

DEPARTMENT OF BIOCHEMISTRY

Program Outcome: A broad outlook on science as a whole and biochemistry specifically

Program Specific Outcome: enrich with the latest development in the field of Biochemistry and related subjects.

Course Outcome:

Course Outcome: B.Sc. BIOCHEMISTRY

1. Perspective, Methodology & introduction to Biochemistry:

CO 1. Get familiarised with science

CO 2. Understands how science works.

CO 3 gain knowledge on Biochemistry.

2. General informatics and Bioinformatics:

CO 1. Develops idea about general informatics

CO 2. Develop skills about the applications of biological databases

3. Cellular Biochemistry

CO 1. Understand biological system at cellular level

CO 2. Describe the structural characteristics, functional properties and regulation of enzymes

4. Techniques in Biochemistry

CO 1. Familiar with the principle, functioning and applications of biological equipments

CO 2. Understand the basis of research methodology

5. Physiology & Immunology

CO 1. Develops an idea regarding the physiological functions of biological system.

CO 2. Understand the basis of immunology and immunological technique

6. Bioenergetics and Carbohydrate Metabolism

CO 1. Gains an overview of Bioenergetics

CO 2. Understand the general principle of cellular energy metabolism and oxidative pathways of carbohydrate

7. Analytical Biochemistry

CO 1. Understand the fundamentals of Analytical Biochemistry

CO 2. Understand the assessment of nutrients, food preservatives and food additives

8. Molecular Biology

CO 1. Awareness about the molecular details of the biological system

CO 2. Develops an insight regarding the central dogma of Molecular Biology

9. Metabolism –II

CO 1. Understand events occurring in the biological system

CO 2. Awareness about biosynthetic pathways and inborn errors of metabolism

10. Clinical Biochemistry

CO 1. Aware about clinical applications of Biochemistry

CO 2. Knowledge about Microbiology and Pharmacology

11. Immunology and Immunological techniques

CO 1. Understand the fundamentals of immunology and immunological techniques

CO 2. Understand the immunological techniques for the diagnosis and treatment of diseases

Practicals

12. BC 1644

1. analyse food quality

2. skill to do clinical analysis of urine samples

13. BC 1545

1. skill for quantitatively estimating the biomolecules

14. BC 1643

1. apply theoretical knowledge in quantitative analysis of haematological parameters.

DEPARTMENT OF BOTANY

1. Program - Science-Botany
2. Specific Program- B.Sc. Botany
3. Courses - Core Course
Open Course
Complementary Course

Programme Specific Outcomes (PSOs) and Course Outcomes (COs) for all courses

Program Outcome (PO) B.Sc. BOTANY

1. Gaining knowledge of plant science, develop a scientific attitude in the students to think in an open minded manner, arouse the quality of curiosity and critical thinking in general and with special focus on plant science.
2. develop special skills in practical work, experiments, laboratory materials and equipments along with collection and interpretation of scientific data to contribute to science in general with special emphasis to plant science.
3. understand scientific terms, concepts, facts, phenomenon and their relationships
4. aware of the natural resources and environment and its conservation
5. gain practical experience as part of the course to develop scientific ability to conduct research in the field of their choice and contribute to society
6. acquisition knowledge in plant sciences, natural phenomenon, manipulation of nature and environment for the human benefit
7. ability to apply scientific knowledge to improve agriculture and related fields to make the country self-sufficient and self-reliant
8. Understand and appreciate the role of biology in societal issues, such as environmental and biological resources, biodiversity, ethics, and human health and diseases
9. Understand the latest developments in the field of information technology, Biotechnology, Bioinformatics and related fields of research and development
10. Appreciate the beautiful planet earth and awareness about the need to protect the planet from exploitation
11. Develop scientific temper that they developed from school level and nurture it to develop a research culture

Program Specific Outcome(PSO)

1. Impart knowledge of science is the basic objective of education.
2. Develop scientific attitude is the major objective to make the students open minded, critical, curious.
3. Develop skill in practical work, experiments and laboratory materials and equipments along with the collection and interpretation of scientific data to contribute the science.
4. Understand scientific terms, concepts, facts, phenomenon and their relationships.
5. Make students aware of natural resources and environment.
6. Provide practical experience to students as part of the course to develop scientific ability to work in the field of research and other fields of their own interest and to make them fit for society.

COURSE OUTCOMES (COs) : B.Sc. BOTANY

BO1221: Methodology and Perspectives in Plant Science

1. Ability to clarify the complexities in cell wall organization, microscopic and sub microscopic structures
2. Identify and differentiate different anatomical features of parts of monocots and dicots (stem, leaf, root) with respect to permanent tissues and tissue systems
3. Ability to identify and differentiate the development of male and female gametophyte in monocots and dicots
4. Differentiate fertilization mechanisms and development of embryo in dicots and monocots

Foundation Course II BO1221: Methodology and Perspectives in Plant Science

1. Familiar with the fundamental characteristics of science as a human enterprise and to see how science works
2. Apply scientific methods independently and interpret scientific data using basic statistical methods
3. Able to prepare specimens for microscopic and gross anatomical studies and using different microscopic methods for sample analysis
4. Able to prepare buffers, measure pH, separate plant pigments and construct absorption spectrum of any sample

Core Course IIBO1341: Microbiology, Phycology, Mycology, Lichenology and Plant Pathology

1. Able to identify and classify the different microbial organisms using staining and microscopic examination
2. Identify vegetative and reproductive structures in different types of algae and its classification based on thallus organization, pigments, mode of reproduction and their commercial importance
3. Identify and classify fungi based on thallus structure, reproduction, life cycle and economic value

4. Identify lichens and their economic value
5. Identify the diseases along with the causative organisms of Mosaic disease of tapioca, Citrus canker and Blast disease of paddy
6. Able to prepare Bordeaux mixture and tobacco decoction as control for plant diseases

Core Course III BO1441: Bryology, Pteridology, Gymnosperms and Palaeobotany

1. Understand the diversity in habits, habitats and organization of various groups of plants.
2. Gain an insight into the modern classifications in lower forms of plants.
3. Understand the evolutionary trends in Pteridophytes and Gymnosperms.
4. Differentiate the anatomical variations in vascular plants.
5. Understand the significance of Palaeobotany and its applications.

Core Course IV BO1541: Angiosperm morphology, Systematic Botany, Economic Botany, Ethno Botany and Pharmacognosy

1. Able to distinguish different types of inflorescence, flowers and fruits based on floral parts, their arrangement and relative position
2. Familiar with the basic rules of classification and types of classification systems herbarium techniques, botanical gardens and account of modern trends in taxonomy
3. Familiar with and identify based on morphological features and economic importance of members based on Bentham and Hooker's system of classification
4. Identify economically important crops with special reference of botanical description, morphology of useful part
5. Familiar with the ethno botanical value of plants and application in pharmacognosy and techniques for collection of information from tribes

Core Course V BO1542: Environmental Studies and Phytogeography

1. Familiar with the different aspects of natural resources, their conservation, their role in economic development and importance of sustainable development
2. Identify polluted sites, major pollutants, major ecosystems and different methods of waste management
3. Familiar with the biodiversity hotspots threat to biodiversity, strategies of biodiversity conservation, global initiatives and legislations in prevention and mitigation of environmental pollution
4. Identify phytogeographical regions of India and ecological and anatomical modifications xerophytes, halophytes, epiphytes, hydrophytes and parasites

Core Course VI BO1543: Cell Biology, Genetics and Evolutionary Biology

5. Familiar with with ultrastructure of cell, cell organelles, chromosomal organization and types of chromosomes, aberrations in chromosome structure and number
6. Familiar with and distinguish mitosis and meiosis and their significance in evolution
7. Skill to prepare acetocarmine squash preparation of onion root tips and identify different stages of mitosis

8. Skill to prepare acetocarmine squash preparation of Rhoeo flower buds and to identify different stages of meiosis
9. Familiar with the old and modern concepts of genetics, types of gene interactions, multiple alleles, quantitative characters, concept of linkage and crossing over, mechanisms of sex determination, extra nuclear inheritance
10. Able to workout problems in monohybrid, dihybrid, incomplete dominance gene interactions, linkage and two point, three point crosses and construct a genetic map
11. Familiar with the different concepts and theories of evolution

Core Course VIIIBO1544: Practical I (BO1141, BO1221)

1. Understand the anatomy of root, stem and leaf (primary, secondary and anomalous growth).
2. Skill for Stomata identification.
3. Identify of male and female reproductive structures, embryo.
4. Identify of pollen morphology.
12. Able to workout problems on frequency distribution, measures of central tendencies and measures of dispersion.

Core Course VIIIBO1545: Practical II (BO1341, BO1441)

1. Apply knowledge for Gram staining of bacteria
2. Ability for micro preparation of vegetative and reproductive structures of algae, fungi and lichen.
3. Identify plant diseases.
4. Identify and distinguish habit, anatomy and reproductive structures of Bryophytes, Pteridophytes and Gymnosperms.

Core Course IX BO1641: Plant Physiology and Biochemistry

1. Familiar with the water relations, mineral nutrition, absorption of water, ascent of sap, mechanisms of water loss from plants
2. Familiar with with light and dark reactions of photosynthesis, comparison C3, C4 and CAM plants, respiration, plant growth regulators, stress physiology, nitrogen metabolism, nif genes
3. Able to demonstrate imbibition, determine stomatal index, measurement of photosynthesis, evolution of oxygen during respiration, measure growth by arc auxanometer, geotropism, evolution of oxygen during photosynthesis
4. Familiar with with the macromolecules like carbohydrates, oils, fats, amino acids and proteins their structure and overall role in cell metabolism, enzymes and their mechanism of action and secondary plant products
5. Identify starch, proteins and carbohydrates by qualitative test

Core Course X BO1642: Molecular Biology, General Informatics and Bioinformatics

1. Familiar with experiments to confirm DNA as genetic material, chemical composition of DNA and different forms of DNA and its structure, replication of DNA
2. Familiar with RNA structure, types of RNA protein synthesis, regulation of gene expression in prokaryotes and eukaryotes, concept of gene and transposable elements
3. Able to create files and use applications in word, excel and powerpoint.
4. Able to use the internet to find recognize download install and use softwares in area of biological research like Phylip
5. Able to use online tools like BLAST, CLUSTAL and visualize molecules using Rasmol

Core Course XI BO1643: Horticulture, Plant Breeding and Research Methodology

1. Skill to the use of garden implements and perform cutting, layering, budding and grafting as means of plant propagation
2. Able to do landscaping of lawns, topiary, carpet beds, ornamental hedges, create green houses, art of bonsai and floral arrangement
3. Able to identify and supply fertilizers at the appropriate time with suitable method
4. Familiar with the methods of plant breeding like introduction, hybridization, acclimatization, polyploidy induction and achievements with reference to crops in India
5. Able to emasculate and hybridize any bisexual flower
6. Identify a research problem, design experiments, execute the research, analyze the results in a qualitative and qualitative manner and bring out statistically relevant results
7. Able to prepare a project report in a prescribed format, proper method of citing references using reference management softwares, preparation of illustrations, tables and graphs

Core course XII BO1644: Practical III (BO1541 and BO1542)

1. Identify different types of flowers, inflorescence and fruits.
2. Identify different taxonomy of angiosperms.
3. Plant identification from Herbarium sheets.
4. Identify the economic products from plants
5. Observe and identify the plants of ethno botanical importance.

Core Course XIII BO1645: Practical IV (BO1543, BO1641, BO1642 and BO1643)

1. Skill for squash preparation of onion root tip.
2. Skill for smear preparation of flower buds.
3. Ability to workout genetic problems.
4. Perform Physiology practical as per syllabus.
5. Ability to perform Biochemical test – protein, starch, carbohydrate, glucose.
6. Molecular visualization using Rasmol.
7. Familiar with garden tools and implements.
8. Practice Workout propagation methods – budding, grafting layering.

9. Skill for emasculation of a bisexual flower.

Open Course IBO1551.1: Horticulture

1. Provide basic information about the business opportunities in plant sciences.
2. Inform the student about sustainable agriculture and organic farming.
3. Understand the importance of horticulture in human welfare.
4. Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.
5. Understand the impact of modern technologies in biology on horticultural plants.
6. Understand the basic concepts of landscaping and garden designing.
7. Inculcate interest in landscaping, gardening and flower and fruit culture.
8. Flower arrangement and preservation of horticultural products.
9. Plant disease management.
10. Marketing of horticultural crops.

Open Course IBO1651: Biotechnology and Nanobiotechnology

1. understand the basics of plant tissue culture like media preparation, explant sterilization, callus induction, synthetic seed preparation and identification of somaclonal variation
2. understand recombinant DNA technology, vectors, restriction digestion, ligation and different methods of gene transfer
3. describe methods in biotechnology and industrial microbiology, aseptic culture of microbes and use of recombinant microbes in dairy industry and useful products
4. identify the use of nanostructures and nanoscale systems in nature and methodologies to visualize and kinds of nanostructures for different applications
5. operate various equipment in a biotechnology laboratory and maintenance septic cultures for both microbiological and plant cultures

Botany Project and Field study

1. Inculcate proficiency to identify appropriate research topic and presentation.
2. Field study to a place of plant diversity within or outside Kerala and prepare a report and submit to the external examiners.

B. Sc. Botany Complementary Course: COURSE OUTCOMES (COs)

Complementary Course I BO1131: Microtechnique, Angiosperm Anatomy and Reproductive Botany

1. Imparting an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm.
2. Understand the individual cells and also tissues simultaneously
3. Understand the structural adaptations in plants growing in different environment.

4. Understand the morphology and development of reproductive parts.
5. Get an insight in to the fruit and seed development.
6. Understand the techniques used to preserve and study plant materials.

Complementary Course II BO1231: Phycology, Mycology, Lichenology, Bryology, Pteridology, Gymnosperms and Plant Pathology

1. Appreciate the adaptive strategies of the algae, fungi and lichens.
2. understand the economic and pathological importance of algae, fungi and lichens.
3. Understand the unique and general features of bryophytes, pteridophytes and gymnosperms and familiarize it.
4. Compare the external morphology, internal structure and reproduction of different types of Algae, Fungi, Lichens, bryophytes, pteridophytes and gymnosperms.
5. Realize the application of Phycology, Mycology and Lichenology in different fields.
6. understand the economic and pathological importance of microorganisms.

Complementary Course III BO1331: Systematic Botany, Economic Botany, Ethno Botany and Plant Breeding

1. Acquaint with the aims, objectives and significance of taxonomy.
2. Identify the common species of plants growing in Kerala and their systematic position.
3. Acquaint with the basic technique in the preparation of herbarium.
4. Familiarizing with the plants having immense economic importance.
5. Study of common plants used by tribes in their daily life.
6. Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.

