for oral and poster presentation

515 – Biodiversity and Conservation

CO1	Understands the importance of vegetation, values of biodiversity and its management and conservation
CO2	Recognizes ecosystem services, major drivers of biodiversity loss and various biodiversity databases
CO3	To pursue methods of conservation strategies to preserve the ecosystem for posterity
CO4	Understands an overview of various databases of global biodiversity

516 – Molecular Plant Breeding

CO1	Understands the genetic basis of Plant Breeding
CO2	Knowledge on biometric techniques in Plant Breeding and analysis of variations
CO3	Analysis the concepts and methods regarding cultivation of self and cross pollinated crops
CO4	Applies different tools for crop improvement in the form of molecular markers and transgenic approach
CO5	Understands the mutation and polyploidy breeding for genetic improvement of vegetative propagated crops

521- Project

CO1	Understands the process of surveying literature towards respected area
CO2	Ability to design and execute experiments based on the information collected
CO3	Learns data collection and interprets it in scientific manner
CO4	Acquires confidence and ability in communication skills – both in writing and articulation
CO5	Gains confidence to present the results and predicts the lacuna needed for further research

522 – Genomics and Bioinformatics

CO1	Understands the basics of Mendelian genetics
CO2	Acquires knowledge for determining the genetic basis of plant characters, inheritance and mutations
CO3	Ability to conduct independent investigation on plant genomics using bioinformatic tools
CO4	Acquires knowledge on various biological databases and deposition of information in it
CO5	Understands the role played by mutations in plant and its application
CO6	Analysis of Biological sequences using appropriate biological softwares

523 – Plant Biotechnology

CO1	Understands the principles of fermentation technology and its application for livelihood of people
CO2	Acquires knowledge on various gene manipulation techniques
CO3	Applies molecular tools and techniques towards manipulation of plant genes
CO4	Understands the fundamentals of plant tissue culture and exploits it commercially
CO5	Train the students on techniques of Plant Tissue culture and its applications

525 – In vitro Technologies and Industrial Applications

CO1	Gains an overview of Plant tissue culture techniques.
CO2	Acquires potential to take entrepreneurial assignments in research firms
CO3	Gains confidence to interact with industries and small business house involved in plant trade
CO4	Ability to construct bioreactors for the production of secondary metabolites
CO5	Ability to conduct training and workshops in Biotech industries

526 – Plants and People

CO1	Understands major events that shaped up the modern society through different life styles
CO2	Knowledge on major religions and faith of the country in relation to plants
CO3	Develops a holistic approach in use of plants to local people towards developing a sense of tolerant and mutual respect among all faiths
CO4	Diversity of food based on geographical distribution and culture of the country
CO5	Understands Indian and indigenous systems of medicine as an alternative to allopathic practices

Department of Chemistry

Programme Specific Outcome (B.Sc CHEMISTRY)	
PSO1	Understand the basic theoretical concepts in inorganic, organic, theoretical and physical chemistry effectively, and systematically solve the problems related to it
PSO2	Experiment, analyse and draw conclusions from qualitative, quantitative and synthetic laboratory exercises
PSO3	Understand the importance of ethics and Good Laboratory Practices in context to the environment
PSO4	Ability to handle modern scientific instruments and to develop a research aptitude
PSO5	Acquire adequate training for employability in Chemical Industries and Research Laboratories
PSO6	Understand the essentials of chemistry in day-to-day life
PSO7	Exposure to the emerging areas of chemistry

SEMESTER	Subject Code	Course	Course Outcome (CO)	B.Sc CHEMISTRY
SEM I	UCHM 111	General Chemistry–1	CO1 CO2 CO3 CO4 CO5	Understand the basics of atomic structure Ability to understand chemical bonding Understand nomenclature, hybridisation electronic effects and aromaticity. Study types of organic reagents, reactive intermediates and organic reactions Understand the basics of stereochemistry: configurations and conformations Study kinetic theory of gases
SEM I	UCHM 116	General Chemistry Practical–I	CO1 CO2	Acquire ample skills in volumetric titrations: permanganometry, dichrometry and iodometry Able to determine R_f values from paper chromatography
	UMAT112	Allied Mathematics-I	CO	Understand fundamentals and applications of Algebra, Trigonometry, Functions of Complex Variables, Vector Calculus, Polar Coordinates
	PADM111	Public Administration	CO	Understand the elements and concepts of public administration Understand the need of ethical seriousness in contemporary Indian public administration within the constitutional framework
SEM II	UCHM 121	General Chemistry–II	CO1 CO2 CO3 CO4 CO5 CO6	Study chemical energetics, thermodynamics, principles of thermochemistry Concepts of chemical equilibrium and ionic equilibrium Study the Hydrogen, Hydrides and S-Block Elements Study the preparation, properties and main reactions and mechanisms of alkanes, alkenes and alkynes Benzene chemistry, its preparations and properties Mechanisms of electrophilic substitution
SEM II	UCHM 126	General Chemistry Practical–II	CO1 CO2	Able to perform experiments for the determination of enthalpy: thermochemistry, phase transition temperature, CST, partition coefficient
	UMAT122	Allied Mathematics-II	CO	Understand fundamentals and applications of Integral Calculus, Vector Integration, Fourier

				Series, Ordinary Differential Equations, Laplace Transform
	ENVS121	Environmental Studies	CO	Understand the essentials of Environmental Science
SEM III	UCHM 231	Physical Chemistry-I	CO1 CO2 CO3 CO4 CO5	Study the solid state: laws of crystallography, X-ray diffraction studies Understand chemical kinetics Study basics of catalysis, adsorption and photochemistry Study dilute solutions and colligative properties Understand phase equilibrium
SEM III	UCHM 232	Inorganic Chemistry-I	CO1 CO2 CO3 CO4 CO5	Learn nuclear chemistry Principles of qualitative inorganic analysis Study of acids and bases and non-aqueous solvents- acid base theories, hard & soft acids and bases (HSAB) Study P-Block elements-boron, carbon and nitrogen groups Study oxygen-sulphur family, halogens and noble gases
SEM III	UCHM 235	Basic Analytical Chemistry	CO1 CO2 CO3 CO4 CO5	Adequate understanding of calibration and maintenance of laboratory glassware's Understand principles of stoichiometry Concepts of concentration systems Understand principles of Titrimetric Analysis Acid-Base Titrations, Redox Titrations, Complex formation Titrations and Precipitation Titrations. Statistical Evaluation of Analytical Data-Ways of Expressing Accuracy and Precision of Data. Types of Errors
SEM III	UCHM 236	Physical and Inorganic Chemistry Practical	CO1 CO2 CO3 CO4 CO5	Learn semi-micro qualitative inorganic mixture analysis Adequate understanding of reactions of cationic and anionic radicals with a view to their identification and confirmation. Acquire the Skill to analyse qualitatively the mixtures containing acid and basic radicals. Attain competency to systematically analyse mixtures of acid and basic radicals containing one interfering radical by semi-micro method. Able to handle viscometer and stalagmometer in order to measure the viscosity and surface tension of an unknown solution
	UPHY233	Allied Physics I	CO	Understand the basics of Classical Mechanics, moment of inertia, modulus, surface tension, thermal conductivity
	UPHY238	Allied Physics Practical-I		Able to perform experiments in surface tension, modulus, spectrometer, newton rings, thermal conductivity, potentiometer, rectifier
SEM IV	UCHM 241	Physical Chemistry-II	CO1 CO2 CO3 CO4 CO5 CO6	Understanding the basics of Electrochemistry – Types of Conductance, different laws, transport number Electrochemical Cells, types of Reversible Electrodes- Nernst equation, EMF measurements and applications Hydrolysis of Salts. Fundamentals of Quantum Mechanics Molecular Spectroscopy-Microwave spectroscopy and Infrared spectroscopy Raman Spectroscopy, Electronic spectroscopy Optical activity and Polarization, Dipole

				moment studies and refractivity methods, Magnetic properties.
SEM IV	UCHM 242	Organic Chemistry-I	CO1 CO2 CO3 CO4	Study preparation and property of Alkyl, Aryl Halides, Alcohols, Phenols To Study Carbonyl Compounds-Aldehydes and Ketones, Carboxylic acids and their derivatives, synthetic applications of Diethyl malonate and Acetoacetic ester. To Study Organic Nitrogen Compounds- Nitro Compounds, Aliphatic and Aromatic Amines, Diazonium salts To Study Heterocyclic Compounds- Five and Six membered Heterocyclic compounds
SEM IV	UCHM 244	Analytical and clinical Biochemistry	CO1 CO2 CO3	Biological Chemistry-Elementary Treatment of Digestion and absorption of Carbohydrates, Proteins and Fats Enzymes and Hormones- Elementary Treatment. Micronutrients and their Biological role in Human Systems. Biochemical Analysis of Blood and Urine
SEM IV	UCHM 246	Physical and Organic Chemistry Practical	CO1 CO2 CO3 CO4 CO5	Separation of organic compounds Determination of electrode potential and solubility product using emf measurements Determination of pH by potentiometry Verification of Beer's Lambert law Determination of rate constant, and equilibrium constant
	UPHY243	Allied Physics-II	CO	Understand the basics of ultrasound, magnetism, quantum mechanics, nuclear physics, electronics
	UPHY248	Allied Physics Practical - II	CO	Able to perform experiments in surface tension, modulus, spectrometer, newton rings, thermal conductivity, potentiometer, rectifier
SEM V	UCHM 311	Inorganic Chemistry-II	CO1 CO2 CO3 CO4 CO5 CO6 CO7	Chemistry of d block elements: first, second and third transition series Metallurgy: extraction of transition metals. Chemistry of Lanthanides and Actinides Fundamentals of Coordination Chemistry EAN, Isomerism Crystal Field Theory -Ligand Field theory. Magnetic & spectral properties metal complexes, spectrochemical series, Orgel energy diagrams.
SEM V	UCHM 314	Analytical Methods in chemistry	CO1 CO2 CO3 CO4 CO5	Learn gravimetric method of analysis Fundamentals of colorimetric analysis Study radiochemical and thermos-analytical method Study Polarography and solvent extraction methods Study Chromatographic methods
SEM V	UCHM 332	Organometallics, Bioinorganic Chemistry and Polynuclear Hydrocarbons	CO1 CO2 CO3 CO4 CO5	Study the chemistry of 3d metals. Study the organometallic compounds. Understand Bio-Inorganic chemistry. Study polynuclear and heteronuclear aromatic compounds Study active methylene compounds
SEM V	UCHM 336	Pharmaceutical Chemistry	CO1 CO2 CO3 CO4	To effectively impart knowledge about various diseases and their treatment. To know about the different types of drugs with examples. To learn the importance of Indian medicinal plants.

				To learn HIV and its treatment & prevention
SEM V	UCHM 331	Inorganic Chemistry Practical-II	CO1 CO2	Acquire skills in gravimetric analysis Acquire skills in the preparation of inorganic complexes
SEM V	UCHM 315	Analytical Methods in chemistry Practical	CO1 CO2	Acquire skills in paper chromatography and thin layer chromatography techniques Acquire skills in Colorimetric analysis
SEM V	UCHM 333	Organometallics, Bioinorganic Chemistry and Polynuclear Hydrocarbons Practical	CO	Acquire skills in the preparation of inorganic complexes and its conductance measurements
SEM VI	UCHM 321	Organic Chemistry-II	CO1 CO2 CO3 CO4	To study the Molecular Rearrangements To study the Natural Products To study the Carbohydrates, Aminoacids, Peptides, Proteins and Nucleic acids To study the Application of Spectroscopy to Simple Organic Molecules
SEM VI	UCHM 322	Analytical Chemistry	CO1 CO2 CO3 CO4 CO5	Understand Flame Spectroscopy UV-Vis. Spectroscopy Infrared Spectroscopy Mass Spectroscopy NMR Spectroscopy
SEM VI	UCHM 324	Polymer Chemistry	CO1 CO2	Learn the classification of polymers, polymerization reactions, properties of polymers, polymerization techniques and polymer degradation Learn the chemistry of commercial polymers
SEM VI	UCHM 343	Fuel Chemistry	CO1 CO2 CO3	Understand different energy sources and coal Learn about petroleum and petrochemical industry Learn about lubricant
SEM VI	UCHM 341	Organic Chemistry Practical -II	CO1 CO2	Acquire skills in Qualitative Organic Analysis Acquire skills in organic preparations
SEM VI	UCHM 325	Polymer Chemistry Practical	CO1 CO2 CO3	Acquire skills in polymer synthesis and purification Acquire skills in polymer characterization: determination of molecular weight, hydroxyl number and testing mechanical property
SEM VI	UCHM 323	Analytical Chemistry Practical	CO1 CO2	Acquire skills in sample analysis using different spectrometric techniques like UV Vis spectrophotometry, IR spectrometry

DEPARTMENT OF COMMERCE

Department of B.COM PROGRAMME OUTCOMES

PO1	This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc., well trained professionals to meet the requirements.
PO2	Capability of the students to make decisions at personal & professional level will increase after completion of this course.
PO3	After completing graduation, students can get skills regarding various aspects like Marketing Manager, Selling Manager, over all administration abilities of the Company.
PO4	Students can independently start up their own Business.
PO5	The knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization.
PO6	Strengthens their capacities in varied areas of commerce and industry aiming towards holistic development of learners.
PO7	After completing their graduation learners develop a thorough understanding of the fundamentals in Commerce and Finance.
PO8	Demonstrate extensive and coherent knowledge of commerce and its applications in real business world
PO9	Understanding of various concepts and theories providing strong academic foundation
PO10	Acquire various soft skills (like communication, organizing, and analytical) required to manage complete business situation as well as life situations
PO11	The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.

PROGRAMME SPECIFIC OUTCOMES

PSO1	The students can get the knowledge, skills and attitudes during the end of the B.com degree course.
PSO2	By goodness of the preparation they can turn into a Manager, Accountant Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.
PSO3	Students will prove themselves in different professional exams like C.A., C S, CMA, MPSC, UPSC as well as other courses.
PSO4	Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication and computer.
PSO5	Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future

	careers in business.
PSO6	Students will be able to do their higher education and can make research in the field of finance and commerce.
PSO7	Enables students to demonstrate Progressive learning of various tax issues and tax forms related to individuals and businessmen and setting up their own business start-up.
PSO8	Students undergoing this programme will be equipped to the world of work, particularly, work of the future. The student will get a first-hand exposure of working in the real world.
PSO9	Students completing this programme will be able to develop managerial knowledge and tactical dexterity, with a broader skill set and encourages them to seek out audacious, innovative solutions for today's business.
PSO10	Completion of this programme will also enable the students to formulate business problems and provide innovative solutions thus, moulding them into future visionaries, management leaders that are compassionate yet efficient.