Complementary Course IV BO1431: Plant Physiology, Plant Ecology, Horticulture and Plant Biotechnology

1. Acquire basic knowledge needed for proper understanding of plant functioning.
2. Familiarize with the basic skills and techniques related to plant physiology.
3. Understand the role, structure and importance of the bio molecules associated with plant life.
4. Acquaint the student with the significance of Environmental Science.
5. Make the students aware about the extent of the total biodiversity and the importance of their conservation.
6. Help the student to design novel mechanisms for the sustainable utilization of natural resources.
7. Enable the students to understand the structure and function of the ecosystems.
8. Enable the students to understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures
9. Make the students aware about various environmental laws in India and the role of various movements in the protection of nature and natural resources.
10. Understand the importance of horticulture in human welfare.
11. Understand the impact of modern technologies in biology on horticultural plants.
12. Understand the current developments in the field of Biotechnology.

13. Equip the students to carry out plant tissue culture.
14. Understand methods and application of biotechnology.

Complementary Course V BO1432: Practical (BO1131, BO1231, BO1331 and BO1431)

1. Identify the anatomy of root, stem and leaf
2. Understand Stomatal structure
3. Familiarize the structure of Anther and Embryo
4. Identify algae, fungi, lichen, bryophyte, pteridophyte and gymnosperms
5. Identify angiosperm members and economic plant products
6. Understand the aim and working of physiological experiments
7. Study of ecological adaptations in plants
8. Familiarize vegetative propagation methods

M. Sc. BOTANY

COURSE OUTCOMES (COs)

BO211: Phycology, Mycology and Plant Pathology

1. familiar with classification of algae based on thallus organization, cell organization, pigments and morphological variations and contribution of Indian phycologists
2. familiar with the structure, reproduction and life cycle of Algae along with their economic importance and ecological role
3. identify algae and classify it based on the thallus organization, cell structure and familiarity of local flora
4. familiar with classification of fungi and lichens based on thallus organization, cell structure and reproduction and life cycle along with economic importance
5. understand with modern trends in classification of fungi and lichens, their ecological significance
6. identify and classify fungi and lichens based on morphology and reproductive structures of the types mentioned in the syllabus
7. understand the pathology, principles and concepts of host-parasite interactions, systemic and acquired resistance and major signaling pathways
8. understand principles and methods of plant disease control with reference to symptoms, causative organism and disease cycle
9. identify and control diseases caused by fungi and lichens

BO212: Bryophyta, Pteridophyta and Gymnosperms

1. understand the general characters, recent systems of classification, contribution of Indian bryologists, morphological, anatomical, reproduction, life cycle and phylogeny of bryophytes
2. knowledge of the origin, evolution of bryophytes, fossil bryophytes and their importance as biological indicators of air and water pollution
3. identify and classify based on anatomical and morphological features of types of bryophytes

4. understand the general characters, affinities, distribution and classification, contribution of Indian pteridologists, morphological, anatomical, reproduction, life cycle and phylogeny of pteridophytes
5. understand the origin, evolution of Pteridophytes, fossil pteridophytes and their importance as ecological indicators
6. understand the evolutionary trends of gametophyte of pteridophytes, origin of roots, telome theory, its merits and demerits
7. understand the general characters, distribution, affinities and classification of gymnosperms along with their economic importance
8. describe the structure, reproduction and life cycle of types along with structural details of vegetative and reproductive parts, phylogeny and inter relationships of eight orders of gymnosperms
9. identify based on anatomy of stem using transverse section, radial longitudinal section and transverse longitudinal section, leaf and reproductive structures the types of gymnosperms
10. identify based on morphological and reproductive parts of the types of gymnosperms and fossil gymnosperms

BO213: Microbiology, Histology, Microtechnique and Histochemistry

1. prepare media, isolate and maintain pure aseptic cultures of microorganisms
2. identify bacteria based on staining and demonstrate bacterial motility
3. able to test for coliforms and identify contaminated water
4. identify and study anomalous anatomical structures
5. understand anatomy of leaf using transverse section of lamina, stomatal study, calculation of stomatal index
6. understand by maceration the woody and herbaceous stem and anatomy of node by anatomical studies to demonstrate root-stem transition
7. prepare free hand and microtome serial sections and identify tissues with histological reasons
8. able to localize proteins, sugars and lipids in sections and prepare squashes and smears
9. prepare buffers, stains for tissue processing and measure microscopic objects

BO221: Taxonomy, Economic Botany and Ethnobotany

1. understand the principles of taxonomy, systems of classification, principles of nomenclature, history of taxonomy in India, herbaria and construction of different types of taxonomic keys
2. understand modern concepts in taxonomy and the origin of angiosperms
3. identify based on herbarium or fresh specimens using flora or monograph based on scientific principles the species of fifty families
4. prepare a dichotomous key, floristic studies of flora, prepare herbarium specimens and identify products of economic importance
5. appreciate occurrence, production, cultivation, processing of crop plants with botanical details along with the biochemical and nutritional value

6. survey, document and study the tribal knowledge of herbal drugs and its relevance to modern medicine
7. identify and appreciate forces of evolution, process of speciation, reproductive isolation and molecular evolution

BO222: Environmental Biology, Phyto geography, Conservation Biology and Evolution

1. analyse vegetation by quadrat or line transect to find frequency in terms of Raunkiaer's frequency formula
2. estimate the dissolved oxygen and estimation of carbonate and bicarbonate content in water samples
3. estimate the total organic carbon content in a soil sample
4. find out the primary production in a given water sample
5. document environmental assets in an area and identify polluted sites
6. familiar with forests in India and world, forest products with reference to Kerala and the importance of forest to environment as a sustainable bio resource
7. familiar with the concept of biodiversity conservation and modes of conservation along with legislations and role of NGOs

BO223: Cell and Molecular Biology and Genetics

1. understand ultrastructure of cell, cell organelles, chromosomal organization and types of chromosomes, aberrations in chromosome structure and number
2. distinguish mitosis and meiosis and their significance in evolution
3. prepare acetocarmine squash preparation of onion root tips and identify different stages of mitosis and meiosis
4. describe the old and modern concepts of genetics, types of gene interactions, multiple alleles, quantitative characters, concept of linkage and crossing over, mechanisms of sex determination, extra nuclear inheritance, two point and three point test crosses, interference and coincidence
5. solve problems in gene interactions, linkage and two point, three point crosses, interference, coincidence and construction of a genetic map
6. solve problems in microbial genetics, molecular genetics and population genetics
7. isolate and purify genomic DNA, total RNA and proteins

BO214 & BO224: Practical I & II

1. Familiarize and identify the algae, fungi, bryophyte, pteridophytes and gymnosperm.
2. Understand preparation and identification of bacterial smear
3. Acquaint with anatomical preparation of angiosperm materials
4. Familiarize identification of angiosperm plants with flora
5. Familiarize economically and ethnobotanically important plant products
6. Understand critical evaluation of different ecosystems and ecological impacts
7. Understand problems in molecular biology

BO231: Plant Breeding, Horticulture and Reproductive Biology

1. To enable the use of garden implements and perform types of budding, grafting and layering as means of plant propagation
2. To be able to do landscaping of lawns, topiary, carpet beds, ornamental hedges, create green houses, art of bonsai and floral arrangement
3. Familiar with the methods of plant breeding like introduction, hybridization, acclimatization, polyploidy induction and achievements with reference to crops in India
4. Apply knowledge to emasculate and hybridize any bisexual flower, estimate pollen viability/sterility by in vitro and in vivo methods and study pollen morphology by acetolysis and morphology examination
5. Understand the developmental stages of anther, ovule, embryo and endosperm

BO232: Biophysics, biochemistry and Plant physiology

1. familiar with the devices used in modern analytical methods like electron microscopes, flow cytometer, confocal microscopy, HPLC, GCMS, LCMS, HPTLC, ELISA, IEF, IR, NMR, ESR spectroscopy, Circular Dichroism, radiation dosimetry, radio isotopes, autoradiography, liquid scintillation
2. separate pigments, amino acids, alkaloid, phenolic by chromatographic methods
3. prepare buffers and standard solutions of BSA, Glucose, Catechol
4. isolate and estimate soluble proteins by Bradford method
5. estimate reducing sugars and isolate and quantify plant lipids by wet and dry methods
6. to isolate, assay and determine the specific activity of plant enzymes of germination, growth and fruit ripening like amylase, lipase, protease peroxidase and polyphenol oxidase
7. extract and estimate total protein by TCA precipitation or Lowry's method
8. isolate and estimate chlorophyll proteins and quantify, using absorption spectra of chlorophyll and carotenoid using different solvents
9. estimate Hill activity by DCPIP/ferricyanide reduction method
10. extract and estimate total phenols and physiological identification of CAM species

BO233: Research Methodology, Biostatistics Plant Biotechnology

1. familiar with research methodology, research and experiment design, data analysis by statistical methods and tools, thesis preparation, writing a research paper and formatting of bibliography
2. Solve problems on mean, median, mode and calculation of central tendency and dispersion of data from plant science
3. apply analysis of variance, Least Significant Difference and 'f' value from data of plant science and find out broad sense heritability
4. prepare graphs in excel and Graphpad Prism
5. prepare media for tissue culture, shoot multiplication, callus culture and induce organogenesis using PGR's in important crops, medicinal plants or ornamentals
6. isolate, estimate and test the quality of genomic DNA by agarose gel electrophoresis
7. able to encapsulate seeds or embryos in calcium alginate for synthetic seed preparation

BO241: Special Paper I – Bioinformatics

1. isolate similar protein and DNA sequences using BLAST tool
2. construct a phylogenetic tree from the data of selected families of eudicots using CLUSTAL X, CLUSTAL W and MUSCLE
3. apply molecular docking studies using AUTODOCK or similar free or commercial software packages

BO242b: Special Paper II Elective – Environmental Biology

1. Create awareness on aspects of the ecosystem and interactions within the system.
2. Have an idea on diverse group of plants, their survival and their interactions in different environments.
3. Understand the flow of energy and route of elements through the ecosystem.
4. Assess the inter-relationship between organisms at population and community level
5. Create awareness on importance of biological resources, laws
6. Study of applications in environmental ecology

Semester III & IV

BO234 & BO243: Practical III & IV

1. understand the structure, fertility and sterility of pollen grains
2. apply plant propagation methods – cutting, budding, grafting, layering
3. Perform plant physiology and biochemical experiments
4. Understand tissue culture practices
5. Familiarize to workout web lab
6. Equip the students to use various tools and techniques for the study of environment.

BO201: Dissertation

1. Inculcate proficiency to identify appropriate research topic and presentation.
2. Develop scientific attitude and Problem solving ability.

BO202: Submissions

Practical skill development

BO203: Comprehensive Viva Voce

Skill development in research and subject

PG DEPARTMENT OF COMMERCE

PG DEPARTMENT OF COMMERCE

B.COM TAXATION LAW AND PRACTICES (337)

Vision

Accomplish global recognition in the field of Commerce by generating highly efficient and committed accountants, entrepreneurs, business men, financial managers, statisticians, bankers, tax practitioners, salesmen and researchers who would excel in conventional as well as emerging areas.

Mission

- To provide high quality education and training in tune with the developments in Commerce
- To develop entrepreneurship skills for transforming knowledge into socially relevant quality projects
- To encourage research and development activities and industry-institute interactions for the business field
- To impart awareness of professional ethics, social responsibilities and sustainable development in the business field.

Program Outcome (PO)

PO1. Apply the knowledge of Commerce, Accountancy, Tax, Management to solve Business problems.

PO2. Identify, formulate and analyze complex business decision making problems and derive meaningful conclusions using principles of management, taxation and accounting.

PO3. design efficient consumer products and develop high quality products by considering safety, environmental and economic aspects.

PO4. conduct investigation of complex business economic problems using research based methods, analyze and interpret data to draw valid conclusions.

PO5 acquire skills to select and use modern business economic tools and accounting softwares for modelling, simulation and solution of various business problems.

PO6 apply contextual knowledge to assess societal, health, safety, legal and cultural issues in business practice to become a responsible business man.

PO7 understand the societal and environmental impacts of business applications and practice sustainable development.

PO8 able to commit to professional and ethical responsibilities of a businessman.

PO9 able to work individually, in a team or as a leader in various challenging environments.

PO10 communicate effectively within the business community or with the society through appropriate reports, designs, products and instructions.

Program Specific Outcomes (PSO)

- Graduates of B.Com Program shall be able to successfully apply the knowledge of principles of management to identify and able to foster research skills to develop sustainable solutions for managerial problems
- Successfully apply the knowledge of principles of managerial economics to identify and solve the real-life problems and develop novel applications in relevant areas. And successfully apply the knowledge of principles of environmental science to identify and solve the real-life problems and develop novel applications in relevant areas.
- apply the knowledge of principles of financial accounting to identify and solve the real-life problems and develop novel applications in relevant areas
- Acquire essential concepts and ethical values to develop oneself as a true entrepreneur.
- Acquire essential banking skills and ethical values to develop oneself as a true businessman
- Acquire essential legal skills and ethical values to calculate GST
- develop research skills to develop sustainable innovations in interdisciplinary research areas.

Course Outcomes (CO)

Management concepts and thoughts CX 1341

1. Demonstrate knowledge of major theories and models in key areas of management.
2. Analyse organisational problems and generate realistic solutions based on current academic research in management functions.
3. Demonstrate a knowledge of management theories as it relates to current management policy and issues
4. Demonstrate a knowledge of management theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic managerial skills necessary for analysis of a range of problems in marketing, management and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the management.
9. Evaluate national and international debates and discussions on business issues.

Managerial Economics CX 1131

1. Demonstrate knowledge of major theories and models in key areas of business economics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in managerial economics.
3. Demonstrate a knowledge of macroeconomic theory as it relates to current macroeconomics policy and issues
4. Demonstrate a knowledge of microeconomic theory as it relates to markets, firms, government policy, and resource allocation.
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic skills necessary for analysis of a range of problems in managerial economics.
7. Analyse managerial economic issues in the international contexts.
8. Compare international contexts and issues through the lens of the commerce disciplines.

9. Evaluate national and international debates and discussions on business economic issues.

Methodology and Perspectives of Business Education CX1121

Demonstrate knowledge of major theories and models in key areas of business education.

1. Analyse organisational problems and generate realistic solutions based on current academic research in Business.
2. Demonstrate a knowledge of business theory as it relates to current policy and issues.
3. Demonstrate a knowledge of business theory as it relates to markets, firms, government policy, and resource allocation
4. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
5. Apply basic business skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance
6. Analyse business issues in the international contexts
7. Compare international contexts and issues through the lens of the commerce disciplines.
8. Evaluate national and international debates and discussions on economic, commercial, and business issues

Environmental Studies CX1141

1. Demonstrate knowledge of major theories and models in key areas of environmental science.
2. Analyse organisational problems and generate realistic solutions based on current academic research in environmental science.
3. Demonstrate a knowledge of environmental theory as it relates to current environmental science policy and issues

4. Demonstrate a knowledge of environmental science theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying environmental science analysis.
6. Apply basic skills necessary for analysis of a range of problems in environmental science.
7. Analyse environmental business issues in the international contexts.
8. Compare international contexts and issues of environment through the lens of the commerce disciplines.
9. Evaluate national and international debates and discussions on business environmental issues.

Financial Accounting CX1241

1. Demonstrate knowledge of major theories and models in key areas of Financial Accounting.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Financial Accounting
3. Demonstrate a knowledge of accounting theory as it relates to current accounting policy and issues
4. Demonstrate a knowledge of accounting theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying financial accounting.
6. Apply basic accounting skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance.
7. Analyse accounting issues in the international contexts
8. Compare international contexts and issues through the lens of the accounting disciplines.
9. Evaluate national and international debates and discussions on financial accounting issues

E-BusinessCX 1331

1. Demonstrate knowledge of major theories and models in key areas of E- business.
2. Analyse organisational problems and generate realistic solutions based on current academic research in E-business.
3. Demonstrate a knowledge of electronic business theory as it relates to current accounting policy and issues
4. Demonstrate a knowledge of E-business theory as it relates to online markets, firms and resource allocation.
5. Demonstrate a knowledge of key concepts underlying online business.
6. Apply basic business communication skills necessary for analysis of a range of problems in management and finance
7. Analyse issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on business communication issues

Informatics and Cyber law CX 1221

1. Demonstrate knowledge of major theories and models in key areas of informatics and cyber laws.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics and laws governing it.
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts

8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Business regulatory framework CX 1441

1. Demonstrate knowledge of major theories and models in key areas of legal regulatory framework.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business regulatory framework
3. Demonstrate a knowledge of legal theory as it relates to current policy and issues
4. Demonstrate a knowledge of key concepts underlying quantitative decision analysis.
5. Analyse commerce /business issues in the international contexts
6. Compare international contexts and issues through the lens of the commerce disciplines
7. Demonstrate knowledge of major theories and models in key areas of Advanced Financial Accounting
8. Analyse organisational problems and generate realistic solutions based on current academic research in financial accounting
9. Demonstrate a knowledge of accounting theory as it relates to markets, firms, government policy, and resource allocation

B.Com.(FINANCE) (159)

Vision

Accomplish global recognition in the field of Commerce by generating highly efficient and committed accountants, entrepreneurs, business men, financial managers, statisticians, bankers, tax practitioners, salesmen and researchers who would excel in conventional as well as emerging areas.

Mission

- To provide high quality education and training in tune with the developments in Commerce
- To develop entrepreneurship skills for transforming knowledge into socially relevant quality projects
- To encourage research and development activities and industry-institute interactions for the business field
- To impart awareness of professional ethics, social responsibilities and sustainable development in the business field.

Program Outcome (PO)

PO1 Apply the knowledge of Commerce, Accountancy, Tax, Management to solve Business problems.

PO2 identify, formulate and analyze complex business decision making problems and derive meaningful conclusions using principles of management, taxation and accounting.

PO3 design efficient consumer products and develop high quality products by considering safety, environmental and economic aspects.

PO4 able to conduct investigation of complex business economic problems using research based methods, analyze and interpret data to draw valid conclusions.

PO5 acquire skills to select and use modern business economic tools and accounting softwares for modelling, simulation and solution of various business problems.

PO6 apply contextual knowledge to assess societal, health, safety, legal and cultural issues in business practice to become a responsible business man.

PO7 understand the societal and environmental impacts of business applications and practice sustainable development.

PO8 able to commit to professional and ethical responsibilities of a businessman.

PO9 able to work individually, in a team or as a leader in various challenging environments.

PO10 communicate effectively within the business community or with the society through appropriate reports, designs, products and instructions.

Program Specific Outcomes (PSO)

1. Graduates of B.Com Program shall be able to successfully apply the knowledge of principles of management to identify and able to foster research skills to develop sustainable solutions for managerial problems
2. Successfully apply the knowledge of principles of managerial economics to identify and solve the real-life problems and develop novel applications in relevant areas. And successfully apply the knowledge of principles of environmental science to identify and solve the real-life problems and develop novel applications in relevant areas.
3. apply the knowledge of principles of financial accounting to identify and solve the real-life problems and develop novel applications in relevant areas
4. Acquire essential concepts and ethical values to develop oneself as a true entrepreneur.
5. Acquire essential banking skills and ethical values to develop oneself as a true businessman
6. Acquire essential legal skills and ethical values to calculate GST
7. develop research skills to develop sustainable innovations in interdisciplinary research areas.

Course Outcomes (CO)

Management Concepts and Thoughts CO 1142

1. Demonstrate knowledge of major theories and models in key areas of management.
2. Analyse organisational problems and generate realistic solutions based on current academic research in management functions.
3. Demonstrate a knowledge of management theories as it relates to current management policy and issues
4. Demonstrate a knowledge of management theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic managerial skills necessary for analysis of a range of problems in marketing, management and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the management.

9. Evaluate national and international debates and discussions on business issues.

Managerial Economics CO 1131

1. Demonstrate knowledge of major theories and models in key areas of business economics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in managerial economics.
3. Demonstrate a knowledge of macroeconomic theory as it relates to current macroeconomics policy and issues
4. Demonstrate a knowledge of microeconomic theory as it relates to markets, firms, government policy, and resource allocation.
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic skills necessary for analysis of a range of problems in managerial economics.
7. Analyse managerial economic issues in the international contexts.
8. Compare international contexts and issues through the lens of the commerce disciplines.
9. Evaluate national and international debates and discussions on business economic issues.

Methodology and Perspectives of Business Education CO 1121

1. Demonstrate knowledge of major theories and models in key areas of business education.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business.
3. Demonstrate a knowledge of business theory as it relates to current policy and issues.
4. Demonstrate a knowledge of business theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic business skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance

7. Analyse business issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines.
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Environmental Studies CO 1141

1. Demonstrate knowledge of major theories and models in key areas of environmental science.
2. Analyse organisational problems and generate realistic solutions based on current academic research in environmental science.
3. Demonstrate a knowledge of environmental theory as it relates to current environmental science policy and issues
4. Demonstrate a knowledge of environmental science theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying environmental science analysis.
6. Apply basic skills necessary for analysis of a range of problems in environmental science.
7. Analyse environmental business issues in the international contexts.
8. Compare international contexts and issues of environment through the lens of the commerce disciplines.
9. Evaluate national and international debates and discussions on business environmental issues.

Financial Accounting CO 1241

1. Demonstrate knowledge of major theories and models in key areas of Financial Accounting.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Financial Accounting
3. Demonstrate a knowledge of accounting theory as it relates to current accounting policy and issues
4. Demonstrate a knowledge of accounting theory as it relates to markets, firms, government policy, and resource allocation

5. Demonstrate a knowledge of key concepts underlying financial accounting.
6. Apply basic accounting skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance
7. Analyse accounting issues in the international contexts
8. Compare international contexts and issues through the lens of the accounting disciplines.
9. Evaluate national and international debates and discussions on financial accounting issues

E-BusinessCO1331

1. Demonstrate knowledge of major theories and models in key areas of E- business.
2. Analyse organisational problems and generate realistic solutions based on current academic research in E-business.
3. Demonstrate a knowledge of electronic business theory as it relates to current accounting policy and issues
4. Demonstrate a knowledge of E-business theory as it relates to online markets, firms and resource allocation.
5. Demonstrate a knowledge of key concepts underlying online business.
6. Apply basic business communication skills necessary for analysis of a range of problems in management and finance
7. Analyse issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on business communication issues

Informatics and Cyber law CO 1221

1. Demonstrate knowledge of major theories and models in key areas of informatics and cyber laws.

2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics and laws governing it.
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Business regulatory framework CX1441

1. Demonstrate knowledge of major theories and models in key areas of legal regulatory framework.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business regulatory framework
3. Demonstrate a knowledge of legal theory as it relates to current policy and issues
4. Demonstrate a knowledge of key concepts underlying quantitative decision analysis.
5. Analyse commerce /business issues in the international contexts
6. Compare international contexts and issues through the lens of the commerce disciplines
7. Demonstrate knowledge of major theories and models in key areas of Advanced Financial Accounting
8. Analyse organisational problems and generate realistic solutions based on current academic research in financial accounting

9. Demonstrate a knowledge of accounting theory as it relates to markets, firms, government policy, and resource allocation

M.Com.(FINANCE) (590)

Vision

To take an anchoring position as one of the prime departments of the College in moulding Commerce professionals who are ready to face the demands of industrial development and societal commitment.

Mission

To produce technically skilled expert graduates through stupendous teaching-learning process complemented with research assistance environment focused on career perspective in the business management. To prepare students of the department for a brilliant career through the development of knowledge, skills, attitude and teamwork by the designed programme by the active participation of faculty.

Program Outcome

PO1 Apply the knowledge of Commerce, Accountancy, Tax, Management to solve Business problems.

PO2 identify, formulate and analyze complex business decision making problems and derive meaningful conclusions using principles of management, taxation and accounting.

PO3 design efficient consumer products and develop high quality products by considering safety, environmental and economic aspects.

PO4 able to conduct investigation of complex business economic problems using research based methods, analyze and interpret data to draw valid conclusions.

PO5 acquire skills to select and use modern business economic tools and accounting softwares for modelling, simulation and solution of various business problems.

PO6 apply contextual knowledge to assess societal, health, safety, legal and cultural issues in business practice to become a responsible business man.

PO7 understand the societal and environmental impacts of business applications and practice sustainable development.

PO8 able to commit to professional and ethical responsibilities of a businessman.

PO9 able to work individually, in a team or as a leader in various challenging environments.

PO10 able to communicate effectively within the business community or with the society through appropriate reports, designs, products and instructions.

Program Specific Outcomes (PSO)

- Apply the knowledge of principles of management to identify and solve the real-life problems in business areas.
- Acquire essential managerial skills and ethical values to develop oneself as a true accountant.
- Apply the knowledge of principles of MIS to identify and solve the real-life problems and develop novel applications in relevant areas.
- Acquire essential ethical values to develop oneself as a true leader and an innovative business man.
- Apply the knowledge of principles of quantitative techniques to identify and solve the real-life problems and develop novel applications in relevant areas.
- Apply the knowledge of principles of cyber law to identify and solve the real-life problems and develop novel applications in relevant areas.
- Apply the knowledge of principles of MOT to identify and solve the real-life problems and develop novel applications in relevant areas.

Course Outcomes

Business ethics and corporate governance CO211

1. Demonstrate knowledge of major theories and models in key areas of Business ethics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in management functions.
3. Demonstrate a knowledge of management theories as it relates to current management policy and issues
4. Demonstrate a knowledge of management theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic managerial skills necessary for analysis of a range of problems in , marketing, management and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the management.

9. Evaluate national and international debates and discussions on business issues.

Research Methodology CO213

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Advanced Corporate Accounting and Reporting CO215

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.

7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Strategic management CO 222

1. Demonstrate knowledge of major theories and models in key areas of management.
2. Analyse organisational problems and generate realistic solutions based on current academic research in management functions.
3. Demonstrate a knowledge of management theories as it relates to current management policy and issues
4. Demonstrate a knowledge of management theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic managerial skills necessary for analysis of a range of problems in marketing, management and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the management.
9. Evaluate national and international debates and discussions on business issues.

International Business CO 224

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
4. Demonstrate a knowledge of key concepts underlying decision analysis
5. Analyse information related issues in the international contexts
6. Evaluate national and international debates and discussions on economic, commercial, and business issues

7. Demonstrate a knowledge of key concepts underlying decision analysis
8. Analyse information related issues in the international contexts
9. Compare international contexts and issues through the lens of the commerce disciplines

Quantitative Techniques and Financial Econometrics CO 223

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

E-business and Cyber Law CO 221

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues

4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues
10. Demonstrate a knowledge of key concepts underlying decision analysis

Advanced Management and Cost Accounting CO 234

1. Demonstrate knowledge of major theories and models in key areas of costing
2. Analyse organisational problems and generate realistic solutions based on current academic research in costing
3. Demonstrate a knowledge of costing theory as it relates to current cost accounting policy and issues
4. Demonstrate a knowledge of costing theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic accounting skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Income Tax Planning and Management CO 231

1. Demonstrate knowledge of major theories and models in key areas of Income Tax law and practice
2. Analyse organisational problems and generate realistic solutions based on current academic research in Income Tax law and practice
3. Demonstrate a knowledge of taxation theory as it relates to current organisational policy and issues
4. Demonstrate a knowledge of economic theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying quantitative decision analysis
6. Apply basic taxation skills necessary for analysis of a range of problems in accounting, and finance
7. Analyse commerce /business issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Security Analysis and Portfolio Management CO 232

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis

6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Management Optimization Techniques CO 244

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Goods and Service Tax and Customs duty CO241

1. Demonstrate knowledge of major theories and models in key areas of business informatics.

2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

International Financial Management CO 233

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines

9. Evaluate national and international debates and discussions on economic, commercial, and business issues

Investment management CO225

1. Demonstrate knowledge of major theories and models in key areas of business informatics.
2. Analyse organisational problems and generate realistic solutions based on current academic research in Business Informatics
3. Demonstrate a knowledge of information theory as it relates to current business policy and issues
4. Demonstrate a knowledge of information theory as it relates to markets, firms, government policy, and resource allocation
5. Demonstrate a knowledge of key concepts underlying decision analysis
6. Apply basic skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance information.
7. Analyse information related issues in the international contexts
8. Compare international contexts and issues through the lens of the commerce disciplines
9. Evaluate national and international debates and discussions on economic, commercial, and business issues

DEPARTMENT OF CHEMISTRY

PROGRAMME OUTCOME

B.Sc. Degree Program

A detailed knowledge of the terms, concepts, methods, principles and experimental techniques of Chemistry can be understood. Basic concepts of chemical sciences and the tools needed for the practice of chemistry is provided in this course. The interdisciplinary approach of the program helps the student to contribute the academic knowledge to industrial requirement of the society. They will be skilled in problem solving, critical thinking, analytical reasoning and

experimentations as applied to scientific problems. They have the ability to follow and understand general lab practice guidelines and safety measures. They can perform qualitative and quantitative chemical analysis from conventional methods to sophisticated instruments.

M.Sc.Degree Program

M.Sc. degree chemistry program is for two years consisting of 4 semesters. An in-depth knowledge can be obtained in fundamental theoretical concepts and experiments in chemistry. Expertise will be obtained in carrying out different experimentations in all areas of chemistry, i.e., physical, organic and inorganic chemistry. They will be able to communicate clearly the results of scientific work in oral, written and electronic formats to both scientists and the public at large,. It will help the student to understand the relationship of Chemistry and other disciplines and applications of Chemistry.