COURSE OUTCOMES

SEM & SUB. CODE	SUBJECT NAME	COURSE OUTCOMES
SEMESTER I		
C C 01	FINANCIAL ACCOUNTING	<ol style="list-style-type: none"> 1. Explain Journal, Subsidiary books, ledger, Trial Balance and rectifying journal entries. 2. Prepare Bank Reconciliation Statement and record the transactions 3. To Analyse and prepare the final accounts of a sole traders. 4. Familiarize with the various methods of depreciation as per AS 6
C C 02 -	BUSINESS ORGANISATION AND MANAGEMENT	<ol style="list-style-type: none"> 1. Distinguish and explain each form of business; 2. Explain principles and functions of management implemented in the Organisation; 3. Identify and explain the managerial skills used in business; 4. Analyse the concept of Delegation of Authority, coordination, and control.
GE -1	BUSINESS ECONOMICS	<ol style="list-style-type: none"> 1. Understand Basic problems of an economy and concept of business cycles; 2. Learn the theory of Demand and related concepts; 3. Understand the theory of supply and Consumer Behaviour; 4. Obtain knowledge about the theory of Production, Costs and Revenue; 5. Identify various types of Markets.
A E C C -1-	INTRODUCTION TO PUBLIC ADMINISTRATION	<ol style="list-style-type: none"> 1. This would help them obtain a suitable conceptual perspective on Public Administration. 2. The growth of such institution devices as to meet the need of changing times. 3. The course also aims to instil and emphasize the need of ethical seriousness in contemporary Indian public administration within the Constitutional framework.
SEMESTER II		
C C -3	ADVANCED ACCOUNTANCY	<ol style="list-style-type: none"> 1. Prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations 2. Define single entry system, compare with double entry system and apply the accounting treatment in business 3. Explain the Fundamentals of Partnership accounts and Prepare accounts relating to admission of a partner. 4. Acquire knowledge on dissolution accounting 5. Using appropriate software for recording transactions and preparing accounts under Hire Purchase and Instalment Purchase System
C C 04 -	BUSINESS LAW	<ol style="list-style-type: none"> 1. Examine the various provisions of the Indian Contract Act, 1872 2. Define various legal procedures under Sale of Goods Act, 1930 and apply the same in business. 3. Summaries the Negotiable Instruments Act 1881 4. Analyse the Provision of Information Technology Act 2000 5. Famili arise with Consumer Protection Act,1986

GE – 02	INDIAN ECONOMY – PERFORMANCE AND POLICIES	<ol style="list-style-type: none"> 1. Evaluate the magnitude, size, and dimensions of Indian economy and to study effect of privatization and liberalization on Indian economy; 2. Evaluate the role of population as an economic resource 3. Explain the role and contribution of agriculture in economic development of India; 4. Analyse contribution of industrial and service sector in Indian economy 5. Evaluate the recent trends in economic planning of India as well as role and functions of central bank and commercial banks.
A E C C – II	ENVIRONMENTAL STUDIES	<ol style="list-style-type: none"> 1. Demonstrate skills in organizing projects for environmental protection and sustainability; 2. Analyse various projects and initiatives with respect to ecosystem restoration; 3. Interpret significance of carbon footprints; 4. Describe the environmental issues and their possible repercussions on the plant in the next few decades; 5. Summarize the green strategies and policies adopted by various business entities to preserve the environment.

SEMESTER III		
CC 05	PRINCIPLES OF COSTING	<ol style="list-style-type: none"> 1. The Concept and Principles of Cost, Costing and Cost Accounting; 2. 2. Compute unit cost and total cost of production and prepare cost statement; 3. 3. Apply the various material control techniques 4. 4. Compute the labour cost under different methods and allocate the overheads to various departments; 5. 5. Prepare Reconciliation Statement
CC -06	GOODS AND SERVICE TAX (GST)	<ol style="list-style-type: none"> 1. Explain concept, need, and utility of indirect taxes; 2. Understand and analyse the taxable event, i.e., supply under GST; 3. Describe the provisions relating to levy of GST; Identify exemptions for different types of goods and services; 4. Examine implications of input tax credit; 5. Explain the various procedures under GST; 6. Analyse provisions regarding penalties and interest and Prepare and file GST return online
CC 07	BUSINESS STATISTICS	<ol style="list-style-type: none"> 1. Develop an understanding of the various averages and measures of dispersion to describe statistical data; 2. Explain the relationship between two variables through correlation and regression; 3. Explain the construction and application of index numbers to real life situations; 4. Analyse the trends and tendencies over a period of time through time series analysis.
CC 08	CORPORATE ACCOUNTING	<ol style="list-style-type: none"> 1. Describe the rationale, merits, and demerits of issuing bonus shares for a company; 2. 2. Prepare financial statements (Profit & Loss Account, Balance Sheet, etc.) using online software; and Prepare balance sheet after Internal Reconstruction of company; 3. Analyse the case study of major amalgamations of companies in India; 4. Describe the process of Holding companies.

CC – 12	SUSTAINABLE DEVELOPMENT	<ol style="list-style-type: none"> 1. Explain key initiatives required to enhance the contribution of an organisation towards Sustainable Development; 2. Analyse the significance of various steps taken by UNDP to ensure Sustainable Development; 3. Assess the results of Smart Cities Mission Initiative of Government of India; 4. Explain the key achievements of National Programmes/Initiatives aligned with SDGs.
DSE – 02 (A)	PRINCIPLES AND PRACTICES OF AUDITING	<ol style="list-style-type: none"> 1. Explain the basic concepts of auditing and differentiate it with accounting and investigation 2. Prepare audit programme and frame the audit procedure 3. Examine the vouchers relating to cash book 4. Familiarise with the provisions of Companies Act Regarding qualification, appointment, rights and duties of company auditor. 5. Apply the concept of Computer Assisted Auditing Techniques and Green Audit in auditing practice
DSE – 2 (B)	INTERNATIONAL BUSINESS	<ol style="list-style-type: none"> 1. Explain the process of globalization, its impact on the evolution and growth of international business and to appreciate the changing dynamics of the diverse international business environment 2. Know the theoretical dimensions of international trade and intervention measures adopted; to appreciate the significance of different forms of regional economic integration and understand the concept of Balance of payment account and its components; 3. Explain the significance of different forms of regional economic integration and to appreciate the role played by various international economic organisations such as the WTO, UNCTAD, IMF and World Bank; 4. Assess international financial environment, and basic features of the foreign exchange market – its characteristics and determinants; 5. Examine the concept and form of foreign direct investment, and to create awareness about emerging issues in international business such as outsourcing and ecological issues.
SEC – 02	ARITHMETIC SKILLS	<ol style="list-style-type: none"> 1. Acquire proficiency in using different mathematical tools (Ratio, matrices and mathematics of finance) in solving real life business and economic problems

DSE - I (A)	BUSINESS ENVIRONMENT	<ol style="list-style-type: none"> 1. Know and analysis different business environment 2. Conduct a business analysis of the local environment 3. Understand the major problems in Indian Economy 4. Know about five year planning and LPG on different sectors 4. Explain the concept of social and political responsibilities of Business
DSE - I (B)	E- BUSINESS	<ol style="list-style-type: none"> 1. Explain the concept of E-business and its various aspects; 2. Acquire skills of designing a website for e-business; 3. Explain about e-commerce activities and its applications; 4. Comprehend about various payment gateway options and Assess the security issues and measures of e-business.
SEC - 01	BUSINESS COMMUNICATION	<ol style="list-style-type: none"> 1. Know various forms of communication, communication barriers; 2. Comprehend a variety of business correspondence and respond appropriately; 3. Communicate in writing for various commercial purposes; 4. Use appropriate grammatical constructions and vocabulary to communicate effectively; 5. Use business language and presentation skills.

SEMESTER IV		
CC 09	MANAGEMENT ACCOUNTING	<ol style="list-style-type: none"> 1. Explain the Concepts and technique of Management Accounting and Preparation of the Financial Statements 2. Compute and construct the Balance sheet by using ratios 3. Prepare the Fund flow statement and to compare it with the balance sheet 4. Apply accounting Standard 3 in the preparation of Cash flow statement 5. Determine the working capital requirements of a business
CC 10	HUMAN RESOURCE MANAGEMNET	<ol style="list-style-type: none"> 1. Develop necessary skills to prepare an HR policy to enable the employees attain work life balance; 2. Prepare a Human Resource Plan in an organisation; 3. Analyse the applicability and use of different kinds of trainings strategies in real life scenarios; 4. Organize counselling sessions for employees in an organisation; i) Design incentive schemes for different job roles in an organisation;
CC 11	COMPANY LAW	<ol style="list-style-type: none"> 1. Explain relevant definitions and provisions relating to issue of prospectus and allotment of shares; 2. To familiar with the provisions of Limited Liability Partnership Act 2008 3. Describe the framework of dividend distribution, Accounts of the company and Audit and Auditors of company; 4. Determine the role of Board of directors and their legal position and Develop the knowledge about the company u...eting

SEMESTER V		
CC 13	INCOME TAX AND PRACTICES- I	<ol style="list-style-type: none"> 1. Determine the residential status of individuals and to calculate the incidence of taxation 2. Compute income from salary by applying the provisions of Income tax Act 1961 3. Compute income/loss from house property 4. Prepare Statement showing taxable income from business/profession 5. Assess capital gains and income from other sources.
CC 14	MONEY AND BANKING	<ol style="list-style-type: none"> 1. Explain the Meaning, Scope and functions of Banking Systems in India 2. Illustrate the recent trends in Banking and its services 3. Explain the Concept of Credit Creation Process
CC 15	METHODS AND TECHNIQUES OF COSTING	<ol style="list-style-type: none"> 1. Prepare various budgets and to measure the performance of the business firm applying budgetary control measures; 2. Compute standard costs and analyse production cost preparing variance report; 3. Analyse cost, volume and profit and to solve short run decision making problems applying marginal costing and Break-Even technique; 4. Use spread sheets and Expert System for managerial decision making; 5. Analyse the role of ERP in Business Decision Making.
CC 16 -	FUNDAMENTALS OF FINANCIAL MANAGEMENT	<ol style="list-style-type: none"> 1. Explain the nature and scope of financial management; Assess the impact of time value of money in different business decisions; 2. Analyse capital budgeting process and apply capital budgeting techniques for business decisions; 3. Explain various capital structure theories and analyse factors affecting capital structure decisions; 4. Critically examine various theories of dividend, identify and analyse factors affecting dividend policy; and suggest sound dividend policy; 5. Design working capital policy based on the assessment of financial requirements and Compare CSR and Profitability
DSE -03 (A)	MARKETING MANAGEMENT	<ol style="list-style-type: none"> 1. Explain the marketing concept, functions of marketing and marketing mix 2. Develop a new product and to apply the pricing strategies 3. Determine the channels of distribution for marketing products 4. Apply the various promotional strategies in marketing 5. Segment the market and apply the modern marketing techniques
DSE -03 (B)	ADVERTISING AND PERSONAL SELLING	<ol style="list-style-type: none"> 1. Identify communication objectives behind advertising and promotions; 2. Explain various advertising and media elements in the advertising decisions; 3. Identify the ethical and legal issues of advertising; 4. Comprehend the importance and role of personal selling; 5. Explain the process of personal selling

SEC -03	COMPUTER SKILLS FOR BUSINESS	<ol style="list-style-type: none"> 1. Acquire the theoretical knowledge in MS-Office 2. Create documents in MS-Word 3. Construct worksheet on MS-Excel 4. Prepare presentations using MS-Power Point and to Develop database management system using MS-Access 5. Explain the fundamentals and key components of Tally ERP 9 and to Create ledgers and groups in various modes.
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SEMESTER VI		
CC 17	INCOME TAX AND PRACTICES- II	<ol style="list-style-type: none"> 1. Apply the concept and procedure of set off and carry forward of losses 2. Analyse and compute deductions from gross total income 3. Explain the meaning of assessment and its procedure to compute tax liability 4. Compare PFAF with PFAOP and its procedure to compute tax liability 5. Classify the companies and its procedure to compute tax liability.
CC 18	FUNDAMENTALS OF INVESTMENT	<ol style="list-style-type: none"> 1. Demonstrate an understanding of, and be able to apply, fundamental investment analysis techniques 2. Apply methods and theories of finance to specific cases. 3. Understand about Portfolio management and financial derivative in India. 4. Know about equity and debt instrument 5. Create awareness about investor protection
CC 19	PRINCIPLES AND PRACTICES OF INSURANCE	<ol style="list-style-type: none"> 1. Explain the Principles of Insurance 2. Compare and Contrast insurance with assurance and explain provisions relating to life insurance. 3. Analyse the principles of Marine Insurance. 4. Prepare Claim on fire insurance policies. 5. Apply the acquired skills in marketing of Life Insurance business.
CC 20	INTERNATIONAL TRADE EXPORT MANAGEMENT	<ol style="list-style-type: none"> 1. Explain the concept of international trade and compare it with domestic trade. 2. Analysis the role of WTO in the international trading environment and explain the concept of Foreign Exchange market. 3. Carry out business according to foreign trade policy and regulations. 4. Mobilise funds from various export finance institutions. 5. Prepare documents related to export trade.
DSE- 04 (A)	INDUSTRIAL RELATIONS AND LABOUR LAWS	<ol style="list-style-type: none"> 1. Explain the evolution and factors influencing industrial relations in changing environment; 2. Evaluate the effectiveness of trade unions and factors influencing their growth; 3. Examine the effectiveness of workers' participation in management; 4. Evaluate the effectiveness of grievance redressal mechanism; 5. Analyse industrial disputes and implementation of its legal provisions; 6. Discuss the concept of bonus and wages payments for all the workers under Code on Wages, 2019.

DSE- 04 (B)	ORGANISATIONAL BEHAVIUR	<ol style="list-style-type: none"> 1. Differentiate between various types of personality using standard tools; 2. Appreciate the applicability of decision making process in real life situations and use TA and Johari Window; 3. Have knowledge to understand the level of motivation in employees; 4. Describe characteristics of a leader; 5. Learn how to build a supportive organisational culture.
SEC - 04	ENTREPRENEURSHIP DEVELOPMENT	<ol style="list-style-type: none"> 1. Discern distinct entrepreneurial traits; 2. Identify the parameters to assess opportunities and constraints for new business ideas; 3. Develop a business idea by adopting systematic process; Design strategies for successful implementation of ideas; 4. Analyse the institutional finance & Support to entrepreneurs. The steps involved in setting up of micro and small enterprises. 5. Create a Business Plan.

DEPARTMENT OF COMPUTER SCIENCE

Programme Outcomes

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B.Sc (CS) programme has been designed to prepare graduates for attaining the following specific outcomes:

PO1 – It provides an ability to apply knowledge of Mathematics, Computer software and hardware in practice. It enhances not only comprehensive understanding of the theory but practical also.

PO2 - The program prepares the young professionals in wide range of areas such as Digital logics and computer architecture, Algorithms, Programming, Networking, Software Engineering, Information Security, Web Designing, Micro-processors and micro-controllers.

PO3 - In order to enhance programming skills of the young IT professionals, the program has introduced the ability to identify a problem, isolate its key components, analyze and assess the salient issues, set appropriate criteria for decision making, and draw appropriate conclusions and implications for proposed solutions.