B.Sc. CHEMISTRY

CH1141 Inorganic Chemistry I

1. understand the structure of atom, periodicity and non-aqueous solvents.
2. appreciate how the inner structure of elements dictates the chemical properties of elements
3. understand how the elements are arranged in the periodic table and the properties and application of s -block elements, hydrogen and their compounds.

CH1221 Foundation course II

1. understand how Science, or in special Chemistry works.
2. Able to do self-directed experimentation work and research in chemistry under the guidance and supervision of a mentor.
3. understand the experimental parts of the theory and the safety measures which could follow when doing experiments using chemicals.

CH1341 Inorganic Chemistry II

1. knowledge foundation for inorganic chemistry.
2. knowledge in chemical bonding and compounds of non-transition elements
3. knowledge about nonmaterials.

4. understand nuclear chemistry.

CH1441 Organic Chemistry Paper I

1. knowledge of aliphatic and aromatic compounds
2. understand the concept of reaction mechanism.
3. understand the mechanism of reactions of organic compounds, stereo chemical aspects, photochemical reactions and aromaticity.

CH1541 Physical Chemistry I

1. knowledge and skill in the areas of physical chemistry which include gas and liquid properties, thermodynamics, and group theory.

CH1542 Inorganic Chemistry III

1. understand the areas of inorganic chemistry which include coordination chemistry, transition and inner transition elements.
2. understand the classification of several organometallic reactions and will be able to identify the role of organometallic compounds in organic synthesis.
3. understand about the experimental techniques used in chemistry and how the elements are isolated from their ores.

CH1543 Organic Chemistry II

1. knowledge and application about the preparation and properties, mechanism of reactions of many organic conversions and of organic compounds.
2. interpret spectrum of organic compounds and the novel areas of organic chemistry – the supramolecular and green chemistry.

Open course Semester V Course-CH1551.1 Essentials of Chemistry

1. knowledge of fundamentals of chemistry and applied chemistry of daily life.
2. knowledge of atomic structure, periodic table, nuclear chemistry, polymer chemistry, Chemistry of biological process, chemistry in action and environmental chemistry.

CH1641 Physical Chemistry II

1. explain and apply the concepts of thermodynamics, quantum mechanics, and spectroscopy to chemical, physical, and biochemical systems.
2. derive essential mathematical relationships in thermodynamics, quantum mechanics, and spectroscopy.
3. evaluate physical and chemical systems by non spectroscopic techniques.

CH1642 Organic Chemistry III

1. skill for the preparation and properties mechanism of reactions of many organic conversions and of organic compound.

CH1643 Physical Chemistry III

1. distinguish various types of reactions and the different factors that determine the rate of chemical changes.
2. understand the phase diagrams of one, two and three component systems and elementary ideas of photochemistry.

Lab course

Semester 2 will help the students to know about the use of computer and internet in learning. Students can know about the educational softwares, information mining from internet using INFLIBNET/NICNET. They can understand chemical structure drawing, visualization of molecules using Chemistry softwares.

CH1442 Qualitative inorganic analysis

1. apply qualitative inorganic analysis using microscale methods of a mixture containing two acidic and two basic radicals.
2. preparation inorganic complexes in normal laboratory conditions.

CH1544 Inorganic Volumetric Analysis

1. prepare solutions of different concentrations.
2. understand the method of standardization and estimation of solutions.
3. Familiar with the Quantitative analysis –Volumetric analysis.

CH1545 Physical Chemistry Experiments

1. Understand the experiment and calculation of molecular masses of solute using depression in freezing point method.
2. Familiar with conductometric titrations and potentiometric titrations. Able to find out the critical solution temperature of phenol-water system.
3. Able to find out the concentration of acids and bases using conductometric titrations.
4. familiarise with potentiometric titrations.

CH1644 Organic Chemistry Experiments

1. Able to find out the melting and boiling points of different substances.
2. Practice to prepare different organic compounds.
3. Understand the qualitative organic analysis.

CH1645 Gravimetry

1. Able to understand the difference between volumetric and gravimetric analysis.
2. Skill gravimetric analysis of different metals.

CH1646 Chemistry project and factory visit

1. Inculcate proficiency to identify appropriate Project.
2. Familiar with the preparation of project report and its presentation.
3. visualize the chemical reactions and understand the working of sophisticated instruments

Elective course CH1651.1 Supramolecular, Nanoparticles and Green chemistry

1. Explore how to apply the 12 Principles of Green Chemistry in the real world.
2. understand the green Chemistry route for some chemical reactions.
3. knowledge about nanomaterials and their preparations. Understand the characterization techniques of nano compounds.
4. understand supramolecular Chemistry.

UG Complementary Chemistry

Physics Major

CH1131 .1 Theoretical chemistry

1. Explain the structure of atom and electronic configuration.
2. understand different types of bonding in atoms.
3. Understand Rock dating, Stability of atom, atomic fission, atomic fusion.
4. understand the theory of volumetric analysis – Acid- Base titration, permanganometry, iodometry etc.

CH1231 .1 Physical Chemistry I

1. understand the First and second law of Thermodynamics.
2. Explain the heat changes taking place during Chemical reactions.
3. Understand reversible reactions and chemical equilibrium.
4. Understand concepts of acids and bases, pH and its determination.

CH1331.1 Physical Chemistry II

1. identify why real gases are deviating from ideal behavior.
2. understand the method to liquefy gases.
3. understand the structure of sodium chloride and other crystals Understand about emf, standard electrodes, fuel cells and potentiometric titrations.
4. understand how the rate of reactions can be changed using catalysts and radiations.
5. knowledge about Symmetry, point groups, and group multiplication table.

CH1431.1 Spectroscopy and Material Chemistry

1. identify molecules using spectroscopy.
2. understand coordination Chemistry and Metallurgy.
3. Understand the different methods used to separate metals from their ores.
4. the preparation and characterization of nano materials.

Laboratory courses Semesters I, II, III, & IV Course code CH1432.2

1. apply methods for the inorganic qualitative analysis.
2. separate and identify cations and anions from mixtures study the different methods for quantitative analysis

Botany major

CH1131.3 Theoretical Chemistry

1. Explain the structure of atom and electronic configuration.
2. understand different types of bonding in atoms about the environment and causes of environmental pollution and its remedies -about causes of water pollution and its remedies.
3. Understand the theory of volumetric analysis – Acid- Base titration, permanganometry, iodometry etc

CH1231.3 Inorganic and Bioinorganic Chemistry

1. understand how metals are linked with organic compounds and the applications of these compounds.
2. application of metal complexes in qualitative and quantitative analysis.
3. understand the role of metal ions in biological systems and the Chemistry behind the oxygen carrying role of Hemoglobin.

CH1331.3 Physical Chemistry

1. Understand about the speed of chemical reaction and the methods we can use to increase the speed of reactions.
2. Analyses how a reaction attains equilibrium and what are the factors affecting equilibrium. Know about Solutions and dilute solutions.
3. understand spectroscopy can be used to find out the structure of simple molecules

CH1431.3 Organic Chemistry

1. understand different types of chromatographic techniques for the separation of mixtures. Know about the synthesis of proteins from aminoacids.
2. distinguish oils, fats, alkaloids vitamins and terpenes familiar with the cleaning action of soaps and detergents.
3. understand about dyes and drugs

Lab course Semester I, II, III & IV Course code CH1432.3

1. apply the methods for the organic qualitative analysis.
2. identify organic substances. Study the different methods for quantitative analysis

Zoology Major

CH1131.4 Theoretical Chemistry

1. Explain the structure of atom and electronic configuration.
2. understand t the different types of bonding in atoms.
3. Understand Rock dating, Stability of atom, Atomic fission, atomic fusion.
4. understand the theory of volumetric analysis – Acid- Base titration, permanganometry, iodometry etc

Semester II Course code CH1231.4 Inorganic Chemistry

1. Study how metals are linked with organic compounds and the applications of these compounds.
2. understand foundation in the area of Nuclear Chemistry.
3. understand application of metal complexes in qualitative and quantitative analysis.
4. understand the role of metal ions in biological systems and the Chemistry behind the oxygen carrying role of Hemoglobin

Semester III Course code CH1331.4 Organic Chemistry

1. understand the difference between monosaccharide, disaccharides and polysaccharides in Carbohydrates.
2. understand the structural difference between glucose and fructose.
3. understand the synthesis of proteins from amino acids and the nucleic acids DNA and RNA.
4. understand mechanism of organic substitution reactions and Stereo Chemistry

Semester IV Course code CH1431.4 Physical Chemistry

1. understand the speed of chemical reaction and the methods we can use to increase the speed of reactions.
2. analyses how a reaction attains equilibrium and what are the factors affecting equilibrium. Know about Solutions and Colloids and applications of colloids.
3. recognise how spectroscopy can be used to find out the structure of simple molecules

Lab Course Semester I, II, III, & IV course code CH1432.4

1. apply the methods for the organic qualitative analysis.
2. identify organic substances study the different methods for quantitative analysis

MSc Chemistry (635)

Course Outcome

CH 211 Inorganic Chemistry I

- (1) In-depth knowledge about Coordination chemistry
- (2) Thorough knowledge on Analytical principles
- (3) To study Molecular symmetry
- (4) Students get awareness on Isopoly and heteropoly acids, Noble gases, interhalogens
- (5) Knowledge on Students get awareness on Chemistry of Natural Environmental Processes

CH 212 Organic Chemistry I

- (1) Familiarize Stereochemistry of organic compounds
- (2) In-depth knowledge Structure, reactivity and intermediates
- (3) In-depth knowledge , Substitution reactions
- (4) Student get awareness of Elimination and addition reactions
- (5) Information and applications of Reagents in organic synthesis

CH 213 Physical Chemistry I

- (1) Knowledge on applications of Quantum Chemistry I
- (2) Thorough understanding of Surface Chemistry and Catalysis
- (3) Familiarization of Classical Thermodynamics
- (4) In-depth knowledge of Chemical kinetics
- (5) Detailed study of Gaseous and liquid state

CH 221 Inorganic Chemistry II

- (1) To study the Sulphur, nitrogen, phosphorus and boron compounds
- (2) To understand Spectral and magnetic properties of transition metal complexes
- (3) To study the concepts of Crystalline state
- (4) To understand the differences and similarities of Lanthanides and actinides
- (5) To understand the Solid state chemistry

CH 222 Organic Chemistry II

- (1) Knowledge on Physical organic chemistry
- (2) Thorough understanding of Molecular rearrangement and transformation reactions
- (3) Familiarization of Aromaticity and symmetry controlled reactions
- (4) In-depth knowledge of Organic photochemistry
- (5) Detailed study of Chemistry of natural products and biomolecules

CH 223 Physical Chemistry II

- (1) Students get thorough knowledge Quantum Chemistry
- (2) Students get a general awareness about Theory and applications Spectroscopy
- (3) Students acquire knowledge about Applications of Thermodynamics
- (4) Students understand Statistical Mechanics –I
- (5) Students get knowledge on the Electrochemistry

CH 214 Inorganic Practicals I

- (1) Awareness about separation and identification of rare cations
- (2) Understand complexometric as well as colorimetric analysis and inorganic preparations.

CH 214 Inorganic Practicals I

- (1) Student learn Separation and identification of rare cations; quantitative methods - complexometric and colorimetric estimation.
- (2) Understand preparation of metal complexes Co, Fe, Cu, and Cr.

CH 215 Organic Practicals I

- (1) Student understand Separation and identification of organic compounds using chromatographic techniques.
- (2) Learn preparation of compounds by two stages
- (3) Student gets ability to analysis of synthesized compounds by various spectroscopic methods

CH 216 Physical Practicals I

- (1) Practice experimental techniques using adsorption, kinetics, phase rule, distribution law, transition temperature, thermochemistry etc.
- (2) Learn how to determination of the concentration of given strong acid/alkali by kinetic measurements

CH 231 Inorganic Chemistry III

- (1) Advanced knowledge about Organometallic compounds
- (2) Thorough understanding about Reactions of metal complexes
- (3) Knowledge about Bioinorganic chemistry
- (4) Familiarization about Spectroscopic Methods in Inorganic Chemistry
- (5) In-depth knowledge about Nuclear chemistry

CH 232 Organic Chemistry III

- (1) Thorough understanding on UV-Vis and IR Spectroscopy and Mass spectrometry
- (2) Knowledge on NMR spectroscopy and structural elucidation
- (3) In-depth knowledge on Organic synthesis
- (4) Familiarization about the Methods in organic synthesis
- (5) Thorough knowledge about Separation techniques

CH 233 Physical Chemistry III

- (1) Advanced knowledge about Chemical Bonding
- (2) In-depth knowledge about Computational Chemistry
- (3) Knowledge about various spectroscopic techniques and its application
- (4) Thorough knowledge about Statistical Mechanics
- (5) Awareness about Electro Analytical and Spectrophotometric methods.

CH 234 Inorganic Practicals I

- (1) Student learn Estimation of simple mixture of ions by volumetric and Gravimetric methods;
- (2) Understand analysis of typical alloys and ores; Ion exchange separation of binary mixtures;
- (3) Practice spectral Interpretation of metal complexes using IR, UV-Vis. spectral data.
- (4) Interpretation of TG and DTA curves of metal oxalate hydrates.

CH 235 Organic Practicals II

- (1) Learn volumetric estimation of organic compounds, Colorimetric estimation; Spectral identification, Separations of mixtures by Paper Chromatography

- (2) Awareness about Single stage preparation of organic compounds by green chemistry

CH 236 Physical Practicals II

- (1) Student learn various physical chemistry experimental techniques using Conductometry, Potentiometry, pH metric titrations, Spectrophotometry, Polarimetry, Polarography, Surface tension, Viscosity and Refractometry

CH 241 Chemistry of Advanced Materials

- (1) Students get awareness on Nanomaterials
- (2) Knowledge on The basic tools and applications of nanotechnology
- (3) Thorough understanding on Polymerization processes
- (4) Student acquire knowledge on Specialty Polymers
- (5) Familiarize Smart materials

CH 242 (b) Organic Chemistry IV

- (1) Knowledge on Organometallic chemistry
- (2) Thorough understanding of Molecular recognition and supramolecular chemistry
- (3) In-depth knowledge of Medicinal chemistry
- (4) Familiarization of biopolymers and polymers
- (5) Detailed study of Green chemistry

CH 243(a) Dissertation

- (1) Helps student to develop research aptitude
- (2) Student understand methodology of research.

CH 243(b) Visit to R & D Centre

General awareness about R&D activities.

Comprehensive viva-voce

DEPARTMENT OF ECONOMICS

B A ECONOMICS

Programme Outcomes

This programme provides students a well-founded education in Economics and to provide and adapt curricula that prepare our graduates for employment and further study as economists.

Programme Specific Outcomes

- To provide the students with the opportunity to pursue courses that emphasizes quantitative and theoretical aspects of Economics.

- To provide students with the opportunity to focus on applied and policy issues in Economics.
- The ability to analyze historical and current events from an economic perspective.
- To create students ability to suggest of the various economic problems.

COURSE OUTCOMES

B A ECONOMICS- course outcomes

Course I EC.1141 METHODOLOGY AND PERSPECTIVES OF SOCIAL SCIENCE

CO: familiarize with the broad contours of Social Sciences, Economics and its methodologies, tools and analysis procedures.

Course 2 EC.1241 MICRO ECONOMICS-I

CO: understand basic principles of Micro Economics.

Course 3 EC.1321 Informatics

CO: skills and attitudes relevant to the emerging knowledge society also to equip the students to effectively utilize the digital knowledge resources for their courses of study.

Course 4 EC.1341 MICROECONOMICS- II

CO: basic understanding of microeconomics.

Course 5 EC.1441 BASIC TOOLS FOR ECONOMICS – I

CO: understand economic concepts with the aid of mathematical tools and enable them to quantify the variables.

Course 6 EC.1442 MACRO ECONOMICS – I

CO: understand the theoretical framework and the working of an economy as a whole.

Course 7 EC.1541 MONEY AND MODERN BANKING

CO: knowledge about the evolution and role of money in the economy. The paper also provides an insight into the innovative role of banks in the changing economic set up.

Course 8 EC.1542 MACRO ECONOMICS - II

CO: understand the theoretical framework and the working of an economy as a whole. The paper also gives an insight to the students about the basic concepts used in Macroeconomics and policy alternatives.

Course 9 EC.1543 ECONOMICS OF GROWTH AND DEVELOPMENT

CO: understand the basic concepts of Development and Growth. It also intends to provide the theoretical framework for growth and development discourses under different schools of economic thought and a better insights and knowledge on issues and challenges on economic development.

Course I0 EC.1544 INDIAN ECONOMY

CO: understand the various issues of the Indian Economy, enabling them to comprehend and critically appraise current issues and problems of Indian economy. The focus of the syllabus is on the development of Indian Economy since Independence

Course 11 EC.1545 PUBLIC ECONOMICS

CO: knowledge on the scope of Public Economics, significance of government and its functions, governmental finance and its economic impacts, and budgeting with special reference to India.

Course I2 EC.1551 HUMAN RESOURCE MANAGEMENT (HRM)

CO: understand the significance of Human Resource in constituting economic growth. The course also teaches the basic principles of strategic human resource management and the various aspects of Human Resource Planning.

Course I3 EC.1641 KERALA ECONOMY

CO : understand the structural changes, sectorial aspects and features of the Kerala Economy since the formation of the state and enable the students to have a basic understanding of the emerging trends and issues of Kerala Economy

Course I4 EC.1642 FINANCIAL ECONOMICS

CO: familiar with the basic concepts in financial economics and develop comprehensive knowledge on the role of finance in the operation of an economy.

Knowledge about the operation of the Indian Financial System and activities in the financial markets

Course I5 EC.1643 BASIC TOOLS FOR ECONOMICS II

CO: familiar with statistical tools and techniques and enable them to apply these tools in economics

Course I6 EC.1644 INTERNATIONAL ECONOMICS

CO : understand the basic concepts and theories of international trade and enable the students to have a basic understanding of the emerging trends ,issues and polices in the field of international Economic system .

Course I7 EC.1661.1 AGRICULTURAL ECONOMICS

1. analyses issues in agricultural economics.
2. familiar with with policy issues that are relevant to Indian agricultural economics and enable them to analyze the issues, using economic concepts.

Course I8 EC 1645: Project Work

CO: research aptitude and skills among the students

Complementary Courses

Course 1 EC .1131 FOUNDATIONS OF ECONOMIC THEORY

CO: understand economic concepts and theories.

Course 2 EC.1231 MONEY AND BANKING

CO: understand the nature and significance of money and banking in the functioning of an economy.

Course 3 EC. 1331 PUBLIC FINANCE AND TRADE

CO: aware about the significance of public finance in the context of increasing role of Government.

Knowledge about the basic theoretical framework of budgetary mechanism in India, State activities and various aspects of International Trade.

Course 4 EC.1431 INDIAN ECONOMY SINCE INDEPENDENCE

CO: understand the Indian Economy.

familiar with the various concepts of National Income and create awareness about the significance of agriculture, industry and service sector in the economy.

M.A.ECONOMICS

Course I EC 211: MICRO ECONOMICS - I

CO: application of the principles of economics in application to individual decision makers, both consumers and firms.

Course 2 EC 212: ECONOMICS OF GROWTH AND DEVELOPMENT

1. familiar with students with the conceptual routes, theoretical dynamics and practical strategies of growth and development.
2. Analysis of knowledge

Course 3 EC 213: INDIAN ECONOMIC POLICY I

Understand the various issues of the Indian Economy with a policy perspective.

Course 4 EC 214: QUANTITATIVE METHODS FOR ECONOMICS

1. insight into the importance of quantitative methods in Economics
2. apply these techniques in finding solutions to economic problems.
3. Familiarization of the basic quantitative techniques used in economic analysis.
4. Ability in making use of a quantitative approach in formulating economic problems.
5. finding solutions to mathematically formulated economic problems.

Course 5 EC 221: MICRO ECONOMICS -II

insight into developments in the areas of theories of distribution, general equilibrium, welfare economics, uncertainty and informational asymmetry and behavioral economics.

Course 6 EC 222: ECONOMICS OF SOCIAL SECTOR AND ENVIRONMENT

1. understand and apply the key economic concepts in the context of social sectors like education, environment and healthcare.
2. appreciate how economic factors contribute to the development and implementation of educational policies.
3. identify the major theories governing the development of human resources, school improvement and development and also recognize the important linkages between the environment and economics

Course 7 EC 223: INDIAN ECONOMIC POLICY II

Enable them for further learning in Indian and Kerala Economy. It helps them to analyses the sectoral development that has taken place India as well as in Kerala economy.

Course 8 EC 224: ECONOMETRICS AND RESEARCH METHODOLOGY

apply economic theories to real economic data by means of empirical models and gives a comprehensive idea on the process of doing research in economics.

Course 9 EC 231: MACRO ECONOMICS I

understand the structural underpinnings of theoretical development of macroeconomic thoughts and their application

Course 10 EC 232: INTERNATIONAL ECONOMICS – I

use economic analysis to reach a deeper understanding of international trade which in turn will bring careers in international business and management.

Course 11 EC 233: PUBLIC ECONOMICS

understand the regulatory and developmental responsibilities of government in a democratic country like India.

Aware about present fiscal management issues of India.

Optional paper in Third semester

Course I2 EC 203: LABOUR ECONOMICS

understand the functioning of labour markets.

Knowledge on the economics of labour market through a blend of theoretical and empirical analyses.

understand the different aspects of the labor market such as labor organization, labor relations and labor legislations, wage and employment theory, collective bargaining theory, social security and welfare measures.

Fourth Semester

Course I4 EC 241: MACRO ECONOMICS II

Analyses abreast with the latest development in macroeconomics.

Course I5 EC 242: INTERNATIONAL ECONOMICS II

Understand theories of international finance flows, determination of interest and exchange rates in interconnected economies, macroeconomic policies available to the government, and the nature of financial crises.

reasoning about international flows of goods, factors of production, and financial assets, trade policy and monetary policy in open economy.

Course I6 EC 243: FINANCIAL SECURITIES MARKET ANALYSIS

skill in security trading.

Optional paper

Course I7 EC 2010: INDUSTRIAL ECONOMICS

1. understand industries and regulatory decision making. It also provides guidelines to urge through knowledge on the basic issues in the industrial development of India.
2. knowledge of international experience of industrial progress.

Course I8 EC 244: Dissertation

research aptitude and skills among the students

PG DEPARTMENT OF ENGLISH

B.A. ENGLISH DEGREE PROGRAMME(130)

Courses Offered

LANGUAGE COURSES FOR SEMESTER I TO IV (B.A/B.SC)

First Semester

1. EN1111.1 Listening, Speaking and Reading
2. EN1121 Writing on Contemporary issues(FOUNDATION COURSE1)

Second Semester

3. EN1211.1 Environmental studies
4. EN1212.1 Modern English Grammar and Usage

Third Semester

5. EN1311.1 Writing and Presentation Skills

Fourth Semester

6. EN1411.1 Readings in Literature

LANGUAGE COURSES FOR SEMESTER I TO IV (B.Com)

1. EN1111.1 Listening, Speaking and Reading- **First Semester**
2. EN1212.1 Modern English Grammar and Usage- **Second Semester**
3. EN1311.1 Writing and Presentation Skills- **Third Semester**
4. EN1411.1 Readings in Literature- **Fourth Semester**

CORE/COMPLEMENTARY COURSES FOR B.A. ENGLISH LITERATURE & LANGUAGE

First Semester

1. EN 1141 Reading Poetry
2. EN1131History of English Literature 1(**COMPLEMENTARY COURSE**)

Second Semester

3. EN1241 Reading Drama
4. EN1231History of English Literature 2 (**COMPLEMENTARY COURSE**)

Third Semester

5. EN1341 Reading Fiction
6. EN1342 20th century Malayalam literature in English Translation
7. EN1331 History of English Literature 3 (**COMPLEMENTARY COURSE**)

Fourth Semester

8. EN 1441 Reading Prose
9. EN 1431 History of English language (**COMPLEMENTARY COURSE**)
- 10 EN 1421 Informatics (**FOUNDATION COURSE**)

Fifth Semester

11. EN1541 Literary criticism
12. EN1542 Indian Writing in English
13. EN 1543 Film Studies
14. EN 1544 Linguistics and Phonetics
15. EN 1545 Post Colonial literatures in English
16. EN 1551.1 Communicative applications in English (**OPEN COURSE**)

Sixth Semester

17. EN 1641- world classics
18. EN1642 Methodology and perspectives of Humanities

19. EN 1643 English for the Media

20. EN1644 Women's Writing

21. EN1661.1 Translation Studies (**ELECTIVE COURSE**)

22. EN 1645 PROJECT

Language courses

First Semester-

EN1111.1 Listening, Speaking and Reading (B.A/ B.Sc/B.Com)

CO1. Develop in the learners the ability to understand English in a wide range of contexts

CO2. Enhances general standard of spoken English with the help of phonetic training

CO3. Preparing the learners to face situations with confidence and to seek employment in the modern globalized world

EN1121 Writing on Contemporary issues (FOUNDATION COURSE1) (B.A/ B.Sc)

CO1. Enable student to develop an overall empathetic attitude towards Contemporary issues of modern world

CO2. Encourage the students to read literary pieces critically.

CO3. Sensitize the students to the major issues in the society and the world.

Second Semester

EN1212.1 Modern English Grammar and Usage (B.A/ B.Sc/B.Com)

CO1. Helps the students improve their verbal communication skills.

CO2. Equip students with necessary skill and knowledge to produce grammatically and idiomatically correct language help them minimize mother tongue influence.

EN1211.1 Environmental studies (B.A/ B.Sc)

CO1.Sensitize students towards the threats faced by environment

CO2. To enable and ensure possible means &methods for environmental protection through student community.

Third Semester(B.A/ B.Sc/B.Com)

EN1311.1 Writing and Presentation Skills

CO1. trained in academic writing and other soft skills which will be helpful for them in shaping a successful career.

CO2. mastering writing techniques to meet academic and professional needs.

CO3. reference skills, take notes, refer and document data and materials and to prepare and present seminar papers and project reports effectively.

Fourth Semester(B.A/ B.Sc/B.Com)

EN1411.1 Readings in Literature

CO1. understand and appreciate literary discourse.

CO2 sensitive to the aesthetic, cultural and social aspects of literature.

CO3 familiarisation with the best pieces of literary writing

CO4 critical analysis of literature as a cultural and interactive phenomenon.

Program Outcome (B.A/ B.Sc/B.Com)

PO1. Apply the LSRW skills in the advancement of the career, higher studies and in all walks of their future life and minimise mother tongue influence.

PO2. Develop a favourable attitude towards English literature and language.

PO3. Comprehend the importance of five skills in language acquisition.

PO4. Recognise the importance of reference skills, grammatical skills and the enrichment of vocabulary.

PO5. The knowledge of the phonetic alphabets/symbols acquired helps the students to refer the dictionary for correct pronunciation.

Program Outcome (B.A/ B.Sc)

PO1. Gets a proper understanding of the environmental issues, its intensity and anticipates precautions for preventing it in future.

PO2. Comprehend and judge the problems prevalent in the contemporary world

PO 3. vigilant of the happenings in their surroundings.

PO3. The courage to face the crucial situations in academic, professional and everyday life adds impetus in them.

Program specific Outcomes:

PSO1. Identify the difference between academic and informal writing.

PSO2. Realize the importance of exposure to English language and how it is necessary for progression in their career.

PSO3. Understand the significant impact of grammatical skills in writing.

PSO4. Understand various dimensions of English language and literature.

PSO5. Develop a proper understanding of the environmental, contemporary issues.

PSO6. Apply correct usage based on Standard English and not conceptual excellence.

CORE COURSES FOR B.A. ENGLISH LITERATURE & LANGUAGE

First Semester

EN 1141 Reading Poetry

CO1. Enhances the reading and critical skill.

CO2. Sensitize students to the language, forms and types of poetry.

CO3. Make them aware of the diverse poetic devices and strategies.

CO4. read, analyze and appreciate poetry.

CO5. Enhance the level of literary and aesthetic experience and to help them respond creatively.

Second Semester

EN1241 Reading Drama

CO1 The students are equipped with different aspects of the theatre and its production.

CO2. Sensitize them to the verbal and visual language of drama

CO3. Enable the students to read, analyse and appreciate drama.

Third Semester

EN1341 Reading Fiction

CO1. appreciation and understanding the production of fiction as a genre.

CO2. creativity of the students gets enriched through the vast canvas of fictional literature.

CO3. identify the different fictional forms, analyse and appreciate fictional writings as well as write imaginatively.

EN1342 20th century Malayalam literature in English Translation

CO1. familiar with the world of Malayalam literature- its history till the present

CO2. identify the vast body of 20th century Malayalam literature.

CO3. understand native Malayalam literature through the English opening up a way to translation studies.

Fourth Semester

EN 1441 Reading Prose

CO1. Sharpen critical and creative insight of the student.

CO2. acquainted with cultural diversity and divergence in perspectives.

CO3. analyse, understand and appreciate prose writings.

EN 1421 Informatics (FOUNDATION COURSE)

CO1. well trained in the usage of Digital Resources & information technology helpful in their studies.

CO2. updated and expand basic informatics skill and attitudes relevant to the emerging knowledge society.

CO3. understand the nature of the emerging digital knowledge society.

Fifth Semester

EN1541 Literary criticism

CO1. better critical expertise.