PO4 – The program equips to demonstrate the capabilities required to apply cross-functional business knowledge and technologies in solving real-world problems and to demonstrate use of appropriate techniques to effectively manage business challenges.

PO5 - curriculum is divided based on various streams specialization that is needed in the IT Domain. Hence a student can specialize himself/herself in a particular stream.

PO6 - It provides an opportunity to prepare for the competitive examination and also getting admission to Higher Education.

PO7 - Become employable in various IT companies as programmer, system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.

PO8 – Ability to work in public sector undertaking and Government organizations.

COURSE OUTCOMES

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First Semester

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Discipline Specific Core 1 : Introduction to Problem Solving Using C with practical

After completing this course, the students can be able to:

CO1 Write efficient algorithms to solve various problems.

CO 2 Understand and use various constructs of the programming language such as conditionals, iteration, and recursion.

CO 3 Implement their algorithms to build programs in the C programming language.

Discipline Specific Core 2 : Digital Logic & Computer Organization with practical

After the completion of the course the student will be able to:

CO 1 Identify various number systems, binary codes and formulate digital functions using Boolean algebra.

CO 2 Design and implement combinational logic circuits.

CO 3 Design and implement sequential logic circuits.

SECOND SEMESTER

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Discipline Specific Core 1 : Python Programming and practical

- C O 1 To know the concept of functions in Python.
- C O 2 Be capable of using basic functions like “if” and different types of loops.
- C O 3 Be able to convert datatypes and to know how to work with lists.

Discipline Specific Core 2 : Data Structures and Algorithms with practical

- C O 1 Demonstrate an understanding of basic data structures (such as array-based list, linked list, stack, queue, binary search tree and algorithms.
- C O 2 apply data structures to algorithmically design efficient computer programs that will cope with the complexity of actual application.
- C O 3 Analysis of data structures and algorithms

Discipline Specific Elective : Numerical Methods

- C O 1 Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.
- C O 2 Apply numerical methods to obtain approximate solutions to mathematical problems.

Ability Enhancement Course (AECC - EVS)

- C O1 Develop various processes/skills e.g. observation, discussion, explanation, experimentation, logical reasoning, through interaction with immediate surroundings.
- C O2 Develop sensitivity for the natural, physical and human resources in the immediate environment.

THIRD SEMESTER

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Discipline Specific Core - object oriented programming using JAVA with Practical

After successful completion of the course, the students are able to

- CO1 Use the syntax and semantics of java programming language and basic concepts of OOP. Ability to design and implement classes and objects in Java, focusing on appropriate data encapsulation, class relationships, and methods.
- CO2 Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages
- CO3 Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
- CO4 Mastery of creating and manipulating sequential access text files.

Discipline Specific Core - Operating Systems

- CO1 Students will learn how Operating System is Important for Computer System
- CO2 To make aware of different types of Operating System and their services.
- CO3 To know different memory management schemes and virtual memory concepts.
- CO4 To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- CO5 Students will learn different types of device management techniques in the operating system.

Discipline Specific Core - Computer Networks with Practical

- CO1 Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission
- CO2 Apply channel allocation, framing, error and flow control techniques.
- CO3 Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
- CO4 Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.

Discipline Specific Core - Software Engineering

- CO1 To provide the idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases
- CO2 To provide an idea of using various process models in the software industry according to given circumstances.

CO3 To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.

Skill Enhancement Course: Soft Skills Lab

CO 1 Develop their communicative competence.

CO 2 Understand employability skills to enhance their prospect of placements

Generic Elective II : Applied statistics

CO 1 To learn the basics of statistics concepts

CO 2 To learn solving correlation and regression problems

CO 3 Ability to understand and represent data

CO 4 Ability to analyze and interpret data.

SEMESTER IV

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Discipline Specific Core : Programming with Visual Basic with Practical

CO 1 To introduce students Event Driven Programming.

CO 2 To help the students to find solution to real life problems using Visual Basic.NET

CO 3 Students will learn about connecting and accessing databases.

CO 4 Understand Forms, module, components, menu editor and its concepts. Usage of controls such as text box, buttons, checkbox etc and control them through codes.

CO 5 Ability to develop simple project with database using data source

Discipline Specific Core: DATABASE MANAGEMENT SYSTEM

CO 1 To learn the fundamental concepts of Database management systems.

CO 2 To learn SQL commands to manage data and PL/SQL.

CO 3 Understand data modeling and database development process. Construct and normalize conceptual data models.

CO 4 Implement a relational database into a database management system. Become proficient in using database query language.

Discipline Specific Elective : PRINCIPLES OF PROGRAMMING LANGUAGES

CO 1 To understand the constructs of programming language

CO 2 To know the different programming paradigms

CO 3 Get the clear idea about the construction of Programming language

CO 4 Use different programming paradigms in and application

Discipline Specific Elective : INFORMATION SECURITY

CO 1 To provide an understanding of principal concepts, major issues, technologies and basic approaches in information security.

CO 2 Understand the history and the need for information security.

CO 3 Acquire knowledge about legal and ethical aspects of information security and risk control strategies

Open Elective : Introduction to E-Business

CO 1 This course introduces students to various aspects and models fore-business.

CO 2 At the end of the course, students should have an understanding of the impacts which e- business is having on society, markets and commerce.

CO 3 Understand the various E-Business solutions available today such as E-Commerce and its mechanisms & acquire knowledge from e-governance to e-learning.

Skill Enhancement Course: Introduction to Office Automation

CO 1 Students will be able to draft official and personal letters using various functions of MSWord.

CO 2 Understand, manipulate, represent data with MS Excel using formula and graphs

CO 3 Acquire knowledge to prepare presentation for presenting their data through PowerPoint.

V SEMESTER

Discipline Specific Core: Web Technology With practical

CO 1 Understand the various steps in designing Creative and dynamic website.

CO 2 Ability to write HTML, JavaScript, CSS and ASP.

CO 3 Students can be able to develop a website.

Discipline Specific Elective: Data Mining

CO 1 To understand the concepts of Data Mining. To learn about Classification, prediction and cluster analysis techniques.

CO 2 Acquire knowledge to compare and contrast OLAP and data mining as techniques for extracting knowledge from a data warehouse.

CO 3 CO 1 Implement data mining techniques like clustering, association rule and decision tree etc on the real data set.

Discipline Specific Elective: SOFTWARE TESTING

CO 1 Understand the problems of defects and need of Testing

CO 2 Acquire knowledge about various testing strategies that are used in the industries to test their products.

ARTIFICIAL INTELLIGENCE

CO 1 To study the concepts of Artificial Intelligence and Methods of solving problems using Artificial Intelligence

CO 2 Understand concepts of artificial intelligence and underlying characteristics

CO 3 Learn various techniques of knowledge representation.

Skill Enhancement Course: Multimedia Tools Lab

CO 1 Acquire knowledge of how to create animation using Flash.

CO 2 Acquire knowledge of how to create story board, work with files create movies and Publish.

Skill Enhancement Course: Miniproject / online Course

CO 1 : Students have to develop a system or they have to register an online course.

VI SEMESTER

Discipline Specific Core: Microprocessor and Microcontroller with Practical

CO 1 Get clear idea about the architectures and instruction set of microprocessor and microcontroller.

CO 2 Do the arithmetic operation, logical operations and code conversion.

Discipline Specific core: PROJECT

CO 1 The course outcome is the ability of the student to apply Software Development Cycle to develop a software module.

CO 2 The student will be able to use the techniques, skills and modern software engineering tools necessary for software development.

CO 3 Develop a software product along with its complete documentation.

CO 4 The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project.

Discipline Specific Elective: CLOUD COMPUTING

CO 1 Understand the principles and paradigm of Cloud Computing

CO 2 Get an idea about the Cloud Computing architecture and implementation

Discipline Specific Elective: Ethical Hacking

CO 1 Acquire knowledge of ethical hacking, need and procedure.

CO 2 Understand various malwares and hacking methodologies.

DEPARTMENT OF ECONOMICS

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Name of the programme - BA ECONOMICS

SRL	Programme Outcomes
1	To impart both theoretical and empirical knowledge of the subject to the students.
2	To provide the students with a foundation to pursue Higher Education in Economics or a related discipline.
3	To provide skills that would enhance employability abilities.

Course Outcome

Se m	Name of the Course	Course Code	Course Type	Credit	Course Outcome
1	TOWARDS UNDERSTANDIN G ECONOMICS	ECON 111	Main	4	The students will get an overview of the subject matter of Economics
					The course is expected to generate curiosity and interest in the subject
					It will familiarise the students with the fundamental concepts used in economics that will serve as the groundwork for comprehending more complex ideas.
1	STATISTICAL METHODS I	ECON 112	Main	4	The students can get an understanding of data representation in tabular and graphical formats.
					It will provide knowledge on the basic measures of central tendency, dispersion, correlation and regression
					It will develop skills in terms of applications of the basic measures and its interpretation
1	ECONOMICS OF SOCIAL SECTOR AND ENVIRONMENTA L ISSUES	ECON S01	Allied	3	The students will get an understanding of the basic concepts pertaining to the social sector, including health, education, and the environment.
					It would provide knowledge regarding the factors that influence the demand for education and health care services, as well as the sources of funding for these expenditures.

					It would provide information regarding matters concerning environmental pollution and degradation
					It would impart knowledge on the policy issues associated with health, education and environment
2	MICROECONOMICS I	ECON 121	Main	4	The course is expected to provide an understanding of the theories pertaining to consumer behaviour, production, cost, and revenue. It will develop the ability to apply the theories to a variety of problems
2	MATHEMATICS FOR ECONOMISTS I	ECON 122	Main	4	The students would have an understanding of the elementary set theory, number system, and linear algebra It would develop skills for solving economics problems using these elementary knowledge
2	ENVIRONMENTAL ECONOMICS	ECON S03	Allied	3	It will acquaint the students with environment economy linkage The course provides knowledge to the students on environmental problems associated with economic activities It would impart knowledge on policy measures
3	MICROECONOMICS II	ECON 231	Main	4	The students will have an understanding of the various forms of market structures and about commodity and factor pricing. It would provide the students with a foundational understanding of welfare economics and general equilibrium. It will increase understanding of the practical applications of theories to various problems
3	MACROECONOMICS I	ECON 232	Main	4	The students will know the basic concepts associated with national output and employment It would impart knowledge on the classical theory of employment interest rate and money and the main postulates of the keynesian theory

3	STATISTICAL METHODS II	ECON 233	Main	4	The course provides knowledge on probability theory, different forms of distributions and on testing of hypothesis
					It also develops knowledge on the applications of the theories
3	ECONOMICS OF INSURANCE	ECON 234	SEC	2	It would acquaint the students with concepts associated with risk, risk management and insurance
					It would impart knowledge on the relationship between insurance and development
					It would familiarise the students with the players involved, the regulations and the major happenings in the insurance industry of India
4	MONEY AND BANKING	ECON 356	Main	4	The course will educate the students regarding the fundamentals of Central Banking
					It would impart knowledge on monetary policy
4	MACROECONOMICS II	ECON 242	Main	4	It will provide an understanding of the basic theory of consumption and investment
					The students will gain knowledge of the IS LM model in the context of closed and Open economy and its application
					It would introduce students to the discourse surrounding inflation, output, and unemployment.
4	MATHEMATICS FOR ECONOMISTS II	ECON 243	Main	4	It will educate the students on integration, differentiation, and differential equations.
					The students will be able to solve unconstrained and constrained optimisation problems.
					It will develop skills regarding economics applications of these mathematical concepts
4	ECONOMICS OF INSURANCE PRACTICE	ECON 244	SEC	2	Students will acquire the knowledge and skills necessary to conduct field surveys.
					Its objective is to impart report writing skills.
					Students will also gain practical knowledge about the insurance sector of India

5	INTERNATIONAL ECONOMICS I	ECON 351	Main	4	The students are expected to acquire knowledge that will enable them to understand issues related to international economics
					The course will familiarise the students to different theories pertaining to international economics
					The students will have an understanding of the implications of the different forms of trade restrictions
5	PUBLIC FINANCE I	ECON 352	Main	4	The course provides an understanding of the role of government
					It will illuminate the students on the theories and views associated with taxation, public expenditure, decentralisation and public debt management
5	BASIC ECONOMETRICS	ECON 353	Main	4	The students will acquire knowledge on two variable and multiple regression analysis
					It would impart knowledge on testing of hypothesis of regression coefficients
					The students would gain knowledge on the limitations of the classical regression model and ways to deal it.
5	INDIAN ECONOMY I	ECON 354	Main	4	The course covers topics such as the structure of the Indian economy during the colonial and post independence period.
					It would provide knowledge on the planning process and sectoral development of India.
					The course aims to illuminate students on the concept as well as on need for inclusive growth.
5	ENTREPRENEURIAL DEVELOPMENT	ECON355	SEC	2	It will educate the students regarding the various concepts associated with entrepreneurial development.
					The course aims to provide students with an understanding of the the diverse facets, scope and challenges faced by entrepreneurs.

					It will enlighten the students about the different supports that are available to entrepreneurs from the government.
5	DEVELOPMENT ECONOMICS	ECON S05	Allied	3	The students will have an understanding of the meaning of the term economic development and how it is measured.
					The course offers knowledge on the different theories of economic development
					It would familiarise students with the Indian experience of development
5	GENDER STUDIES	ECON 356	Allied	3	The students will get acquainted with the basic concepts associated with gender studies
					It will impart knowledge of gender disparities existing in India and across the globe
					It will educate the students with the laws and legal system for ensuring equality dignity and freedom from discrimination
					It will familiarise the students with various national and international initiatives regarding women development
6	SOCIETY AND ECONOMY	ECON S07	Allied	3	The course aims to educate the students about human society, evolution of culture and culture as the foundation for socio-economic structures
					It aims to educate students on the role of social, political and economic institutions on resource allocation.
6	INTERNATIONAL ECONOMICS II	ECON 361	Main	4	The students will get familiarised with the different concepts and accounting principles and theories associated with the Balance of Payment
					The course offers an understanding of the benefits, different forms and theories associated with economic integration.
					The students will gain knowledge on how exchange rates are determined

6	PUBLIC FINANCE II	ECON 362	Main	4	The course provides an understanding of the trend and pattern of public revenues and expenditures.
					It will educate the students on the basics of budgeting.
					The students will have an understanding of the centre state financial relationship
					The course also educates students about the fiscal reforms that are taking place.
6	INDIAN ECONOMY II	ECON 363	Main	4	The course covers topics which are areas of concern for the Indian economy such as unemployment, poverty and inequality.
					It will educate the students about the different sectors and the currency and financial system of India
					The students will learn about the Pondicherry economy
6	HISTORY OF ECONOMIC THOUGHT	ECON 364	Main	4	The objective of this course is to explain the progression of economic thought starting from its origin to the development that took place in the 20th century.
					The course provides an understanding of the classification of thoughts according to different schools
6	INDIAN FINANCIAL INSTITUTIONS AND MARKETS	ECON S08	Allied	3	The course will educate the students regarding the fundamental concepts associated with the Indian financial system (money and capital markets)
					It will impart knowledge on issues of financial Inclusion and development
6	ENTREPRENEURIAL DEVELOPMENT-PRACTICE	ECON 365	SEC	2	Students will acquire the knowledge and skills necessary to conduct field surveys.
					Its objective is to impart report writing skills.
					Students will also gain practical knowledge about the insurance sector of India.