CO2. compare and relate various critical traditions prevalent in literature from ancient times to the present.

CO3. read and analyze literary texts from different perspectives.

EN1542 Indian Writing in English

CO1. Understand invaluable contribution of Indian writers to the arena of English literature.

CO2. capable of tracing the development of Indian writing in English.

CO3. explain the Indianness in Indian literature in English, read and appreciate Indian literature.

CO4. analyse the strength and constraints of Indian English as a literary medium.

EN 1543 Film Studies

CO1. well equipped in analyzing the dynamics of Cinema.

CO2. knowledge about its technicalities, film theories and viewing it through a critical perspective enhances a better understanding of the films at a universal level.

CO3. appreciation the popular media of films than they used to do.

CO4. Ability to pursue higher studies and careers in film.

EN 1544 Linguistics and Phonetics

CO1. Sensitive to the nuances of spoken and written forms of English

CO2. able to overcome specific problems resulting from mother tongue interference

CO3. develop a neutral accent and improve their general standard of pronunciation and can speak globally intelligible English.

EN 1545 Post Colonial literatures in English

CO1. knowledge of Post Colonial literature, life and culture.

CO2. identify what is distinctly Post Colonial literature & read and appreciate Post Colonial literature with insight.

CO3. broadened aesthetic and intellectual faculties .

Sixth Semester

EN 1641- world classics

CO1. critically evaluate and appreciate classical texts.

CO2. broad outlook and sensibility through the world of the classics in literature.

CO3. evaluate classical texts critically and assess their own culture and classics.

EN1642 Methodology and perspectives of Humanities

CO1. sense of literature and can approach literature from a theoretical perspective.

CO2. critical perspective in pursuing literary studies.

CO3. sense of literature and read literature critically from a theoretical perspective.

EN 1643 English for the Media

CO1. comprehend the nature and scope of the communication media

CO2. headlines and articles for newspapers and magazines and design their content.

CO3. produce and present scripts and programmes for Radio and TV and can even design and write webs, blogs and advertisements.

EN1644 Women's Writing

CO1. understand the development of women's writing in various countries.

CO2. familiar with the diverse concerns addressed by feminism and are motivated to critically analyse literary works from a feminist perspective.

CO3. awareness of class, race and gender as social constructs and about how they influence women's lives.

Program Outcome

PO1. Identify the various forms and types of poetry, dramatic forms and fictional forms.

PO2. Read, analyse and appreciate poetry, drama and fiction critically.

PO3. Develop the ability to organise, evaluate and present ideas from one coherent body of knowledge.

PO4. Discern the richness and distinctiveness of twentieth century Malayalam writing.

PO5. Understand and appreciate different types of prose writing.

PO6. Use digital knowledge resources effectively for their studies.

PO7. Develop a critical perspective and capacity to relate and compare various critical practices and schools.

PO8. Trace the development of Indian writing in English.

PO9. Understand Post Colonial culture and its varying modes of literary expression.

PO10. Acquire familiarity with both the Western and the Indian theatre.

PO11. Read and appreciate classical works.

PO12. Develop critical perspective in pursuing literary studies.

Program specific Outcomes:

PSO1. Understand the nature of the emerging digital knowledge society

PSO2. Understand some of the significant concepts that had a seminal influence on the development of critical thought.

PSO3. Analyse the strength and constraints of Indian English as a literary medium.

PSO4. Broaden and sharpen the aesthetic and analytical skills.

PSO5. Discover the language of cinema.

PSO6. Analyse films as texts and write critically about films.

PSO7. Improve the general standard of pronunciation as well as speak globally intelligible English

PSO8. Broaden the aesthetic and intellectual faculties.

PSO9. Respond creatively to the world around.

PSO10. Unravel new meanings in classics of all languages accessible.

PSO11. Read literature critically from a theoretical perspective.

Complementary Courses

Courses Offered

SEMESTER I-EN1131 History of English Literature 1 (COMPLEMENTARY COURSE)

SEMESTER II- EN1231 History of English Literature 2 (COMPLEMENTARY COURSE)

SEMESTER III-EN1331 History of English Literature 3 (COMPLEMENTARY COURSE)

SEMESTER IV-EN 1431 History of English language (COMPLEMENTARY COURSE)

SEMESTER V-EN 1551.1 Communicative applications in English (OPEN COURSE)

SEMESTER VI- EN1661.1 Translation Studies (ELECTIVE COURSE)

SEMESTER VI-EN 1645 PROJECT

EN1131 History of English Literature 1 (COMPLEMENTARY COURSE)

CO1. Students gain a wholesome understanding of British History.

CO2. Students comprehend the social and political organisations in Britain.

CO3. Students understand the culture of Britain & the kind of literature that emerged out of these conditions.

EN1231 History of English Literature 2 (COMPLEMENTARY COURSE)

CO1. Provide them with an insight on different periods and the English literature of those times.

CO2. The evolution of most important works in literature and the significant English writers enhance the students' knowledge and their impetus in higher studies.

EN1331 History of English Literature 3 (COMPLEMENTARY COURSE)

CO1. adequate knowledge of the later periods in English literature.

CO2. The socio-political changes of the age and its impact on literary works and writers gives an anticipation of what can be expected from contemporary literary works.

EN 1431 History of English language (COMPLEMENTARY COURSE)

CO1. better understanding of the origin and the development of English language.

CO2. identify the various language families & knows about the evolution of the English language.

EN 1551.1 Communicative applications in English (OPEN COURSE)

CO1. attain high level proficiency in all the four language skills.

CO2. equipped for competitive examinations and various International English Language Tests.

CO3. personality is fine tuned through their communication and presentation skills.

EN1661.1 Translation Studies (ELECTIVE COURSE)

CO1. know the concepts and theories of translation and even undertake various translation works.

CO2. motivated to pursue translation as a profession.

EN 1645 PROJECT

CO1. proper insight of various aspects of research, its limitations and the vast arena of analysis.

CO2. research attitude and aptitude is given vent to, motivating them and preparing them for the broad areas of research awaiting them.

Program Outcome

1. Enable the students to understand and appreciate individual works from any age better, develop a sense of history.
2. Trace the evolution of the English language.
3. Respond critically and creatively to the world around having gained valuable background information about the ages, authors and works of English.

Program specific Outcomes:

PSO1. Identify the various language families.

PSO2. Draw comparisons on the literary history of English and other similar languages of importance in career development.

PSO3. Make them capable of using English effectively and intelligibly for future use and during job interviews.

PSO4. Recognise the importance of translation process and choose it as a profession.

PSO5. Make use of the research aptitude in an apt manner.

M.A. ENGLISH LITERATURE & LANGUAGE PROGRAMME (530)

Courses Offered

First Semester

1. EL 211 Paper 1 – Chaucer to the Elizabethan Age
2. EL 212 Paper 2- Shakespeare Studies
3. EL 213 Paper 3- The Augustan Age
4. EL 214 Paper 4- Romantics and Victorians

Second Semester

5. EL 221 Paper 5 – From Modernism to the Present
6. EL 222 Paper 6 – Indian Writing in English
7. EL 223 Paper 7- American Literature
8. EL 224 Paper 8 – Critical Studies I

Third Semester

9. EL 231 Paper 9- Linguistics and Structure of the English Language
10. EL 232 Paper 10 – Critical Studies II
11. EL 233.1 Paper 11- Elective Paper I - European Drama
12. EL 234.2 Paper 12- Elective Paper II- African and Caribbean Literature

Fourth Semester

13. EL 241 Paper 13-English Language Teaching
14. EL 242 Paper 14- Cultural Studies
15. EL 243.1 Paper 15- Elective 3- Comparative Literature
16. EL 244.2 Paper 16-Elective 4- Regional Literatures in English Translation
17. EL 245 - Comprehensive Paper
18. EL 246 - Project & Project based Viva Voce

Course Outcomes

First Semester

EL 211 Paper 1 – Chaucer to the Elizabethan Age

- CO1. Student will have an overall understanding of the historical background of the age
- CO2. Student has adequate knowledge of the major literary works and writers during this period.

EL 212 Paper 2- Shakespeare Studies

- CO1. Have an Enhanced and in-depth knowledge of Shakespeare's works
- CO2. Understand the socio-political background of his times.

EL 213 Paper 3- The Augustan Age

- CO1. Develop enriched understanding about the literal, political conditions of the period
- CO2. Understand evolution of Novel as a genre

EL 214 Paper 4- Romantics and Victorians

- CO1. Establish a deeper connection towards the romantic ethos and regarding the troublesome Victorian times.
- CO2. Understand about Romantic poets, prose writers and Novelists and the rise of colonial ideology, science and religion and their conflict, Victorian compromise and the prominent literal figure.

Second Semester

EL 221 From Modernism to the Present

- CO1. Student will have comprehensive knowledge of the socio-political discourse of the time.

CO2. Comprehend the two major world wars, literary and aesthetic movements, liberal humanistic approaches and modernism.

EL 222 Papers 6 – Indian Writing in English

CO1. Develop an insight into the recent trends in Indian English Writing and the contribution of Indian writers to the English literary scenario.

EL 223 Paper 7- American English

CO 1. To create a deep understanding regarding the history, genres and perspectives of American Literature with regard to the major writers and their works.

EL 224 Paper 8 – Critical Studies 1

CO1. Possess an in-depth knowledge of the different literary theories and their cultural production.

Third Semester

EL 231 Paper 9 - Linguistics and Structure of the English Language

CO1. Possess a profound knowledge of linguistics.

CO2. Proper understanding of the structure of English Language is inculcated.

EL 232 Paper 10 – Critical Studies II

CO1. Enables the student to understand the fact that history is not linear and progressive and it is impossible to analyse history objectively

CO2 Provides an understanding that the human societies are structured by the economic system and all efforts are to achieve economic power.

CO3. Helps the students to grab the notion that a literary text represents various aspects of colonial oppression and media too has its effects on society and culture

CO4. Makes the student aware that the discourses wield power for those in charge and the fact that colonization is a process of political domination based on race, ethnicity, economic greed and expansionism.

EL 233.1 Paper11 - Elective Paper I - European Drama

CO1. Helps the students to realise the invaluable contributions of major European dramatists and their innovative theatrical techniques which revolutionised modern theatre.

EL 234.2 Paper12- Elective Paper II - African and Caribbean Literature

CO1. Students are able to discern the richness and variety of African Caribbean literary tradition.

Fourth Semester

EL 241 Paper 13 - English Language Teaching

CO1. Introduce students to the basic concepts and principles of language teaching, the schools of thought and their impact on language teaching.

CO2. Understand the role of sociolinguistics and psychology in language teaching and different teaching methods.

CO3. Students are acquainted to the manifold classroom strategies, teaching aids, the lesson plan to teach the language skills and different genres, and also the process of testing and evaluation.

EL 242 Paper 14 - Cultural Studies

CO1. Cultural Studies is a new area of research and teaching that brings in new perspectives to the notions regarding 'texts' and 'meanings' and thereby relating it to the study of literatures, cultures and societies.

CO2. Inculcate theoretical tools and critical perspective to interrogate the media such as advertisement, film, television, newspaper and internet texts that saturate our lives.

EL 243.1 Paper 15 - Elective 3 - Comparative Literature

CO1. Dealing with the study of literature and cultural expression across linguistic, national and disciplinary boundaries.

EL 244.2 Paper 16 - Elective 3 - Regional Literatures in Translation

CO1. Provide an insight into the arena of regional literary tradition in translation

EL 245 Paper 17 - Comprehensive Paper

CO1. Sums up the learning output the student has achieved through the learning of literature

CO2. Tests the student's cognitive abilities in this regard

EL 246 Paper 18 - Project & Project based Viva Voce

CO1. Sharpens the research capabilities of the students by analysing and arriving at their findings regarding various topics of literature

Program Outcomes

PO1. Enable the learners to take certification of Master's degree in English.

PO2. Equipped with indepth knowledge of English literature and English language.

PO3. Enable them to specialize in Linguistics, Women's Writing and other offered elective courses.

PO4. Capable of grabbing the opportunities of continuing education and professional development.

PO5. Widen the scope of the learners for careers in different sectors of employment.

PO6. Enable the students to avail career opportunities in English language teaching and research.

Program Specific Outcomes

PSO1. Develop academically sound future researchers and intellectuals in the varied areas concerning English literature and language.

PSO2. Inculcate interest in theatre and its technicalities, seeking it as a career option.

PSO3. Cultivate a generation of liberal humanistic approaches and aesthetic

DEPARTMENT OF GEOGRAPHY- B.Sc. GEOGRAPHY

VISION

- To teach, to spread and to flourish geographical knowledge
- To create awareness about the importance of Geography in the field of Competitive Examinations
- To inculcate geographical/natural/environmental values in students.
- To create awareness on Social relevance of Geography in the society and to serve the society.

MISSION

- We are on a mission to spread, make aware and inculcate to our students, values for environment, nature, earth and for human kind.
- We do strongly advocate for protection of environment and we have kept our premises green by planting trees, saplings of plants etc.
- We, by including nature camps, seminars, symposiums, exhibitions, extension lectures, day observations into our curriculum, apart from daily teaching, we are trying to mould our students more creative and innovative in academic and non-academic pursuits

Course1. GG 1141 Principles of Geomorphology.

CO 1. Explain the various theories of the origin of the earth.

CO2. Describe the various endogenic and exogenic forces acting on the earth.

CO3. Identify the erosional and depositional land forms created by the agents of erosion.

Course 2. GG 1221 Fundamentals of GIS& Remote Sensing

CO1. Explain the basic components of remote sensing.

CO 2. Study of Aerial photos and satellite imageries & Satellite remote sensing programmes of India and other countries.

CO3. Explain the definition and components of GIS and types of data in GIS.

Course 3. GG 1341 Climatology and oceanography

CO1. Describe the structure and composition of atmosphere.

CO2. Explain the atmospheric phenomena like temperature, pressure, wind system and precipitation

CO3. understand the bottom relief of oceans and description about waves ,currents, and tides.

Course 4. GG 1441 Human geography

CO1. Describe the basic concept of space and human spatial behavior.

CO2. Identify various cultures, their structure and changes in culture.

CO3. Classify the world languages and religions.

CO4. Explain the type, structure, pattern and function of human settlements.

Course5 GG 1442 Practical I-Scales and projections

CO1. Acquire practical skill in the construction of different types of scales and projections

Course 6. GG 1541 Geography of India

CO1. Describe the physical geography of India.

CO2. Describe the geographical requirements, distribution and production of major crops, important minerals, and power resources.

CO3. Identify the demographic characteristics of India.

CO4. Analyze the industrial production, trade and transport network of India.

Course 7. GG 1542 Geography of Kerala

CO1. Describe the location, Physiography, flora, & fauna of Kerala.

CO2. Explain the Resources & economy of Kerala.

CO3 .Analyze the demographic characteristics& infrastructure of the state.

Course 8. GG 1543 Geography of Resources

CO1. Understand the basic concepts of resource, its utilization and conservation.

CO2. Explain the management of resources in primary, secondary and tertiary activities.

CO3. Analyze the Strategies, pattern and current flow of international trade.

Course 9 GG 1544 World Regional Geography

CO1. Explain the various types of regions.

CO2. Understand the world distribution of mountains, plateaus, plains, rivers, lakes, & major natural regions of the world.

CO3. Identification of environment degradation due to human interference.

Course 10 GG1551.1Geography of Tourism

CO1 .Explain the role of geography in tourism.

CO2. Understand the elements and components of tourism

CO3. Identify the major natural& cultural attractions of Kerala

Course 11 GG1641 Cartography

CO1. Explain the nature, scope and growth of cartography.

CO2. Describe the various procedures involved in the mapmaking.

CO3. Appreciation of the Survey of India topographic maps.

Course 12 GG1642 Environmental Geography

CO1. Explain the scope and components of environment.

CO2. Understand the concept of Ecosystem and its disruption due to human interference.

CO3. Assess the environmental movements of Kerala and India.

CO4. Describe the environment impact assessment, management and planning.

Course 13 GG1661 An Introduction to Disaster Management

CO1. Explain the causes and types of disaster.

CO2. Awareness about prevention, preparedness and mitigation.

CO3. Identify the hazard and vulnerability profile of India.

Course14 GG 1643 Practical II- Representation and interpretation of Geographic Data

CO1. Drawing skills to represent climatic and socio-economic data.

CO2. skill to interpret the weather symbols and interpret the Indian daily weather report.

Course 15 GG1644 Practical III -Map reading and analysis

CO1. skill to identify different types of relief, slopes and to interpret the Indian Topographic maps.

Course 16 GG1645 Practical IV Surveying and levelling

CO1. Acquire skill in field survey using various equipments.

Department of Hindi

Programme specific outcomes and course outcomes

- Programme Outcome: - The B. A. Graduates can pursue B.Ed Course and opt teaching career in the schools. Also they can do Post Graduate studies in their subjects. After their PG, they may do M.phil or P.hd and take teaching as their career in Degree Colleges and Universities.
- Programme Specific Outcome(BA Hindi):- Students interested in Hindi language can do the job in the following areas:-
 - i. Professional writing
 - ii. Research
 - iii. Editing
 - iv. Journalism
 - v. Media
 - vi. Teaching
- Course Outcome:-
 - i. Students, at the end of the course, would be able to unlock the communicator in them by using national language Hindi appropriately and with confidence.
 - ii. Students will gain knowledge of major traditions of literature written in Hindi.

Course Outcome 2017 onwards

Course Outcome 2017 onwards

SEMESTER-1

Common Course – Hindi(For B.A./B.Sc.)

HN 1111.1- Prose and One Act Plays

1. understand the cultural, social and moral values of modern Hindi prose.
2. understand the One Act Plays.

Complementary Course-I
HN 1131- Women's Literature in Hindi

1. compare the efforts done by women writers in Hindi and evaluate their vision about women.
2. evaluate the peculiarities of women writers.

Complementary Course – II

HN 1132- Bharathiya Sanskriti

1. knowledge of History and to familiarize with the important events of Indian Culture.
2. knowledge of historical developments of India.

Core Course-I

HN 1141- Hindi Prose

1. knowledge of prose.

SEMESTER-2

Common Course-Hindi (For B.A./B.Sc.)

HN 1211.1- Fiction, Short Story & Novel

1. appreciate the world of fiction.
2. developed creative process and communication skills.

Complementary Course III

HN 1231- Special Author Kabeer Das

1. knowledge of the famous ancient poet Kabeer Das.

Complementary Course IV

HN 1232- Echo Literature

1. understand the eco of the Literature and the elements of different types of poems and stories
2. understand the relation between environment and the human beings.

Core Course II

HN 1241- History of Hindi Literature upto Ritikal

1. understand the origin and development of the ancient Hindi Literature
2. familiar with great poets like Kabeer, Thulasi, Soor, etc

SEMESTER -3

Common Course

HN 1311.1 – Poetry and Grammar

1. Knowledge of Hindi Poetry.
2. understand the Grammar of Hindi

Complementary Course V

HN 1331- Comparative Literature

1. understand Comparative Literature and the use and nature of it.
2. awareness of Malayalam and Hindi Literature and to introduce major writers.

Complementary Course VI

HN 1332- Development of Hindi as Official Language

1. understand different forms of Hindi and the power of Hindi language.
2. communications skills in Hindi Language.

Foundation Course

HN 1321 – Information and Computer

1. describe basic informatics skills.
2. Apply theoretical and practical knowledge in computing

Core Course III

HN 1341- History of Hindi Literature: Modern Period

1. understand the modern trends of Hindi Literature.
2. familiar with prominent Hindi writers and their major works.

SEMESTER -4

Common Course

HN 1411.1- Drama, Translation and Correspondence

1. appreciate and analyse the dramatic elements in Literature
2. understand the process of translation.
3. Familiar with official correspondence in Hindi.

Complementary Course VII

HN 1431- Indian Literature

1. understand the origin and development of ancient Indian Literature and different trends of each period.

Complementary Course VIII

HN 1432-Script Writing and Advertisement

1. understand the information of Script Advertisement and the technique and process of Script writing.
2. developing the imaginative power and skill of art.

Core Course IV

HN 1441- Hindi Drama and One Act Plays

1. understand the distinct features of Hindi Drama.
2. understand the difference between Drama and One Act Plays.

Core Course V

HN 1442- Premchand's Fiction

1. knowledge of world famous Hindi writer Premchand.
2. realize the theme problems and style of Premchand's fiction

SEMESTER -5(2016 admission)

Core Course VI

HN 1541- Ancient Poetry

1. understand the Ancient Poetry, the theme, thought and philosophy of Ancient Poets.

Core Course VII

HN 1542- Modern Poetry

1. knowledge of Modern Hindi Poetry and to familiarize with prominent Modern Poets and Poems.

Core Course VIII

HN 1543- Hindi Fiction upto 1980

1. knowledge and appreciation of Hindi Fiction upto 1980

Core Course IX

HN 1544 – Hindi Grammar: Theory and Practice

1. understand the grammar of Hindi Language and the structure of Hindi Language
2. application of the grammatical rules of Hindi Language.

Core Course X

HN 1545 – History of Hindi Language and Linguistics

1. understand the classification of language and the development of Hindi Language and Lipi.

Open Course

HN 1551 – Translation: Theory and Practice

1. understand the process of translation and the qualities of a translator.
2. Familiar with the translation of English to Hindi and Hindi to English.

SEMESTER -6

Core Course XI

HN 1641 – Post Modern Hindi Fiction Since1980

1. understand Post modernism, Post modern culture and the theme and form of Post modern Hindi Fiction.

Core Course XII

HN 1642- Literary Criticism

1. understand different Indian Literary theories like Rasa, Alankara, etc.
2. knowledge of the literary thoughts, Ancient and Modern of western criticism.

Core course XIII

HN 1643- Translation: Theory and Practice

1. understand the process of translation and the qualities of a translator.
2. Familiar with the translation of English to Hindi and Hindi to English.

Core Course XIV

HN 1644 – Film: History and Production

1. explain the history of Indian film
2. understand the genius directors, actors, etc. of Indian film.

HN 1645: Dissertation

1. Interest in subject
2. enhance research quality

Elective Course

HN 1661 – Journalism and Hindi Journalism in Kerala.

1. Understand the origin and development of Journalism in India.
2. understand the development of journalism in Hindi.
3. understand the development of Hindi Journalism in Kerala.

COMMON COURSE FOR B.Com(Hindi Language)

SEMESTER-1

HN 1111.2 – Prose, Commercial Hindi and Letter Writing

1. understand and appreciate Hindi prose.
2. knowledge of commercial letter writing and the form and style of other letters.

SEMESTER – 2

HN 1212.2 – Poetry, Translation and Technical Terminology

1. appreciate Hindi poetry.
2. develop communicative skills in Hindi and English through the Translation.
3. Familiar with the technical terms used in offices.

COMMON COURSE FOR CAREER RELATED B.Com(Tax)

SEMESTER-1

HN 1111.4 – Short Story and Translation

1. Understand Hindi Short Stories and Story Writers.
2. Develop communicative skills in Hindi and English through the Translation

SEMESTER – 2

HN 1211.4- Drama and Vyavaharik Hindi

1. appreciate and analyze the dramatic elements in Literature
2. skill of communication through conversations

Department of Hindi

• Course Outcome:-

- iii. Students, at the end of the course, would be able to unlock the communicator in them by using national language Hindi appropriately and with confidence.
- iv. Students will gain knowledge of major traditions of literature written in Hindi.

Department of History

PSOs of B.A History

PSO1. *Understand* background of our religion, customs institutions, administration and so on.

PSO2. *Understand* the present existing social, political, religious and economic conditions of the people.

PSO3. *Analyze* relationship between the past and the present is lively presented in the history.

PSO4. Develop *practical skills* helpful in the study and understanding of historical events. They:

(a) Draw historical maps, charts, diagrams etc.

(b) Prepare historical models, tools etc.

PSO5 .Develop *interests* in the study of history and activities relating to history. They:

(a) Collect ancient arts, old coins and other historical materials;

(b) Participate in historical drama and historical occasions;

(c) Visit places of historical interests, archaeological sites, museums and archives;

(d) Read historical documents, maps, charts etc.

(e) Play active roles in activities of the historical organizations and associations; and

(f) Write articles on historical topics.

PSO6. The study of history helps to impart moral education.

PSO7. History installs the feeling of patriotism in the hearts of the pupils.

B.A. HISTORY COURSE OUTCOME

HY 1141 METHODOLOGY AND PERSPECTIVES OF SOCIAL SCIENCES

1. Familiar with the broad contours of Social Sciences and its methodology.
2. Familiar with the main concerns of Social Science disciplines.
3. Articulation the basic terminologies and theories prevalent in concerned disciplines.
4. Analysis and critical reading of popular and periodical literature from a Social Science perspective.

HY – 1241 CULTURAL FORMATION OF THE PRE-MODERN WORLD

1. Able to engage with conceptual and general issues regarding culture and civilization of the ancient period.
2. Aware about among the students about the cultural heritage of mankind.
3. knowledge about changes that took place among the major cultures of
4. world civilizations.
5. Aware about harmonious existence of the different sections of the people.

HY 1321 INFORMATICS

1. skills in informatics relevant to the emerging knowledge society and also to equip the students effectively to utilize the digital knowledge for their course
2. analyse basic concepts and functional knowledge in the field of informatics
3. functional knowledge in a standard office package and popular utilities
4. Aware about social issues and concerns in the use of digital technology
5. skills to use digital knowledge resources in learning

HY1341 EVOLUTION OF EARLY INDIAN SOCIETY AND CULTURE

1. analyze the salient Features of Prehistoric and Proto Historic Culture in India
2. analyse the evolution of India Culture with special reference to the society and polity of Ancient period`
3. Familiar with the heritage of India

HY1441 MEDIEVAL INDIA: SOCIO- CULTURAL PROCESSES

1. knowledge on the Social Cultural and Administrative Features during the Medieval Period
2. familiar with the processes that made the socio-cultural specificities possible
3. Aware about the linkage effect of this period in subsequent centuries

HY – 1442 HISTORY OF MODERN WORLD – PART I

1. Familiar with the changes in the history of the modern world
2. analyze the agenda of the imperialistic powers in Latin America and Africa
3. understand about the liberal ideas and freedom struggles

HY 1541 MAJOR TRENDS IN HISTORICAL THOUGHT AND WRITINGS

1. understand the history of historical writings.
2. evaluate the works in the light of new theories and concept

HY1542 COLONIALISM AND RESISTANCE MOVEMENTS IN INDIA

1. Review the circumstances that led to the establishment of colonialism in India
2. describe the impact of colonial rule in India with particular reference to socio-religious political and economic fields
3. analyze the genesis and progress of the resistance Movements against the British

HY – 1543 HISTORY OF MODERN WORLD – PART II

1. analyze the significance of the unification movements in Italy and Germany that paved the way for the beginning of a new epoch
2. understand the First and Second World Wars
3. evaluate the achievements and failures of the International Organizations

HISTORICAL METHOD

Mechanics of Project Writing

1. enable the students to understand the method of writing history.
2. make aware of the various tools pertaining to the writing of history.
3. Familiar with the new theories and concepts in historical method.

HY 1642 MAJOR TRENDS IN INDIAN HISTORICAL THOUGHT AND WRITINGS

1. understand the origin and development of historical writings in India.
2. Identify major historical works in Indian history.
3. Aware about the influence of ideas and theories, trends and concepts in Indian historical writings.

HY1643 CONTEMPORARY INDIA

1. understand the circumstances that led to the formation of India Union
2. understand the challenges faced by independent India and the bold measures initiated after independence
3. evaluate the achievements of contemporary India with special reference to Science, Information Technology

HY644 THE TWENTIETH CENTURY REVOLUTIONS

1. understand four major revolutions of the 20th century, *i.e.* Russian, Chinese, Vietnamese and Cuban
2. Aware about the legacy of the above revolutions
3. Familiar with the nature, scope and significance of the revolutions in the present context

HY 1651.5 Elective Course INTRODUCTION TO ARCHAEOLOGY

1. insight into the discipline of archaeology
2. analyse the evolution of archaeology as a subject
3. understand various periods & concepts in archaeology.
4. describe archaeological methods

COMPLEMENTARY COURSES

HY – 1131.2 HISTORY OF MODERN WORLD (1789-1900)

1. understand the importance of French Revolution this marked the beginning of far-reaching changes in the history of mankind
2. Interpret the significance of the unification movements in Italy and Germany that paved the way for the beginning of a new epoch

3. Aware about the genesis and growth of liberal ideas

HY 1131.1 HISTORY OF MODERN INDIA (1857-1900)

1. analyse the circumstances that led to the establishment of colonialism in India
2. Judge impact of colonial rule in India with particular reference to socio-religious political and economic fields
3. analyze the genesis and progress of the resistance Movements against the British

HY – 1231.4 HISTORY OF MODERN WORLD (1901-1920)

1. Familiar with the hidden agenda of the imperialistic powers in Asia and Africa
2. review that led to the confrontation among European powers
3. appreciate the triumph of the working class movements
4. assess the merits and demerits of the League of Nations as the First International Organization

HY – 1331.6 HISTORY OF MODERN WORLD (1921-1955)

1. Familiar with the history of modern world from 1921 to 1955
2. Analyze causes that led to the rise of dictatorship during the inter-war period
3. review the causes, course and results of the Second World War
4. assess the cold war alliances and developments

HY – 1431.8 HISTORY OF MODERN WORLD (AFTER-1955)

1. Knowledge of the nature, scope and relevance of NAM
2. assess the current problems of the world with special reference to the Unipolar and Bipolar coupled with the emerging nations
3. analyse the nature and circumstances that led to the rise of regional and international alliances

OPEN COURSE HY 1551.2 INTRODUCTION TO ARCHAEOLOGY

1. insight into the discipline of archaeology
2. understand the evolution of archaeology as a subject
3. understand various periods & concepts in archaeology.
4. understand archaeological methods

DEPARTMENT OF MALAYALAM

DEPARTMENT OF MATHEMATICS

COURSE OUTCOME: **B.Sc. MATHEMATICS**

Methods of Mathematics MM 1141

- CO1 familiar with the fundamental methods solving problems.
- CO2 understand the importance of Mathematics in the field of Science.