U G Department of English

English Programme: B. A. English

(Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs)

Programme Outcomes (POs)

PO 1. **Comprehensive Perspective:** Students will develop an extensive, insightful perspective and appreciation of seminal writings spanning genres including fiction, poetry, drama, across major literary periods and schools of theory.

PO 2. **Analytical Skills:** Students will master skills for text-based evidence, data analysis, logic and synthesis toward interpreting meanings, themes, stylistic elements across literature writings.

PO 3. **Critical Thinking:** Students will evolve advanced critical thinking abilities including comparing viewpoints, evaluating arguments, determining credibility toward literature analysis.

PO 4. **Effective Communication:** Students will demonstrate effective written and verbal communication tailored to various formats including fiction, non-fiction, reports, reviews, articles, presentations, interpersonal interactions etc.

PO 5. **Research Competency:** Students will perform secondary qualitative and quantitative research, integrate insights across reference material, analyze implications toward addressing research questions.

PO 6. **Intercultural Appreciation:** Students will demonstrate intercultural appreciation, inclusivity, gender sensitivity toward responsible analysis, interpretation and critique of writings by authors across geographies.

PO 7. **Professional Application:** Students will showcase specializations including literary analysis, language editing, writing, publishing, journalism, teaching indicating employability, entrepreneurship.

Programme Specific Outcomes (PSOs)

PSO 1: Deliver knowledge, insights and an overall comprehension of English Language, literatures in English as well as Communication skills in English

PSO 2: Cultivate critical, analytical and reasoning skills to identify and resolve issues they encounter in their everyday life as well as those related to their academics

PSO 3: Inculcate a sense of self -steem, self-reliance, well-being and creativity in all spheres of life in academic as well as personal.

PSO 4: Progressively enhance their communicative repertoire for effective communication
 PSO 5: Acquire cultural literacy and broaden their intellectual horizons.

PSO 6: Imbibe humanistic values by studying human conditions and social issues.
 PSO 7: Develop empathy, open-mindedness and respect for diversity.

PSO 8: Pursue diverse career opportunities in media, journalism, publishing, teaching etc.

Course Outcomes (COs)

Sl. No	Sub Code	Title of the Paper	Course Outcomes (COs)	
SEMESTER I				
1	ENGL 111	<i>Indian Writing in English</i>	CO 1	Identify and discuss characteristics of different genres like poetry, prose, drama, and fiction in Indian writing in English
			CO 2	Analyze poetic elements such as themes, imagery, figures of speech in Indian English poems as demonstrated through interpretative study of the given works
			CO 3	Examine narrative and plot structure, characterization in Indian fiction as shown through critical reading of short stories
			CO 4	Discuss the role of Indian writings in English in capturing Indian identity and ethos
			CO 5	Construct analytical arguments and form independent interpretations about texts
2	ENGL 112	<i>Prose</i>	CO 1	Identify characteristics of prose writing such as essays, sketches, literary non-fiction based on analysis of prescribed texts.
			CO 2	Compare writing styles and perspectives between British prose authors from different periods
			CO 3	Critique and evaluate effectiveness of themes, arguments and rhetorical strategies in British prose
			CO 4	Discuss influence of social and historical contexts in shaping ideas and thoughts of writers

			CO 5	Construct coherent analytical arguments and form reasoned judgments, demonstrating critical thinking and independent perspective
SEMESTER II				
3	ENGL 121	<i>Poetry</i>	CO 1	Identify and explain poetic elements such as form, structure, rhyme, rhythm, imagery based on analysis prescribed sonnets and lyrics
			CO 2	Critically analyze the use of poetic devices, symbols, allusions and examine thematic concerns, ideas and poetic craft in romantic Victorian and modernist poems
			CO 3	Compare perspectives, language use and style between male and female poets of the modern period through analysis of prescribed poems
			CO 4	Develop literary sensitivity and creativity through imaginative response to poetry across different styles and time periods
			CO 5	Construct critical arguments and form independent literary judgments about poems through analysis, interpretation and effective communication
4	ENGL 122	<i>Fiction</i>	CO 1	Understand the evolution of British fiction as a genre and analyze major fictional works from different literary periods
			CO 2	Understand the elements and characteristics of fiction as a literary genre
			CO 3	Analyze the themes, style, narrative techniques and literary devices used by the writers of different eras
			CO 4	Develop the ability to understand and critically appreciate the different styles adopted by male and female writers
			CO 5	Helps in Identifying and analysing the modernist features and stream of consciousness techniques
SEMESTER III				
5	ENGL 231	<i>History of English Literature</i>	CO 1	Gain knowledge of significant authors, literary works, and movements within the English literary tradition
			CO 2	Develop sensitivity towards the socio-political contexts surrounding literary production in each age

			CO 3	Construct logical connections between textual details and historical conditions to derive integrated literary meaning
			CO 4	Examine characteristics, themes, ideas, writing and literary strategies used by prominent writers of each age based on critical reading and analysis
			CO 5	Critically analyze experiments, techniques employed, innovations, and approaches English literature across genres based on interpretative study
6	ENGL 232	<i>English Language and Linguistics</i>	CO 1	Identify basic concepts of language, linguistics and phonetics through definitions, examples and prescribed readings
			CO 2	Apply knowledge of physiology of speech production, description and classification of vowels and consonants through analytical exercises
			CO 3	Examine the sound system of English and its patterns through interpretative discussions on phonology components like phonemes, allophones etc.
			CO 4	Analyze morphological processes like affixation, reduplication through identification and classification of morphemes in English language
			CO 5	Evaluate structure and syntactic aspects of English sentences through diagramming conventions and generative grammar concepts
7	ENGL 233	<i>Communication English</i>	CO 1	Apply speaking skills in individual and collaborative contexts through practice conversations, role plays, and public address
			CO 2	Demonstrate active listening and conversation etiquette across formal and informal settings through simulations and media response.
			CO 3	Develop confident self-expression balancing task and relations across diverse cultural groups and situations
			CO 4	Enhance employability through public speaking, formal presentations, panel moderation and mass communication
			CO 5	Develop effective presentation techniques for conveying literary analyses and research findings

SEMESTER IV				
8	ENGL 241	British Drama	CO 1	Identify key features, forms and evolution of British drama from its origins through introductory readings and timelines.
			CO 2	Enhance cultural literacy and critical thinking by effectively analyzing and responding to British dramatic works.
			CO 3	Compare and contrast dramaturgy, character development, dialogues between classic and modern British plays based on texts prescribed
			CO 4	Critically analyze plot structure, characterization, language usage through interpretative study
			CO 5	Examine structure, symbols, themes, imagery, stagecraft features using multiple critical perspectives
9	ENGL 242	Literary Forms	CO 1	Identify and explain key literary and poetic devices like symbol, imagery, figures of speech based on definitions and examples.
			CO 2	Classify literary works into forms and genres based on their salient features using definitions and conventions.
			CO 3	Analyze poetic form, meter, rhyme scheme, theme and other elements in different poems across periods
			CO 4	Examine features of prose like style, rhetorical devices and interpret meaning in essays, non-fiction etc.
			CO 5	Evaluate elements of drama including plot, characters, language use, staging conventions in plays from different eras and genres.
10	ENGL 24	Writing Skills	CO 1	Demonstrate effective written communication skills for formal and business settings.
			CO 2	Develop skills in professional writing, including resume and cover letter writing, and other forms of workplace communication
			CO 3	Construct well-organized paragraphs and communicate effectively in digital formats, developing technological aptitude

			CO 4	Gain life skills like logic, analytical thinking, and articulation through writing.
			CO 5	Produce well-structured reports, including preparing agendas and minutes.
SEMESTER V				
11	ENGL 351	<i>English for Competitive Examination</i>	CO 1	Demonstrate competitive examination readiness through enhanced vocabulary, grammar, reading comprehension and writing
			CO 2	Apply integrated reading, writing, and critical thinking abilities across diverse contexts and themes
			CO 3	Identify common errors in grammar, usage, and vocabulary in written texts through spotting exercises and analysis
			CO 4	Interpret written content accurately by inferring ideas, analyzing passages and applying strategies to answer comprehension questions
			CO 5	Demonstrate proficiency in writing essays, research papers, and creative pieces with clarity, coherence, and style
12	ENGL 352	<i>Literary Criticism</i>	CO 1	Develop the ability to read and interpret a variety of literary and non-literary texts with critical insight.
			CO 2	Understand the historical development of literary criticism from the classical to modern period
			CO 3	Analyze key concepts and approaches of major critics and critical theories
			CO 4	Apply critical frameworks and methodologies to evaluate literary texts
			CO 5	Trace the progress of major movements, theorists and concepts in literary criticism
13	ENGL 353	<i>Shakespeare</i>	CO 1	Understand the historical, social and literary contexts that influenced Shakespeare's works
			CO 2	Apply literary models and wider research to confidently critique and articulate significance of Shakespeare through oral, written and performative modes

			CO 3	Appreciate range and depth of Shakespearean drama across tragedies, comedies and histories by studying select major representative works
			CO 4	Analyze Shakespeare's major plays through close reading of key scenes, characters, themes and literary devices
			CO5	Examine Shakespeare's use of literary techniques like plot structure, metaphors, imagery, dramatic irony etc
14	ENGL 354	<i>American Literature</i>	CO 1	Develop an appreciation and broad understanding of major writings across genres in American literature
			CO 2	Critically analyze representative works of American poetry, drama, fiction and nonfiction
			CO 3	Examine themes, styles and literary techniques used by major American writers
			CO 4	Gain insight into the diversity of American experiences and identities
			CO 5	Enhance their understanding of American culture, values and social issues
15	ENGL 355	<i>Post-Colonial Literature</i>	CO 1	understand the historical background and major concepts related to post-colonial literature
			CO 2	Read, comprehend and analyze post-colonial literature from diverse regions and perspectives
			CO 3	Develop critical perspectives on the impact of colonialism and emerging new national literatures
			CO 4	Appreciate the diversity of voices and styles in writings from Africa, the Caribbean, India and other post-colonial societies
			CO 5	Enhance skills to analyze post-colonial literature in historical, cultural and political contexts
16	ENGL 356	<i>English for Mass Media</i>	CO 1	Understand the role and responsibility of mass media and develop skills for media writing
			CO 2	Enhance their skills for effective presentation and communication for the media
			CO 3	Understand media ethics, laws and potential social impacts

			CO 4	Analyse and create different media formats like news reports, radio shows, advertisements etc
			CO 5	Pursue careers in journalism, publishing, media production, public relations etc
17	ENGL 357	Soft Skills	CO 1	Develop well-rounded interpersonal and intrapersonal skills to evolve as professionals
			CO 2	Able to apply techniques for teamwork, communication, leadership, critical thinking and conflict resolution
			CO 3	Gain valuable employability related competencies and skills for the dynamic workplace
			CO 4	Develop adaptability skills to adjust to changing situations and ambiguity
			CO 5	Apply problem solving techniques and make data driven decisions in complex scenarios
SEMESTER V				
18	ENGL 361	Translation Studies	CO 1	Understand key concepts, history and role of translation
			CO 2	Analyze textual elements and apply techniques for translating them across languages.
			CO 3	Identify common translation challenges and develop skills to address them.
			CO 4	Develop critical perspective on linguistics, culture and context in translation
			CO 5	Evolve as language professionals with an insight into the global translation industry
19	ENGL 362	Literature in Translation	CO 1	Develop appreciation for world literature through celebrated translated classics
			CO 2	Able to critique translation quality and interpret meanings
			CO 3	Gain exposure to diverse literary traditions and cultures beyond English language writings
			CO 4	Analyze seminal translated works from different languages and cultures
			CO 5	Explore connections between literature and other disciplines, fostering interdisciplinary thinking

20	ENGL 363	Contemporary Literary Theories	CO 1	Develop a conceptual understanding of contemporary schools of literary theory and criticism.
			CO 2	Enhance analytical skills by applying theoretical frameworks to interpret literary texts.
			CO 3	Gain familiarity with major literary theories and apply them to the analysis of texts
			CO 4	Get an overview of seminal global writers and texts associated with the emerging theories
			CO 5	Analyze key concepts, thinkers and texts associated with Literary theories
21	ENGL 364	Advanced English Grammar and Usage	CO 1	Demonstrate proficiency in writing essays, research papers, and creative pieces with clarity, coherence, and style
			CO 2	Master the conventions of grammar, syntax, and style in written and oral communication
			CO 3	will gain comprehensive expertise in English grammar for academic and professional use
			CO 4	Learn advanced verb tenses and aspects, voice, moods etc. and apply them appropriately in communication
			CO 5	Learn advanced sentence structure rules, transformations and punctuation usage
22	ENGL 365	Women Writing	CO 1	Develop gender-sensitive perspectives and appreciation of seminal writings by women
			CO 2	Gain insight into key feminist ideas, critiques of patriarchal structures and gender stereotypes
			CO 3	Evolve as discerning, socially aware readers, able to analyze and interpret women's writings
			CO 4	Analyze and interpret feminist perspectives in seminal English works written by women
			CO 5	Reflect diverse women's experiences and feminist ideas
23	ENGL 366	Green Literature	CO 1	Develop eco-critical perspectives and appreciation of literature addressing environmental issues
			CO 2	Analyze selected works from different periods and appreciate literary depictions of the natural world

			CO 3	Understands and appreciate literary texts based on green ideas and movements
			CO 4	read seminal essays about nature and ecological balance and analyze perspectives and arguments
			CO 5	Analyze the key environmentalist texts, its themes, plot and symbolism related to ecological crisis
24	ENGL 367	<i>Indian Culture Through Literature</i>	CO 1	Understand the diversity, richness and ethos of Indian culture as portrayed in literature
			CO 2	Analyze how cultural history, values and social issues are depicted in Indian literary works
			CO 3	Able to analyze and interpret Indian writings from cultural perspectives
			CO 4	Examine folklore, myths and philosophical ideas that have shaped Indian thinking
			CO 5	Develop the essential practices for enriching one's understanding of texts from various culture

FOUNDATION COURSES COURSE IN ENGLISH

(Common for all Undergraduate Departments)

The outcomes focus on enhancing English proficiency across reading, writing, comprehension, analysis and interpretation moving from introductory to advanced integration of grammar, literature analysis and formal/informal writing

Course Outcomes (COs)

Sl. No	Sub Code	Title of the Paper	Course Outcomes (COs)	
SEMESTER I				
1	ENGL 112	<i>English I</i> (Common for all)	CO 1	Developing English language proficiency in grammar, reading comprehension and written communication at an introductory level through the study of basic literary pieces
			CO 2	Comprehend simple literary pieces like stories, poems etc. and summarize the key ideas
			CO 3	Understand basic grammar concepts and apply them in writing sentences and paragraphs

			CO 4	Build foundational skills in written communication including letter writing, conversations, diaries etc.
			CO 5	Improve vocabulary through reading wide-ranging prose and poetry
SEMESTER II				
2	ENGL 122	English II <i>(Common for all)</i>	CO 1	Strengthen close reading and comprehension skills
			CO 2	Develop analytical skills by critically evaluating ideas and arguments in non-fiction prose and short stories
			CO 3	Develop written communication skills for both formal and informal purposes like letters, resumes, emails etc
			CO 4	Enhance oral communication skills through class discussions, presentations, and other spoken interactions
			CO 5	Demonstrate proficiency in reading, writing, listening and speaking English
SEMESTER III				
3	ENGL 232	English III <i>(common for all except BCom and BSc. Computer Science)</i>	CO 1	Expand exposure to diverse writing styles and perspectives
			CO 2	Understand advanced grammar concepts related to phrases, clauses, conditionals, and apply them in writing.
			CO 3	Study of literary texts hones both language and literary skills in English.
			CO 4	Develop advanced written skills including essay/report writing and integrate credible evidence to support ideas.
			CO 5	Enhance English proficiency across reading, writing, comprehension, analysis and interpretation
SEMESTER IV				
4	ENGL 232	English IV <i>(common for all except</i>	CO 1	Understand and analyse global classic literature across genres, analyze story elements, literary devices and Evolution of styles, themes.

		<i>BCom and BSc. Computer Science)</i>	CO 2	Develop competence in critical and creative thinking
			CO 3	Prepare students with essential language competencies and communication abilities for higher studies, careers and life.
			CO 4	Gain proficiency in higher-order written communication skills through note making, essays using credible sources on contemporary topics.
			CO 5	Enrich their own self-expression through creative engagement

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POST GRADUATE DEPARTMENT OF HINDI

Name of Programme : B.A. Hindi

Programme Outcomes (POs), Programme Specific Out comes (PSOs) and Course Outcomes (Cos)

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Programme Outcomes (POs) :

After the completion of the B.A. Hindi programme

PO 1- BA Hindi Course is to encourage in depth study in the field of language and literature.

PO 2- The course imparts basic knowledge of grammar and Translation

PO 3- It ensures the ability of effective writing and smooth communication skills in Hindi.

PO 4- The Programme also empowers and makes them confident to appear for various competitive examinations.

PO 5- The course enhances the ability of student's critical thinking in a more rational way to conclude from facts, logic and data.

PO 6- The study of language and literature provides students uncounted occasions to understand different facets of human life and a thorough knowledge of our environment.

Programmes specific Outcomes (PSOs) :

PSO 1- The programme provides deep knowledge about origin, evolution and other various aspects of Hindi language and literature.

PSO 2- Developing skills in reading, writing, speaking and understanding the language.

PSO 3 – They will be familiarized with the theory and practice of Hindi Translation

PSO 4- Students will gain experience in using computers for a better life.

PSO 5- Students get enough information regarding official terms, usages, phrases, secretarial practice etc, through the study of official language.

PSO 6- Students will be able to identify the various dialects of Hindi language family.

PSO 7 – The Topics like functional Hindi, Theory and practice of Translation from English to Hindi and vice-versa

helps them to compete in National and state level exams and secure comfortable and challenging jobs in

media, communication and in other relevant fields.

PSO 8- Study of literature moulds them as responsible citizens.

Course Outcomes (COs)

I B.A. HINDI - SEMESTER - I

Paper - HIND 113 –Hindi Katha sahitya -1 (Kahani)

CO 1 –Gain a deep understanding of the evolution of Hindi short stories and their historical context .

CO 2- Analyze the themes and literary techniques employed by renowned Hindi short story writers.

CO 3- Develop critical thinking skills through the interpretation and evaluation of Hindi Kahani.

CO 4- Develop effective presentation skills by explaining the significance of specific Hindi Kahani.

CO 5- Write critical essays and reviews on the themes and literary techniques used in Hindi Kahani.

CO 6- Engage in peer review and critique of class mate's analyses and essays.

Paper - HIND 112 – Prayojanmoolak Hindi-1 (Patrakaritha aur Media Lekhan)

CO-1- Introduction to Hindi Journalism and electronic media

CO-2 – Will be familiar with the knowledge of journalism, writing and concept of News in Hindi, art of editing

and writing related to journalism and the fundamental rights of journalism in democracy.

CO 3- To understand the nature of mass media and the development of media in India.

CO 4- Writing skill for various registers such as official Language usage, Journalism and Media

Paper- LHIN-111 –Samanya Hindi-I

COs-Language proficiency, communication skills, writing proficiency, listening skills, and the knowledge of grammar.

I B.A. HINDI - SEMESTER - II

Paper - HIND-121-Hindi Katha sahitya-II (Upanyas)

CO 1 –Gain a deep understanding of the evolution of Hindi Novel and their historical context .

CO 2- Analyze the themes and literary techniques employed by renowned Hindi Novel writers.

CO 3- Develop critical thinking skills through the interpretation and evaluation of Hindi Novels.

Paper - HIND-122- Prayojanmoolak Hindi-11 (Kamkaji Hindi aur anuvad)

COs-1 – Introduction to functional hindi and its main features-Letter writing- Official letters, business letters etc.

COs-2-To understand the basic knowledge of computer

COs-3- To acquire Translation skills.

Paper - LHIN-121-Samanya Hindi-II

COs-1-Language proficiency

COs- 2-Communication skills

COs-3- A brief knowledge of Devanagari script.

II B.A. HINDI - SEMESTER - III

Paper- HIND-231- Aadhunik Hindi Kavya

COs-1- Students will develop the ability to critically analyze the themes, motives and literary

techniques employed by Aadhunik Hindi poets, with a focus on the evolution of literary styles.

COs-2- Learners are able to develop critical thinking skills by analyzing the socio-political commentary

embedded in Aadhunik Hindi kavya, exploring how poets use their work to engage with

contemporary issues.

Paper- HIND-232-Hindi sahitya ka Itihas (Ritikaal Tak)

COs-1- Develop an in-depth understanding of the historical and cultural context in which hindi literature evolved up to the medieval period

COs-2- Develop critical thinking skills to assess the historical and cultural significance of specific literary works and their contribution to the over all development of Hindi literature .

COS-3- Enhance participant's proficiency in Hindi, focusing on the linguistic nuances and evolution of the language over different periods .

COs-4- Train participants to conduct thorough research on specific literary periods , authors or works.

Paper- HIND-233- Anuvad shikshan

COs-1- Proficiency in source and target languages

COs-2- Cultural competency.

COs-3- Apply a range of translation techniques, such as literal translation, free translation and cultural adaptation to achieve accurate and contextually appropriate translations.

COs-4- Conduct workshops on ethical consideration and best practices for translators, including confidentiality and impartiality.

II BA - LHIN-231 – Samanya Hindi -III

CO 1 : Students will enhance their proficiency in Hindi language and Communication skills.

Cos-2- Students will enhance their proficiency in different forms of Hindi prose.

CO 3 : Students acquire knowledge of different forms of Hindi language such as official language, National language and Link language etc.

II B.A. HINDI - SEMESTER - IV

Paper- HIND-241- Adhunik Hindi Kavya-II

COs-1- Students will enhance their proficiency in Hindi language through the study of

aadhunik Hindi Kavya, including the exploration of diverse vocabulary, linguistic nuances and figurative language.

COs-2- Students will develop research and presentation skills by investigating the lives and works of

prominent aadhunik Hindi poets, presenting their findings in a coherent and engaging manner.

Paper- HIND-242- Hindi Sahitya Ka Ithihas-II (Aadhunik Kaal)

COs-1- Students will be able to trace the historical development of Hindi literature from its early origins to the contemporary period.

COs-2- Analyze different literary genres in Hindi literature, including poetry, prose, drama and Novels.

COs-3- Develop research skills in gathering and evaluating primary and secondary sources related to Hindi literary history.

COs-4- Enhance written and oral communication skills through the articulation of ideas, analysis, and interpretations of Hindi literary texts.

Paper- HIND-243- Rajabhasha Prashikshan

COs-1- Define the concept of official language

COs-2- Discuss the constitutional provisions regarding official language

COs-3- Use of official language and demonstrate skill of writing and drafting.

COs-4- Appraise development of Hindi as official language.

COs-5- developing skill in official language.

Paper - LHIN-241-Samanya Hindi-IV

COS-1- Understand the historical and socio cultural context in which Ancient and modern Hindi poetry emerged.

COs-2- Training in analyzing poems closely to understand nuances in language, imagery and symbolism.

COs-3- Developing skills in writing critical essays and reviews on ancient and Modern Hindi poetry.
COs-4- Develop Translation Skills.

III B.A. HINDI - SEMESTER - V

Paper- HIND-351- Computer Shikshan

COs-1-Basic computer literacy
COs-2- Basic knowledge of web browser, internet explorer and net scape navigator
COs-3-Web publishing
COs-4- Email communication practice

Paper- HIND 353- Kavyang

COs-1 –Acquire the skill to identify and evaluate the use of literary devices and techniques in Hindi Poetry.
COs-2- Gain a comprehensive understanding of different poetic forms such as Doha, Chaupai, Gazal and their historical evolution.
COs-3- Explore the distinguishing features of various poetic forms and their significance in Hindi literature.

Paper- HIND-354- Hindi Natak aur Ekanki

COs-1-The study of the History of Hindi Drama and one act play.
COs-2- Theatrical study of the Drama.
COs-3- Script analysis and character analysis

Paper- HIND-355- Hindi Bhasha

COs-1-Define concepts of language Technology and recall its characteristics.
COs-2- Demonstrate the skills of natural language processing.
COs-3- Evaluate various issues of language technology and products developed for Hindi.
COs-4- Practical skills in applying language technology tools for various application such as information retrieval, sentiment analysis and language generation.

Paper- HIND-357- Kathakar Premchand

COs-1-Understanding of Premchand literary works.
COs-2- Analysis of Premchand's short stories and Novels.
COs-3- Critical thinking and Interpretation.
COs-4 Language Proficiency

III B.A. HINDI - SEMESTER - VI

Paper- HIND-361- Bhasha Shikshan

COs-1-To develop student's proficiency in listening, speaking ,reading and writing skills
COs-2- Describe various aspects of language technology.

Paper- HIND-364- Nibandh tatha anya gadya vidhayem

COS-1- Students will develop critical thinking skills, enabling them to analyze and evaluate ideas, arguments, perspectives presented in essays and to construct well-reasoned responses .
COs-2- Students will engage in the process of revision and editing, refining their essays for clarity and learning to give and receive constructive feedback. Students will develop effective oral presentation skills, enabling them to articulate and discuss the themes and arguments presented in their essays.

Paper- HIND -365- Bhasha vigyan

COs-1 – Remember and recall facts and basic concepts of linguistics

COs-2- Understand, classify, describe, discuss and identify linguistics characteristics.

COs-3- construct, develop and formulate the basic requirements of language

COs-4- Develop skills in phonetic and morphological analysis of the Hindi language facilitating deeper understanding of its linguistic components

COs-5- Enhance the ability to communicate linguistic concepts and analyses effectively, both in written and oral forms to diverse audiences

Paper- HIND-366 - Sahitya Swaroop aur vidhayen

COs-1- Students will be able to recognize and differentiate between various literary forms such as Prose, Poetry, Drama, Essay and Novel.

COs-2- Students will appreciate the cultural, historical and social contexts that influence and shape different literary forms.

COs-3- Students will be able to place literary works within their respective literary movements or periods, understanding how they reflect or challenge the prevailing norms and ideologies.

COs-4- Engage students in discussions and activities that explore ethical dilemmas within literature, prompting them to reflect on issues of representation and cultural sensitivity.

Paper- HIND-367- Hindi Upanyas

Cos-1- Develop the ability to critically analyze the themes, characters and narrative styles in the works of key Hindi Novelists.

Cos-2- Understand the ways in which Hindi Novelists engage with their readership and the role of their works in shaping public discourse.

Cos-3- Enhance oral and written communication skills to effectively convey interpretations and analysis of Hindi Novels.

M.A. PROGRAMME OUTCOMES (PO)

POs. 1 Hindi literature helps the students to build the skills of creative and intellectual ideas and makes them to enrich their carrier.

POs. 2 The M.A programme enables the students to acquire the knowledge based on human values to deal with various problems that come across in actual life and face these challenges with courage.

POs. 3 Develop intellectual independence and cultivate rational thinking.

POs. 4 To encourage the students to pursue research work which leads to acquire higher degrees or to opt for careers in Hindi language, literature and its allied fields.

POs. 5 Students should be able to understand the process of communicating and interpreting human experiences through literary representation using historical contexts and disciplinary methodology.

POs.6 To assist students in competitive exams like NET/JRF/SLET and other exams.

M.A . HINDI P.SO

PSo-1 - Enhance the students skills to analyze the concept and different theories of Hindi language and Literature.

- PSo-2-** Programme will definitely help students to develop communication skill and writing skill in Hindi language.
- PSo-3-** The Programme enables the students to acquire Translation skill and computer skill in Hindi.
- PSo-4 -** It will help problem solving attitude in students. They can critically interact according to the context.
- PSo-5-** Apply knowledge to develop critical approach to write independent research articles.
- PSo-6** On completion of the programme students will be strong enough in Hindi grammar and its usages.
- PSo-7** The students will be familiar with the Hindi textual genres including fiction, poetry, prose, plays, editorial etc.
- PSo-8-** Students who complete the MA Hindi course will find out many potential job opportunities in various fields in schools and colleges, like teachings, implementations of official language policies of the govt. of India as O.L. officers in nationalized banks, Assistant Manager (Hindi), Assistant Director (OL), Junior and senior translation officers etc.
- PSo-9** Students acquired the knowledge for pursuing research in Hindi Language and literature and its allied fields. They will also be competent to prepare and appear in NET /JRF/SLET/ Exam. Etc.

COURSE OUTCOMES (COs)

I.M.A FIRST SEMESTER

Paper : HIND-411- Aadhunik Hindi Kavya -1 (Chayavad tak)

- Cos-1- Enhance proficiency in the Hindi language through the study of modern Hindi poetry up to Chayavad.
- Cos-2-Encourage creating expression by inspiring learners to compose their own poetry.

Paper : HIND-412-Adhunik gadya sahitya-1-(Natak, Nibandh evam charitmak)

- Cos-1- Drama enhances student's artistic and creative abilities and gives them a better understanding of their life.
- Cos-2- Students also gain the knowledge of theoretical elements, script analysis and performance analysis.
- Cos-3-Essay writing helps the students to develop their ideas and thoughts effectively.

Paper : HIND-413- Hindi sahitya ka ithihas-1 (Reetikaal tak)

- Cos-1- Understanding the importance of literature and the role played by the poets of ancient and medieval period in Hindi literature.
- Cos-2- Acquaint with various features of Hindi poetry during the ancient, Bhakti and Reeti era of Hindi literature.

Paper : HIND-414-Hindi Bhasha

- Cos-1- Ability to understand the development of Hindi language.
- Cos-2-To understand Hindi Bhasha kshetra, dialects, vocabulary etc.

Paper : HIND-415-Pracheen evam madhyayugeen kavya-1

- Cos-1- Develop the ability to critically evaluate different interpretations and perspectives on specific poems or literary movements within pracheen evam madhyayugeen kavya.
- Cos-2- The detailed study of the Poet Kabir and his works.

I-M.A. SECOND SEMESTER

Paper : HIND-421-Adhunik Hindi Kavya -11 (Chayavadothar)

- Cos-1- Ability to understand the development of modern Hindi poetry.
- COS-2- Develop the ability to critically evaluate different interpretations and perspectives on specific poems or literary movements in modern poetry.

Paper : HIND-422- Adhunik Gadya Sahitya-11 (Upanyas or Kahani)

- Cos- 1-Ability to understand the development of Hindi Novels & short stories .
Cos-2-Practice the skill of reading Novels and short stories closely .

Paper : HIND-423-Hindi Sahitya ka Ithihas-11 (Adhunik Kaal)

- Cos-1- Ability to understand the development of Hindi language and literature of Adhunik kaal.
COS-2- The different forms of Hindi prose in Adhunik kaal.
Cos-3- The different trends in contemporary Hindi poetry.

Paper : HIND 424 – Bhasha Vigyan (Linguistics)

- CO 1 :** Student will be able to understand Definition and characteristics of language, language system and behavior, language structure and linguistic function.
CO 2 : Student will be able to understand Linguistics: Nature and scope, directions of study – descriptive, historical and comparative.
CO 3 : Student will be able to understand Process of phonemes: Nature and branches of phonetics, concept of phonemes and classification of phonemes, phonemic properties, phonemic changes. Nature of phonetics, concept of phonemes, types of phonemes.
CO 4 : Student will be able to understand Morphology: Nature and branches of the process of form, concept, types and functions of morphemes.
CO 5 : Student will be able to understand Morphology: Nature and branches of the process of form, concept, types and functions of morphemes. Syntax: Concept of sentence, types of sentence and sentence analysis.
CO 6 : Student will be able to understand Semantics: Concept, meaning, relation between word and meaning, synonymy, polysemy, antonymy, causes and directions of change of meaning.
CO 7 : Student will be able to understand Literature and Linguistics: Usefulness of parts of linguistics in the study of literature.

HIND-425- Pracheen evam Madhya kaleen kavya-II

- Cos- 1-To Develop the ability to critically evaluate different interpretations and perspectives on specific poems with in pracheen and madhyayugeen kavya.
Cos-2- Explore the intricate metrical patterns (chhandas) employed by poets and their impact on the aesthetic appeal of the poetry.
Cos-3- Practice the skill of reading pracheen evam and madhyayugeen kavya closely.

II- MA - III SEMESTER

Paper : HIND-531- Bharateeya Kavyashastra

- Cos-1-Understanding of poetic theories in Bharateeya Kavya shastra.
Cos-2- Knowledge of poetic forms and terminology.
Cos- 3- Enhance the ability of critical thinking and comparative analysis.

Paper : HIND 532- Pracheen evam Madhya kaleen kavya- III (Ancient and Medieval Poetry – III)

- CO 1 :** Student will be able to understand Study of the following One poets for interpretation and discussion- Surdas: 'Surpancharatna' -Vinay - Pad No. – 6 to 15, Bal krishna - Pad No. – 9,14, 22, 24, 31, 36, 40, 48, 49, 50, 99,104, 109,113 and 117 , Roop Madhuri – Pad No. – 1,2, 9,10 and 28 & Murali Madhuri - Pad No. – 28 to 32
CO 2 : Student will be able to do For quick recitation, short answer/very short answer questions will be asked on the following five poets. Rahim & Raskhan.

Paper : HIND 501 – Prayojanmoolak Hindi

- CO 1 :** Student will be able to understand Section: A Working knowledge of Hindi- Various forms of language, General Hindi, literary Hindi, practical Hindi, national language Hindi, official language Hindi, contact language Hindi, Constitutional status of Hindi, use of Hindi as official language, problems and suggestions.
- CO 2 :** Student will be able to understand Concept of purpose-oriented Hindi and its various dimensions Hindi in official use: Letter writing and its types, drafting, note, memorandum, notification, summarization, Expansion.
- CO 3 :** Student will be able to understand Terminology : Nature and importance, principles of formulation of terminology
- CO 4 :** Student will be able to understand Section B - Journalism : Nature and different types & News writing art, Hindi Journalism: Origin and Development, Major laws and codes of conduct.
- CO 5 :** Student will be able to understand Section C - Translation: Theory and Practice, Nature, scope, process and technique of translation, Role of translation in Functional Hindi, translation practice & Editing art.

Paper : HIND 505 - Bharteeya Sahitya

- CO 1 :** Student will be able to understand Nature of Indian literature & fundamental unity of Indian literature.
- CO 2 :** Student will be able to understand Problems of study of Indian literature & Indianness in Indian literature.
- CO 3 :** Student will be able to understand sociology of Indian literature & Expression of Indian values in Hindi literature
- CO 4 :** Student will be able to understand Study of one novel, one poetry collection & one Drama.(Novel (Bangla) 'Jungle ke Daadaar' - Mahasweta Devi,(translator Jagat Shankhadhar Radhakrishna Prakashan Daryaganj Delhi) 2. Poetry Collection (Punjabi) 'There is no middle path' - Pash 3. Drama (Kannada)- 'Hayavadan' - Girish Karnad)

Paper : HIND 509 - Dalit Literature in Hindi

- CO 1 :** Student will be able to understand Dalit Literature: Concept, form, and definition of Dalit literature.
- CO 2 :** Student will be able to understand Major signatures of Dalit movement : Mahatma Jyotiba Phule, Achyutananda, Bhimrao Ambedkar, Mahatma Gandhi etc.
- CO 3 :** Student will be able to understand for four detailed study-Novel – Chhappar – Jai Prakash Kardam Autobiography- Joothan - Om Prakash Valmiki, Story- Silia- Sushila Takbhaure & Apna Gaon- Mohandas Naimishrai.
- CO 4 :** Student will be able to understand quick lesson Biography of the author Bihari Lal, Kanwal Bharti, Ramanika Gupta & Surajpal Chauhan.

II- MA - IV SEMESTER**Paper : HIND 541 - Pashchaatya kavyashastra (Western Poetics) - 4 Credits**

- CO 1 :** Student will be able to understand Plato - poetic theory, Arastu : Imitation Theory, Tragedy Analysis and Lonjainas : the concept of the sublime.
- CO 2 :** Student will be able to understand Dryden's poetic principles, Wordsworth: Theory of poetic language and Coleridge: Imagination Theory and Fine Imagination.
- CO 3 :** Student will be able to understand Mathew Arnold: The Nature and Function of Criticism, and T.S. Eliot: Concept of tradition and individual intelligence, principle of impersonality, objective equation, non-association of sensitivity.
- CO 4 :** Student will be able to understand Richards: melodious meaning, balance of emotions, practical criticism.

CO 5 : Student will be able to understand Theories and isms: Elitism, Romanticism, Expressionism, Marxism, Psychoanalysis and Existentialism.

CO 6 : Student will be able to understand Distinctive tendencies of modern criticism: structuralism, stylistics, deconstructionism, postmodernism.

Paper : HIND 542 - Pracheen evam Madhya kaleen kavya - IV (Ancient and Medieval Poetry - IV)

CO 1 : Student will be able to understand Study of the following two poets for interpretation and discussion-Tulsidas - 'Ramcharitmanas', First 50 (1-50) couplets of Ayodhya incident & Bihari Lal - 'Bihari Sardashati' first 50 (50- 100) couplets

CO 2 : Student will be able to understand For quick recitation, short answer/very short answer questions will be asked on the following two poets - Ghanananda & Bhushan

Paper : HIND-504- Anuvad Vigyan-1

Cos-1-Define and explain key concepts and theories in translation studies.

Cos-2- Analyze the historical development of translation theories and their impact on contemporary.

Cos-3- Strengthen the students proficiency in at least two languages- source language and target language.

Paper : HIND-506 Hindi Upanyas-11

Cos-1- Develop the ability to critically analyze the themes, characters, narrative styles in Hindi Novels.

Cos-2- Acquire research skills to investigate the historical, cultural contexts in famous Hindi Novels.

Cos-3- Enhance oral and written communication skills.

Paper : HIND 511- Stree vimarsh aur Hindi sahitya (Women's Discourse and Hindi Literature)

CO 1 : Student will be able to understand History of women, concepts and forms of women's discourse and Concepts of feminist thinkers (in western and Indian context)

CO 2 : Student will be able to understand contemporary women's discussion and Creators and works related to women's discussion in Hindi literature.

CO 3: Student will be able to understand For Study and Analysis :Prose - Autobiography - Dohara Abhishaap - Kaushalya Baisantri, Novel – 'Chhinnamasta' - Prabha Khetan, Stories -'Akeli' - Mannu Bhandari and Sangharsh- Sushila Takbhaure.

CO 4 : Student will be able to understand for quick text Drama- Anth Hazir Ho- Meera kant.

U G DEPARTMENT OF MALAYALAM

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Name of the Programme: B A MALAYALAM

• **Programme Outcomes (PO)**

- PO 1 The Programme primarily aims at specialized study of Malayalam Language and Literature.
 PO 2 Inculcate creativity and develop the ability to appreciate Literature.
 PO 3 Help the Students develop a sense of Social and Cultural values and assist them in forming a unique perspective on life.
 PO 4 Develop qualities such as social awareness, analytical and critical thinking skills.
 PO 5 Prepare the students for Personal, social, and professional life.
 PO 6 Build up the ability to face challenges.

B. Programme Specific Outcomes (PSO)

- PSO 1 To prepare Students to enter Masters Programmes like MA, MCJ, MBA.
 PSO 2 To develop Research attitude in the field of Cultural studies and history of Kerala.
 PSO 3 To prepare Students for Teachers Training Programmes.
 PSO 4 To develop effective communication skills.
 PSO 5 To equip students with skills and knowledge to excel in their future careers.
 PSO 6 Revitalise the subject area by integrating modern trends within the scientific domain.
 PSO 7 To develop the experience in language computing.

C Course Outcomes (CO)

MODEL- I - BA /B.Sc

6 Lecture hours per work, 3 Credits in one Semester. The Course comprises of 4 Papers, spread over 4 Semesters. Total Credits 12.

SEMESTER	COURSE CODE	TITLE OF COURSE	COURSE OUTCOME
1	LMAL 111	MALAYALAKAVITHA	Awareness of Malayalam Poetry (Romantic Period to Postmodern Period)
2	LMAL 121	KATHASAHITHYAM	Awareness about Malayalam Fiction After Modern Period
3	LMAL 231	GADYASAHITHYAM	Awareness about the Evolution of Malayalam Prose
4	LMAL 241	DRISYAKALASAHITHYAM	Awareness about the Malayalam Drama and Aattakatha

MODEL-II- B.Com/ B.Sc Computer Science

6 Lecture hours per work, 3 Credits in one Semester. Total 6 Credits

SEMESTER	COURSE CODE	TITLE OF COURSE	COURSE OUTCOME
1	MIL- 1 (LMAL)	NAVEENAKAVITHA	Awareness about Modern Poetry
2	MIL- 2 (LMAL)	MALAYALANOVALUM KATHAYUM	Awareness about Malayalam Fiction

MODEL- III-BA Malayalam**UG PROGRAMME IN MALAYALAM**

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
1	DSC-1-A	ADHUNIKA KAVITHA	Awareness about the Romantic, Realistic, Modern Malayalam Poetry
	DSC-2-A	CHERUKATHA SAHITHYAM	Awareness about the Evolution and Sensibility Change of Malayalam Short Story
	MIL-1	MALAYALAKAVITHA	Awareness of Malayalam Poetry (Romantic Period to Postmodern Period)
	AECC	PUBLIC ADMINISTRATION	Introduces the elements of Public Administration
	FC	ENGLISH	

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
2	MIL-2	KATHA SAHITHYAM	Awareness about Malayalam Fiction After Modern Period
	DSC-1-B	SAMAKALIKA KAVITHA	Awareness about the Postmodern trends in Poetry
	DSC-2-B	NOVEL SAHITHYAM	Awareness about the Evolution of Malayalam Novel till Postmodern age
	ENVS-123	ENVIRONMENTAL STUDIES	Awareness about the Fundamentals of Environmental Studies
	FC	ENGLISH	

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
3	MIL-3	GADYA SAHITHYAM	Awareness about the Evolution of Malayalam Prose
	DSC-1C	NIROOPANA SAHITHYAM	Awareness about the Malayalam Criticism
	DSC-2C	PRACHEENA SAHITHYAM	Awareness about the Ancient Literature
	SEC-1	BHASHASASTHRAM	Awareness about the Linguistics
	FC	ENGLISH	

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
	MIL-4	DRISYAKALA SAHITHYAM	Awareness about the Malayalam Drama and Aattakatha
	DSC-1D	MADHYAKALA SAHITHYAM	Awareness about the Medieval Literature

4	DSC-2D	MALAYALA NATAKAM	Awareness about the Malayalam Drama
	SEC-2	SAMSKRITHA BHASHAYUM SAHITHYAVUM	Awareness about the Sanskrit Language and Literature
	FC	ENGLISH	

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
5	SEC-3	VRUTHASASTHRVUM ALANKARASASTHRVUM	Awareness about the Prosody and Poetics
	DSE-1A	PRACHEENAKERALAM- CHARITHRAVUM SAMSKARAVUM	Awareness about the Ancient History of Kerala
	DSE-2A	BHASHASAHITHYACHAR ITHRAM -PRACHEENAM	Awareness about the Ancient History of Malayalam Language and Literature
	DSE-3A	SAHITHYASIDHANTHAN GAL-PASCHATHYAM	Awareness about the Western Literary Theories
	GE-1	CYBER MALAYALAM- SAMVEDANAVUM SANKETHIKATHAYUM	Awareness of the Sensibility and Technicalities in Malayalam Cyber Space

SEMESTER	COURSE CODE	TITLE OF THE COURSE	COURSE OUTCOME
6	SEC-4	MALAYALA VYAKARANAM	Awareness about Malayalam Grammar
	DSE-1B	ADHUNIKA KERALAM - CHARITHRAVUM SAMSKARAVUM	Awareness about the History and Culture of Modern Kerala
	DSE-2B	BHASHA SAHITHYA CHARITHRAM- ADHUNIKAM	Awareness about the Modern History of Malayalam Language and Literature
	DSE-3B	SAHITHYA SIDHANTHAGAL- POURASTHYAM	Awareness about Eastern Literary Theories
	GE-2	MADHYAMA PADANAM	Awareness about Media

DEPARTMENT OF MATHEMATICS

PROGRAMME OUTCOMES

- Scientific temper will be developed in Students.
- Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.
- Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.
- Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law, etc.
- Students will be aware of and able to develop solution-oriented approach towards various Social and Environmental issues.

COURSE OUTCOMES

SEMESTER I

MATH 111 Theory of Equations and Trigonometry

- D To learn the relation between the co-efficient and roots of polynomial equations.
- E To learn various methods for solving polynomial equations and study the nature and position of roots.
- F Analytic Methods for solving the polynomial equation of degrees 3 & 4.
- G To learn about the expansions of trigonometric functions and related problems.
- H The learners will acquire skills of solving problems in logarithm of complex quantities.
- I To learn about the summation of Trigonometric series and related problems.

MATH 112 Differential Calculus

- Acquire knowledge on successive differentiation and its properties.
- Applying the concept of successive differentiation and solving problems related to Jacobian, maxima, Minima of two variables, Lagrange's method of multipliers.
- Acquire adequate knowledge of the concept of curvature and apply the same to solve related problems.
- To examine and identify the properties of curvature in polar coordinates and develop problem-solving skills.

SEMESTER II

MATH 121 Analytic Geometry-3

- Understand the concepts of planes and formation of equations and understand the various properties involved in it.
- Acquire knowledge of representing straight lines in symmetrical form and understanding the concepts of coplanar and skew lines.
- Solve problems related to the sphere in terms of the general equation of a sphere, the length of the tangent from a point, and the equation of the tangent plane to the sphere.
- Acquire knowledge of cones and right circular cones and their properties as three-dimensional objects.

MATH 122 Integral Calculus

- To examine various techniques of integration and applied them to solve problems in definite and improper integrals, reduction formulae, Bernoulli's formula.
- Ability to solve problems in multiple integrals by applying various integral formulae.
- Acquire knowledge about special functions like beta and gamma to evaluate multiple integrals.

SEMESTER III

MATH 231 Abstract Algebra

- Recognize the mathematical objects called groups.
- Link the fundamental concepts of groups and symmetries of geometrical objects.
- Explain the significance of the notions of cosets, normal subgroups, and factor groups.
- Analyze the consequences of Lagrange's theorem.
- Learn about structure-preserving maps between groups and their consequences.

MATH 232 Real Analysis I

- Describe a brief introduction of Metric spaces and continuous functions on Metric spaces, leading to the formal development of real analysis.
- Comprehend rigorous arguments, developing the theory underpinning real analysis.
- Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and calculate their limit superior, limit inferior, and the limit of a bounded sequence.
- Use the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.

MATH 233 Logic and Lattices

- Construct and verify mathematical proofs and comprehend formal logical arguments.
- To understand lattices as algebraic structures homomorphisms between lattices.
- Simplify the lattices as an algebraic system and solve the Boolean algebra.

SEMESTER IV

MATH 233 Linear Algebra

- To learn the importance and applications of linear transformation.
- To learn matrix and its properties, system of equations which has a wide variety of applications in various science subjects.
- To learn basic concepts of vector space which is used in other pure mathematical subjects and engineering.
- To get well equipped with Mathematical Modelling abilities.

MATH 242 Real Analysis II

- Understand Integrability and theorems on integrability. Recognize the difference between point-wise and uniform convergence of a sequence of functions.
- Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and integrability.
- Study the concepts like connectedness, completeness, and compactness of the Metric spaces.
- Riemann integral, Rolle's theorem, the law of the mean, improper integral, elementary functions, etc are also familiarised.

MATH 243 Vector Calculus

- Familiarize the students with the notion of vectors as representing quantities that have directions as well as magnitude in the advanced level of learning.
- Extend the basic vector concepts to learn about Gradient fields and path-independent fields, calculating directional derivatives, gradients, and curls.
- Evaluate line integral as work over a closed curve, including parameterized curves. Evaluating integral using applications of Green's theorem and Stokes's theorem.
- To compute surface and volume integrals through surfaces such as Cylinders, Cuboids, Spheres, etc., evaluating surface integral using Gauss Divergence in a plane.

SEMESTER V

MATH 352 Complex Analysis I

- Defining continuity, differentiability, and analyticity of a complex-valued function which helps the students to acquire a deeper knowledge.
- Showing the condition(s) for a complex valued function to be analytic and/or harmonic.
- Developing the concept of sequences and series with respect to the complex numbers system.
- Understand the bilinear transformations, elementary functions and the mappings by elementary functions are also familiarised.

MATH 353 Operation Research-I

To apply various optimization techniques for decision-making

To appropriately formulate Linear Programming models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these LP problems.

Formulate a real system into a Linear Programming problem and solve it using the graphical or simplex method.

Explain the primal-dual relationship.

Interpret minimum cost of transporting item from Source and Destination Formulate and solve transportation and assignment problems and interpret their solutions.

Solve two-person zero-sum games with and without saddle point.

Model competitive real-world phenomena using concepts from game theory. Analyze pure and mixed strategy games.

MATH 354 Ordinary Differential Equation

- Broad classification of Differential equations and learning the different standard modules to identify the type of a differential equation.
- Apply a suitable procedure to find the solution of first-order, second and specific higher-order ordinary differential equations with constant and variable coefficients.
- Solving the Mathematical models using higher-order differential equations to solve application problems in the field of Applied Physics.
- Familiarize the students with the Laplace Transform Techniques and properties. Defining mathematically and describing the properties of the Laplace transform such as linearity, time shifting, time scaling, and convolution.
- Equip and enhance their knowledge to deal with equations with differential coefficients.

MATH 357 Programming using SCILAB

- Understand and apply the programming concepts of Scilab which is important for mathematical investigation and problem solving.
- Use mathematical libraries for computational objectives.
- Represent the outputs of programs visually in terms of well-formatted text and plots.

SEMESTER VI

MATH 362 Complex Analysis II

- Recalling the fundamental theorem of algebra in complex number systems.
- Illustrating Taylor's and Laurent's expansions of simple

functions.

- Applying Laurent's series for isolated singularities and determining residues.
- Analyzing the residues and residue theorem concepts to compute real definite integrals using contours.

MATH 363 Operation Research II

- Knowledge about network construction and to find critical path and total project duration. Student will be able to use CPM and PERT techniques, to plan, schedule, and control project activities, and select the best strategy based on decision criteria.

- Students will be able to determine the Economic order quantity and describe the costs and functions of an inventory system. Calculate an optimum number of orders for deterministic inventory models with or without shortages.
- Knowledge of Queuing Theory provides a competitive advantage to improve customer satisfaction. Equips students to conduct studies using mathematical models and formulas to determine the best way of serving students to conduct studies using mathematical models and formulas to determine the best way of serving.
- Students will understand the basic concepts of simulation modeling and be able to identify real-life problems within various industries that can be modeled and analyzed using simulation techniques.

MATH 364 Partial Differential Equation

- Apply various techniques to solve first & second-order partial differential equations.
- Model physical phenomena using partial differential equations like heat and wave equations.
- Understand problems, methods, and techniques of calculus of variations.

MATH 367 Numerical methods

- To apply appropriate numerical methods to solve the problem with the most accuracy.
- Using appropriate numerical methods, determine the approximate solution of ODE and system of linear equation.
- Compare different methods in numerical analysis w.r.t accuracy and efficiency of the solution.

Department of Physics

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Name of Programme : B.Sc. Physics (Allied subjects : Chemistry, Mathematics)
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(Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (Cos))

Programme Outcomes (POs)

PO 1 Critical Thinking: The programme aims to enable the students to question, analyse, interpret, evaluate and make a judgment with facts and figures related to various subjects in pure sciences such as Physics, Chemistry, Mathematics and Quantitative Techniques etc.

PO 2 Creative thinking: The programme aims to enable the students to come up with unique, original solutions and to propose innovative ideas in clarifying facts and figures and providing new solution to the problems.

PO 3 Scientific aptitude: The programme targets to develop scientific aptitude among the students to make them open- minded, comprehend, evaluate, arrange, and integrate scientific concepts in a meaningful and purposeful manner.

PO 4 Logical experimentation: The learners acquire the abilities in handling scientific instruments, scheduling and executing the experiments in laboratories and to draw logical inferences from the scientific experiments.

PO 5 Self reliant: To make them capable of applying their acquired knowledge and able to work on their own hence make themselves self-reliant and self-sufficient.

PO 6 Lifelong learning: Enable the students to understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevance in the day- to - day life.

PO 7 Interdisciplinary approach: To give them knowledge about developments in any science subject and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.

Programme Specific Outcomes (PSOs)

PSO 1: To comprehensively study about simple harmonic motion and different types of oscillators. To understand the basic concepts of wave motion and its propagation through different media.

PSO 2: To solve various problems of mechanics of particles, rigid bodies and continuous medium, kinetic theory and thermodynamics.

PSO 3: To study the concepts of General theory of relativity and special theory of relativity and to implement them to study various phenomena.

PSO 4: To assimilate the concept of Electric and Magnetic fields and their applications.

PSO 5: To study the basis of Statistical and Quantum mechanics and their applications to various physical processes.

PSO 6: To study the applications of Interference and diffraction of light.

PSO 7: To understand the basic concepts of atomic and molecular spectra and to apply them to study spectra of one electron and many electron atoms as well as Raman Spectroscopy.

PSO 8: To give a brief introduction of different types of Laser, their working and applications.

PSO 9: To introduce the concept of crystal lattice and lattice dynamics

PSO 10: To understand basic electronic devices and their applications in different electronic circuits.

PSO 11 : To be able to solve problems using numerical methods and Fortran Programming.

PSO 12 : To study various aspects of astrophysics and its applications.

PSO 13 : To study different types materials, its properties, preparation, characterization and applications.

Course Outcomes (COs)

Semester I

Paper : PHYS-111: MECHANICS OF PARTICLES, RIGID BODIES and CONTINUOUS MEDIA

CO 1 : Students will be able to understand different physical quantities in vector form and the significance of their representation in vector form through vector algebra.

CO 2 : Students will be able to understand gravitational field and potentials, their values in different conditions, along with laws of planetary motion.

CO 3 : Students will be able to understand the dynamics of rigid bodies by studying the laws of moment of inertia, values of moment of inertia for different bodies, collision of particles, rotational and also appreciate the concept of precession and its applications as elementary gyroscope.

CO 4 : Students will be able to understand significance of elasticity of various materials, relation between various elastic constants, applications of elasticity such as cantilever and various concepts of fluid dynamics such as Euler's equation, viscosity and surface tension.

Paper : PHYS-112: KINETIC THEORY AND THERMODYNAMICS

CO 1 : Students will be able to learn the thermodynamic description of a system, concepts of different laws of thermodynamics and its applications, different types of thermodynamic parameters and their relations.

CO 2 : Students will be able to understand different thermodynamic potentials, their relations and applications, kinetic theory of gases, various transport phenomenon and related relations and applications.

CO 3 : Students will be able to understand the theory of radiation, mainly blackbody radiation, its spectral distributions and its applications.

CO 4 : Students will be able to understand the concepts of statistical mechanics, three different statistical distribution laws, their comparison and applications.

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Semester II

Paper : PHYS-121: OSCILLATIONS, WAVES AND ACOUSTICS

CO 1 : Students will be able to learn superposition of two harmonic oscillations under different conditions, graphical and analytical methods, their applications.

CO 2 : Students will be able to learn about wave motion in detail, such as transverse waves on a string, travelling and standing waves on a string, different types of waves.

CO 3 : Students will be able to learn about sound in detail, such as different characteristics of sound wave, forced vibrations and resonance, Fourier's Theorem and its applications.

CO 4 : Students will be able to learn about architectural acoustics, different factors important for architecturally good structures, such a reverberation time, Sabine's formula.

Paper : PHYS-122: OPTICS

CO 1 : Students will be able to understand ray optics such as Fermat's principle and its applications, paraxial approximation, matrix method in paraxial optics.

CO 2 : Students will be able to understand reflection and refraction in detail, different types of aberration in lens and mirrors, their remedies.

CO 3 : Students will be able to understand interference and diffraction in detail, multiple beam interferometry, different types of interferometers, their uses,

CO 4 : Students will be able to understand the basics of polarization in optics, different types of polarization, and applications.

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Semester III

Paper : PHYS-231: ELECTRICITY AND MAGNETISM

CO 1 : Students will be able to understand vector analysis in detail, vector integration, line, surface and volume integrals of vector fields, and various theorems of vector analysis.

CO 2 : Students will be able to understand electrostatics, various theorems of electrostatics and their applications, determination of electric potential for different cases, capacitance, dielectric medium and its properties.

CO 3 : Students will be able to understand magnetostatics, various theorems of magnetostatics and their applications, divergence and curl of magnetic field, magnetic vector potential, magnetic properties of materials, classification of magnetic materials.

CO 4 : Students will be able to learn Maxwell`s equations and Electromagnetic wave propagation in detail.

Paper : PHYS-232: MODERN PHYSICS AND RELATIVITY

CO 1 : Students will be able to learn the concepts of quantum physics in detail, such as Planck`s quantum concept, dual nature of light, De Broglie hypothesis and its experimental evidence, problems with Rutherford model, discrete atomic spectra, hydrogen atoms and their spectra.

CO 2 : Students will be able to learn the wave - particle duality, Heisenberg uncertainty principle and its applications, Two slit interference experiment with photons, atoms and particles; linear superposition principle as a consequence.

CO 3 : Students will be able to learn Schrodinger equation for non – relativistic particles, different types of operators, physical interpretation of wave equation, probability and probability current densities in one dimension, simple one dimensional problems.

CO 4 : Students will be able to learn the Postulates of Special theory of Relativity, length contraction, relativistic addition of velocities.

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Semester IV

Paper : PHYS-241 : QUANTUM MECHANICS

CO 1 : Students will be able to learn time dependent Schrodinger equation and dynamical evolution of a quantum state, properties of Wave Function, Eigenvalues and Eigen functions, Position, momentum & Energy operators and their properties, Wave Function of a Free Particle.

CO 2 : Students will be able to learn time independent Schrodinger equation in detail, general solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; wave packets, Fourier transforms and momentum space wave function; Position-momentum uncertainty principle.

CO 3 : Students will be able to go through a general discussion of bound states in an arbitrary potential, boundary condition and emergence of discrete energy levels, application to one-dimensional problem, quantum mechanics of simple harmonic oscillator.

CO 4 : Students will be able to learn quantum theory of hydrogen-like atoms, angular momentum operator and quantum numbers, Orbital angular momentum quantum numbers.

Paper : PHYS-242: ELECTRONICS

CO 1 : Students will be able to learn the concepts of current density, continuity equation, Kirchoffs laws, Network theorems and their applications, Non-Ohmic circuitry, rise and decay of currents in LR, CR circuits and LCR circuits.

CO 2 : Students will be able to learn Junction diode, special diodes, and their general uses.

CO 3 : Students will be able to learn Bipolar junction transistors, biasing and hybrid parameters in detail.

CO 4 : Students will be able to learn Operational amplifiers and oscillators in detail.

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Semester V

Paper : PHYS-352: SOLID STATE PHYSICS

CO 1 : Students will be able to learn the basics of Crystallography, reciprocal lattice crystallography, diffraction of X-rays by a crystal lattice, Laue's formulation of X- ray diffraction, Laue spots rotating crystal.

CO 2 : Students will be able to learn bonding and lattice vibrations, types of bonding in solids, dynamics of chain of two types of atoms, interaction of light with ionic crystals, Einstein's and Debye's theories of specific heats of solids.

CO 3 : Students will be able to learn about electrical conduction in solids and semiconductor, thermal conductivity of metals in detail.

CO 4 : Students will be able to learn the magnetic properties of solids, diamagnetism, paramagnetism, ferromagnetism, hysteresis loop, outline of antiferro and ferrimagnetism, ferrites and superconductivity.

Paper : PHYS-353: ATOMIC AND MOLECULAR SPECTROSCOPY

CO 1 : Students will be able to learn about atomic and X-ray Spectra in detail.

CO 2 : Students will be able to learn effect of magnetic field on energy levels.

CO 3 : Students will be able to learn Rotation and Vibration of Molecules and the related selections rules, Electronic levels and Raman Effect.

CO 4 : Students will be able to learn about laser system, working principle, types and applications.

Paper : PHYS-354: DIGITAL ELECTRONICS

CO 1 : Students will be able to understand digital principles, basic logic gates and universal gate operations, Boolean algebraic theorems and properties, Karnaugh map, logic families, combinational logic design.

CO 2 : Students will be able to learn about Flip Flops and Counters in detail.

CO 3 : Students will be able to learn about A/D, D/A Converters in detail.

CO 4 : Students will be able to learn about the components of a micro-processor system, architecture of 8085, assembly language, programming of Intel 8085, elementary introduction to 16 bit processor.

Paper : PHYS-355: ASTROPHYSICS

CO 1 : Students will be able to learn about Radio galaxies, their types and origin, quasars and its properties, basics of orbiting telescope, Hubble space telescope.

CO 2 : Students will be able to learn about Hertzsprung-Russel Diagram, star formation, stellar evolution, planet evolution theory.

CO 3 : Students will be able to learn about the structure of the sun, significance of its different layers, big band theory and future of the Universe.

CO 4 : Students will be able to understand bio-astronomy, habitable planets, search for extra-terrestrial civilizations, Rocket equation and theory of geosynchronous satellite.

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Semester VI

Paper : PHYS-362: NUMERICAL METHODS AND COMPUTATIONAL PHYSICS

CO 1 : Students will be able to learn straight line fitting, parabola fitting, successive approximation method , solution of simultaneous equations.

CO 2 : Students will be able to learn numerical differentiation, numerical interpolation and determination of eigen value of a matrix.

CO 3 : Students will be able to learn about basics of a computer and FORTRAN programming.

CO 4 : Students will be able to learn about programming algorithm, flow chart, simple programs using FORTRAN.

Paper : PHYS-363: NUCLEAR PHYSICS

CO 1 : Students will be able to learn the general properties of nuclei, angular momentum, parity, magnetic moment, electric moments, nuclear excited states.

CO 2 : Students will be able to understand different nuclear models, evidences in favour of the models, disadvantages of the models, concept of nuclear force.

CO 3 : Students will be able to understand different types of radioactive decay, their properties, different types of nuclear reactions and conservation laws.

CO 4 : Students will be able to understand the basics of Particle physics, including particle interactions, types of particles, conservation Laws, concept of quark model, color quantum number and gluons.

Paper : PHYS-364: RENEWABLE ENERGY AND ENERGY HARVESTING

CO 1 : Students will be able to learn about fossil fuels and alternate Sources of energy.

CO 2 : Students will be able to understand solar energy and wind energy harvesting in detail.

CO 3 : Students will be able to understand the basics of ocean energy and geothermal energy.

CO 4 : Students will be able to understand electromagnetic energy harvesting.

Paper : PHYS-356: MATERIAL SCIENCE

CO 1 : Students will be able to learn the types of materials, semiconductors, superconducting materials, nanomaterials.

CO 2 : Students will be able to learn about different techniques of growing crystals, characterization by X ray and optical methods.

CO 3 : Students will be able to learn about electrical and thermal properties of metals, semiconductors and thin films, conduction of semiconductors, metallic and insulator films.

CO 4 : Students will be able to learn about the applications of materials and non destructive testing.

MGGAC, Mahane

Department of Zoology

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Name of Programme : B.Sc. Zoology (Allied subjects : Botany & Chemistry)
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(Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (Cos))

Programme Outcomes (POs)

PO 1 Knowledge acquiring: The programme aims to enable the students to acquire knowledge across different areas of animal Science and understand the importance of animals in Biosphere.

PO 2. Critical Thinking: The Course enables the students to critically evaluate the Ecosystem services rendered by Biodiversity in the Biosphere for the Life sustainability of the Universe.

PO 3 Creative thinking: The programme aims to enable the students to come up with unique, significant secrets of various physiological functions of organ system, which maintain the life.

PO 4 Scientific aptitude: The programme targets to develop scientific aptitude among the students to make them understand, evaluate, arrange, and integrate biological concepts in a meaningful and purposeful manner.

PO 5 Logical experimentation: The learners acquire the abilities in handling scientific instruments, scheduling and executing the experiments in laboratories and to draw logical inferences from the scientific experiments.

PO 5 Self reliant: To make them capable of applying their acquired knowledge and able to work on their own hence make themselves self-reliant and self-sufficient.

PO 6 Lifelong learning: Enable the students to understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevance in daily life.

PO 7 Interdisciplinary approach: To give them knowledge about developments in any science subject and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.

Programme Specific Outcomes (PSOs)

PSO 1: Provide an opportunity to familiarize with the functional anatomy and mode of reproduction in different group of animals.

PSO 2: To understand various techniques employed in biological sciences

PSO 3: To study the concepts of immunity, molecular aspects of heredity and variations in the Biological world.

PSO 4: To assimilate the concept Ecosystem, sustainable management of resources and Biodiversity conservation for future green world.

PSO 5: To study the basis of Biotechnology to cater the needs of tomorrow.

PSO 6: To study the applications of Biochemistry for improvement of medical sciences, food sciences and environmental sciences.

PSO 7: To understand the basic concepts of immunology, Microbiology and Endocrinology to upgrade living standards of human society.

PSO 8: To give a brief introduction to invertebrate biology and adaptation involved.

PSO 9: To understand reproductive biology of various organisms for maintaining balance of ecosystem.

PSO 10: To understand basics of behavioral sciences of various animals and their communication methods.

PSO 11 : To be able to acquire various skills for self-employments.

PSO 12 : To study various theories of evolution and process of biochemical evolution.

PSO 13 : To study basic structural and functional unit of life called cell and different modes of its division.

PSO 14 : To understand various organ, organ systems and their physiological functions.

PSO 15 : To make them aware of embryonic development of a species and various cellular changes happens in ontogenic embryonic development.

Course Outcomes

(COs) Semester I

UZOC 111 Biodiversity of Invertebrates - Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	To understand Biodiversity, adaptation, organization and taxonomic status of invertebrates.
CO2	Know more about protozoans and protozoan parasites of Man
CO3	Understanding biology of sponges and canal system of sponges
CO4	Learning of various useful and harmful insects in human life
CO5	Able to dissect out and study the features of representative phylum and gain knowledge of various adaptations.

UZOC 112 Zoology Supportive Paper I (Basic Zoology) – Theory & Practicals

At the end of this course, a student will have developed ability to:

CO1	Understand various invertebrate and vertebrate phylum coming under the Animal world
CO2	Various life adaptations of different organisms and their importance
CO3	Knowledge regarding harmful and beneficial organisms around us and their application in human society
CO4	Understand the economically important animal products
CO5	Hands on training on dissection of representative phylum for understanding

PADM 113 Public Administration

At the end of this course, a student will have developed ability to:

CO1	Knowledge on evolution of Public administration, their relationship with other disciplines
CO2	Understand the administration system in Central, state and U.T.
CO3	Ethical awareness and issues in India, Public administration within the constitutional frame work
CO4	Understand the constitution of India

Semester II

UZOC 121 Biodiversity of Chordates and Vertebrates – Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the characteristics, classification, structure and adaptations of various vertebrate classes in the animal kingdom
CO2	Able to understand parental care of various vertebrates
CO3	Understand the economically important species of animal
CO4	Knowledge regarding migration, reproduction and Biology of animals

UZOC 122 Zoology Supportive Paper II (Animal and Human Welfare) – Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand various animals for human welfare
CO2	Know more about animal products and their importance
CO3	Knowledge on the vectors of human health and the management of these vectors
CO4	Various diseases of man and their causative agents
CO7	Hands on training on the internal morphology and organ system of animal

ENVS 123 Environmental Studies

At the end of this course, a student will have developed ability to:

CO1	Understand the biodiversity, documentation, extent of their loss and conservation strategies
CO2	Distinguish the different ecosystem, Energy resources, Kinds of pollution, impacts and control measures
CO3	Know the environmental policies, movements, public awareness and human animal conflicts
CO4	Field visit to nearby ponds, hillocks, polluted sites for live study of environmental issues

Semester III

UZOC 231 – Animal Physiology-Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the various aspects of physiological activities of animals with special reference to man
CO2	Able to understand coordination of different life functions for the maintenance of life.
CO3	Understand the process of nervous conduction and muscular contraction
CO4	Understand the functions of all receptors and their abnormalities.
CO5	Know more about the physiology of digestion process
CO6	Able to study the circulatory system and their involvement in immunology and endocrinology
CO7	Know more about nutrients, different mode of nutrition on the living world.

UZOC 232 – Microbiology- Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the importance of microbial world
CO2	Ability to classify microorganisms
CO3	Knowledge regarding beneficial and harmful microbes
CO4	Understand microbial application in human life
CO5	Know the types of microbes, their economic importance

UZOS 233 – Vermitechnology

At the end of this course, a student will have developed ability to:

CO1	Understand the morphology, taxonomic position and biology of earthworm
CO2	Know different species used for vermitechnology
CO3	Various internal and external factors affecting vermitechnology
CO4	Understand various aspects of vermitechnology
CO5	Get sufficient knowledge in starting self-employment venture in vermitechnology

Semester IV

UZOC 241 Developmental Biology – Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the Ontogenesis
CO2	Know Human gametogenesis, reproduction and reproductive technology
CO3	Learn about extra embryonic membrane and their importance in embryonic development.
CO4	Understanding Parthenogenesis and embryonic adaptation
CO5	Understand various stages of gastrulation, morphogenetic movement of cells and gene regulation in development

UZOS 243 Clinical Laboratory Technology

At the end of this course, a student will have developed ability to:

CO1	Know various laboratory techniques involved in the diagnosis of diseases.
CO2	Different method of blood sample collection for various tests
CO3	Understand the importance of various blood cell counts and its significance.
CO4	Understand the various biochemical analysis employed in laboratory techniques

Semester V

UZOS 351 Apiculture

At the end of this course, a student will have developed ability to:

CO1	Understand the morphology, taxonomic position and biology of honeybee
CO2	Know different species used for Apiculture industry
CO3	Various external factors affecting bees and different plants favorable for apiculture
CO4	Understand various aspects of Apicultural practice
CO5	Get sufficient knowledge in starting self-employment venture in the field of Apiculture

UZOE 352 Immunology – Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Grasp the fundamental concepts of immunity and the contribution of organs and cells in the development of immune response
CO2	learn the various cellular and molecular aspects of immune system
CO3	learn the various cellular and molecular aspects of immune system
CO4	Understand the regulation of immune response against different diseased states
CO5	Understood the role of different types of Cells, Effector Molecules and Effector Mechanisms in Immunology.
CO6	Learnt the mechanism of histocompatibility, host & graft interaction.

UZOE 354 Cell and Molecular Biology - Theory & Practical

At the end of this course, a student would have developed ability to:

CO1	Understand the structure and function of cell, its organelles and other components.
CO2	Learn the mechanism of cell division and cell cycle
CO3	Know about the importance of different sub-cellular organization and their interaction
CO4	Learnt about the composition and packaging method of the genetic material – DNA
CO5	Understood the details of DNA replication, transcription and protein translation, the most significant processes at molecular level of life.

UZOE 355 Biochemistry and Intermediary Metabolism - Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the scope and importance of biochemistry with interdisciplinary perspective of other branches of life sciences.
CO2	Comprehensive and cohesive knowledge in biochemistry with distinct understanding of intermediary metabolisms occurring in cells.
CO3	Analytical and problem solving with regard to various biochemical principles of life process.
CO4	Critical thinking about the concept of biochemistry and ability to read scientific articles for the development of scientific reading.
CO5	Competence for research in biochemistry as a skilled experimentalist.
CO6	Development of leadership quality, demonstration of scientific integrity, honesty and ethics

UZOG 357 (GE I) – Public Health and Hygiene

At the end of this course, a student will have developed ability to:

CO1	Understand the Public health and hygiene
CO2	Create knowledge on health education
CO3	Knowledge about communicable disease such as air born, food and water-born and vector born diseases
CO4	Learn about non-communicable diseases
CO5	Provided a critical knowledge about nutritional requirements and its deficiencies.

Semester VI**UZOS 361 Aquatic Biology and Culture Techniques**

At the end of this course, a student will have developed ability to:

CO1	Understand the Biology of fish and know about various culture techniques.
CO2	To know various marine fisheries, estuarine fisheries and inland fisheries of India.
CO 3	Understand the fish diseases and its managements.
CO4	Understand the marketing standards and strategies in fishery science

UZOE 362 Endocrinology and reproductive Biology - Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Explain the role of hormone in the physiological activities of animal with special reference to man
CO2	Understands the biosynthesis of various hormones and its significance
CO3	Knowledge regarding hormonal action of different types of hormones
CO4	Learn the effects of male and female sex hormone in human being
CO5	Understand the structure, histology and functions of various endocrine glands.

UZOE 364 Evolution and Conservation Biology - Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	Understand the concepts of animal evolution through theories and evidences.
CO2	Learn the origin of life and progressive evolution of animal kingdom
CO3	Learn origin of species and evolutionary forces acting for species formation
CO4	Understand the concepts of Biodiversity, levels of biodiversity and extend of biodiversity
CO5	Learn the various uses and threats of Biodiversity
CO6	Learn biodiversity conservation methods

UZOE 365 Genetics and Biotechnology - Theory & Practical

At the end of this course, a student will have developed ability to:

CO1	To know the principles of genetics
CO2	Learn the basic principles of linkage and cross over process for the transmission of characters from parents to offsprings.
CO3	Learn chromosomal aberration and mutation as principal forces of variation
CO4	Understand the basic principles of biotechnology
CO5	Know about the enzymes, tools and techniques of biotechnology
CO6	Learn about the scope of biotechnology in the field of medicine, agriculture and environment.
CO7	Understands the use of GM crops and GM animals in the new era.

UZOG 367 (GE II) – Value added product of Animal

At the end of this course, a student will have developed ability to:

CO1	Sound knowledge on value added products of animal
CO2	Learn about fish and fishery products and its usage in human society
CO3	Know about meat and various meat products
CO4	Knowledge on the Poultry products and its economic importance
CO5	Understand production of various dairy products and marketing possibilities.