Foundations of Mathematics MM 1221

- CO1 understand how Mathematical concepts work.
- CO2 application of mathematical techniques **Elementary Number theory and Calculus I MM 1341**

- CO1 understand Abstract Algebraic structure.
- CO2 analysis of fundamental facts in Elementary Number Theory.

Elementary Number Theory and Calculus II MM1441

- CO1 analysis of the fundamental facts in Elementary Number Theory.
- CO2 understand 'Calculus of Vector functions and Multiple Integrals'

Real Analysis I and II: MM1541

- CO1 application of the concepts of the Real numbers.
- CO2 motivated to learn Mathematics.

Complex Analysis I and II: MM1542

- CO1 understand Complex Analysis and its Applications.
- CO2 apply the fundamentals of Complex Analysis with applications to engineering and other sciences.

Abstract Algebra: MM1543

- CO: application of the Theory of Groups and Rings.

Differential Equations: MM 1544

- CO: problem solving using differential equations with regard to various physical problems

MATHEMATICS SOFTWARE- LATEX OF SAGE MATH: MM1544

- CO1 familiar with two software which are commonly used by people working in Mathematics.
- CO2 able to understand how the computation techniques they have learnt can be put into action with the help of software so as to reduce human effort.

Operation Research(Open course):MM 1551.1

- CO formulation of linear programming models, Graphical solutions, Transportation and Assignment problems.

Linear Algebra: MM1644

CO understand linear algebra and methods in it for solving mathematical problems.

Integral Transforms:MM1645

CO describe the applications of differential equations and integral calculus in various fields of science.

Graph Theory:

1. aware of some of the fundamental concepts in graph theory
2. Understand of the subject so as to use these ideas skilfully in solving real world problems.

Department of Physical Education

Semester V PE 1551.1 Health & Fitness Education [Open Course] credits 2

1. To introduce the fundamentals of Health and Physical fitness.
2. To provide information about the scientific basis and benefits of Physical Activity.
3. To enable the students to lead a healthy lifestyle.
4. To impart knowledge regarding health, nutrition and first aid measures
5. To give a brief awareness about sports & games and their influence in the society.

PG DEPARTMENT OF PHYSICS

1. **Program** - **Science-Physics**
2. **Specific Program-** **B.Sc.Physics**
3. **Courses** - **Core Course**
Open Course
Complementary Course

Programme Specific Outcomes (PSOs) and Course Outcomes (COs) for all courses

Program Outcome (PO)

1. generate graduates of the caliber sought by industries and public service as well as academic teachers and researchers of the future.
2. attract outstanding students from all backgrounds.
3. develop skills required to gather information from resources and use them.

Acquire skills in methodology related to physics.

Program Specific Outcome(PSO)

1. a broad knowledge of fundamental physical laws applying to the world at scales ranging from the nuclear to the cosmological.
2. demonstrate a rigorous understanding of the core theories & principles of physics, which includes mechanics, electromagnetism, thermodynamics, and quantum mechanics.
3. knowledge about material properties and its application for developing technology to ease the problems related to the society.
4. understand the set of physical laws, describing the motion of bodies, under the influence of system of forces.
5. understand the relationship between particles and atom, as well as their creation and decay.
6. relate the structure of atoms and subatomic particles to their properties.
7. analyze the applications of mathematics to the problems in physics and develop suitable mathematical method for such application and for formulation of physical theories.
8. understand the structure of solid materials and their different physical properties along with electronics, and material science.
9. Skill to use Information Communication Technology to gather knowledge at will.
10. read, understand and interpret physical information – verbal, mathematical and graphical
11. ability to tackle a wide range of topics in thermodynamics, Statistical Mechanics, Electricity, Electrodynamics and Electronics.
12. skill to unravel the secrets of the universe and understand the physical laws governing the motion of planets and astronomical objects in the solar system.
13. Skill use appropriate software such as programming languages and packages in a physics investigation.
14. ability to carry out an independent investigation using textbooks and other available literature, searching databases and interacting with colleagues and staff to extract important information.
15. understand component symbol, working principle, classification and specification of electrical components.
16. trained in skills related to electronics industry and market.
17. Scientific aptitude and temperament- perspective on superstitions prevailing in the society will be changed by developing a scientific aptitude.

18. develop an aptitude for research in Physics

COURSE OUTCOMES (COs)

Core Course I Basic Mechanics and Properties of Matter

1. Understand the elastic behaviour and working of torsional pendulum
2. Analyse bending behaviour beams and analyse the expression for young's modulus
3. Acquire basic knowledge of elasticity, Surface tension and fluid dynamics
4. Analyse waves and oscillations

Core Course II Classical Mechanics

1. Understand of Newton's laws.
2. Understand the dynamics and gravitation
3. Understand behaviour of rigid body dynamics
4. Explain Lagrangian formulation and its application
5. Describe how the symmetries of space and time lead to conservation laws

Core Course III Thermodynamics and Statistical Physics

1. Analysis of laws of thermodynamics and its applications to real world.
2. Understand the working principle of diesel engine and petrol engine
3. Understand the heat transfer mechanism

Core course IV Electrodynamics

1. Knowledge of Electrostatics, Magnetostatics and Electromagnetic induction
2. Understand Maxwell's equations and electromagnetic waves
3. Knowledge of transient currents, alternating current and circuit theory

Core Course V Practical I - Mechanics, Properties of Matter, Heat and Acoustic

1. Familiar with simple experiments on the elastic behaviour of materials
2. Familiar with simple experiments on the heat transfer mechanism in various type of materials
3. Analysis of experimental data with error calculations

Core Course VI Methodology in Physics and Relativistic Mechanics

1. Knowledge of research-methodology, experimentation and error analysis.
2. Preliminary understanding of Hamiltonian dynamics.

3. Understand of Frames of reference, Galilean invariance, and Special Theory of Relativity and its consequences.

Core course VII Quantum Mechanics

1. understand the failure of classical mechanics in explaining various physical phenomena.
2. Statistical interpretation of wave function
3. Understand mathematical formulation of quantum mechanics
4. Understand Development of time dependent and time independent Schrodinger equation

Core Course VIII Electronics

1. Understand the principle of diodes, transistors, field effect transistors
2. Study the construction and working of signal amplifiers and oscillators
3. Learn the principle of operation amplifiers and simple circuits using op-amps.

Core Course VIII Atomic and Molecular Physics

1. Analysis of atom models.
2. Understand and analyse atomic and molecular spectra.
3. Apply knowledge of resonance spectra in various fields.

Open Course Astronomy and Astrophysics

1. Gain knowledge about the birth, life and death of stars
2. Gain knowledge about various objects in sky
3. Understand the classification of celestial bodies
4. Understand the reason for various seasons in different parts of earth.

Core Course IX Solid State Physics

1. Understand crystal structure and interatomic forces
2. Describe the properties of X-rays and its application in crystallography
3. Analyse the optical, dielectric and magnetic properties of materials.
4. Understand the basics of superconductivity

Core Course X Nuclear and Particle Physics

1. Understand the nuclear structure and various models
2. Understand the principle of radioactivity and carbon dating
3. Gain detailed knowledge on elemental particles
4. Understand the principle of nuclear fission and nuclear fusion

Core course XI Classical and Modern Optics

1. Detailed knowledge of Interference and Diffraction, Polarization and Dispersion
2. Understand preliminaries of Fiber optics and Lasers
3. Understand the basics of Holography

Core Course XII Digital Electronics and Computer Science

1. Distinguish and apply number systems, Boolean algebra and logic gates.
2. Understand the basics of computers and memory systems.
3. Understand C programming and computer oriented numerical methods.

Core Course XIII Elective-Space Science

1. Understand the large-scale structure of Universe
2. Classify and catalogue of various astronomical bodies
3. Understand the dynamic activity of Sun
4. Understand the structure and composition of Earth's magnetosphere

Core Course XIV Practical II- Optics, Electricity and Magnetism

1. Understand various phenomena of optics with the help of simple experiments
2. Familiar with some simple experiments in electricity and magnetism

Core Course XV Practical III- Electronics and Computer Science

1. Knowledge in Construction of rectifiers, amplifiers and oscillators
2. Solving some simple problems in physics using numerical methods by implementing them in C programming language

Core Course XVI Project

1. Develop research culture
2. Understand the research methodology
3. Interpretation of data and improved scientific writing

B.Sc Physics Complementary Course for Chemistry

Complementary Course I Rotational Dynamics and Properties of Matter

1. Understand the basic concepts related to modulus of elasticity
2. Understand molecular theory of surface tension
3. Understand rotational dynamics of rigid bodies

Complementary Course II Thermal Physics

1. Analysis of laws of thermodynamics and its applications to real world.

2. Understand the working principle of diesel engine and petrol engine
3. Understand the heat transfer mechanism

Complementary Course III Optics, Magnetism and Electricity

1. Detailed knowledge of Interference and Diffraction, Polarization and Dispersion
2. Understand preliminaries of Fiber optics and Lasers

Complementary Course IV Atomic physics, Quantum mechanics and Electronics

1. Knowledge of various atom models.
2. Understand and analyse atomic and molecular spectra.
3. Understand the principle of diodes, transistors, field effect transistors.

Complementary Course V Practicals

1. Understand various phenomena of optics with the help of simple experiments.
2. Familiar with some simple experiments in electricity and magnetism.
3. Apply the knowledge of diodes in various circuits

B.Sc Physics Complementary Course for Mathematics

Complementary Course I Mechanics and Properties of Matter

1. Understand the basic concepts related to modulus of elasticity
2. Learn the molecular theory of surface tension
3. Understand rotational dynamics of rigid bodies

Complementary Course II Heat and Thermodynamics

1. Analysis of laws of thermodynamics and its applications to real world.
2. Understand the working principle of diesel engine and petrol engine
3. Understand the heat transfer mechanism

Complementary Course III Optics, Magnetism and Electricity

1. knowledge of Interference and Diffraction, Polarization and Dispersion
2. Understand preliminaries of Fiber optics and Lasers

Complementary Course IV Modern Physics and Electronics

1. Study various atom models.
2. Understand and analyse atomic and molecular spectra.
3. Understand the principle of diodes, transistors, field effect transistors.

Complementary Course V Practicals

1. Understand various phenomena of optics with the help of simple experiments.
2. Familiar with of some simple experiments in electricity and magnetism. ·
3. application of diodes in various circuits

M.Sc. PHYSICS

Program Outcomes

1. To develop strong student competencies in Physics and its applications in a technology-rich, interactive environment.
2. The student understands the historical development of physics, its possibilities and limitations, and understands the value of lifelong learning.
3. The students will become effective researcher who will be able to provide lucid summation of the scientific literature on a given topic of study.
4. Enable the students to avail career opportunities in teaching, industry and research

Program Specific Outcomes

1. Understanding the basic concepts of physics particularly concepts in classical mechanics, quantum mechanics, statistical mechanics and electricity and magnetism to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical and mathematical reasoning.
2. Students will be able to describe and critically evaluate the current state-of-the-art in selected areas of physics.
3. Students will learn to carry out experiments in basic as well as certain advanced areas of physics such as condensed matter physics, nanoscience, lasers and electronics.

COURSE OUTCOMES

First Semester Classical Mechanics

1. Application of Newton's laws of motion to solve advanced problems involving the dynamic motion of classical mechanical systems.
2. Use differential equations and other advanced mathematics in the solution of the problems.

3. represent the equations of motion for complicated mechanical systems using the Lagrangian and Hamiltonian formulations of classical mechanics.
4. get familiarized with Poisson brackets and Hamilton -Jacobi equation and classical background of Quantum mechanics
5. Understand Kinematics and Dynamics of rigid body in detail and ideas regarding Euler's equations of motion.
6. Understand theory of small oscillations in detail along with basis of Free vibrations.
7. Gain basic ideas about Non linear equations and chaos.

Mathematical physics

1. Develop detailed knowledge of Linear algebra, Complex analysis, Fourier Series and Tensor analysis
2. Knowledge in Probability theory, Group Theory and Special Functions
3. Develop in-depth knowledge of Differential equations and solution methods.

Basic Electronics

1. Know common electronic circuits using Diodes, BJTs, FETs, OPAMPs and 555 timer ICs.
2. Familiar with solid-state devices
3. Familiar with preliminaries of Digital Electronics and Optical Electronics
4. Knowledge of electronic instrumentation.

Second Semester

Modern Optics and Electromagnetic Theory

1. Knowledge of common topics in modern optics and preliminaries of nonlinear optics
2. Knowledge of Electromagnetic waves and Relativistic electrodynamics
3. Knowledge of Radio wave propagation, Transmission lines, waveguides and antennas

Thermodynamics, Statistical Mechanics and Basic Quantum Mechanics

1. Familiar with Thermodynamic relations and Classical and Quantum statistics
2. Understand Phase transitions
3. Understand Foundations of quantum mechanics, the paradoxes and some exactly solvable problems in quantum mechanics

Computer Science and Numerical Techniques

1. Familiar with basic computer architecture and microprocessors

2. Understand Python and C++ programming languages
3. Understand the some of the important numerical methods in problem solving in physics

Practical I General Physics

1. Develop observational, analytical and evaluation skills in mechanical and optical properties of materials.

Practical II Electronics and Computer Science

1. Develop observational, analytical and evaluation skills in electronics

Third Semester

Quantum Mechanics

1. Understand approximation methods in quantum mechanics
2. Analyse the connection between symmetry and conserved quantities, the angular momentum, and the properties of systems of identical particles.
3. Understand the theory of quantum scattering
4. Understand topics in relativistic quantum mechanics and preliminaries of quantum field theory

Advanced Spectroscopy

1. Understand general tools of spectroscopy
2. Detailed understanding of Molecular, rotational, IR, Electronic, Raman,
3. Distinguish ESR, NMR, Mossbauer, Photo electron and Photo acoustic spectroscopy

Advanced Electronics

1. Understand Radio and microwave communications and Pulse modulation
2. Understand digital communications, optical fiber communication and mobile cellular communications
3. Understand Digital signal processing

Fourth Semester

Condensed Matter Physics

1. Learn crystal structure, lattice vibrations and free electron and band theories
2. Learn semiconductors, Dielectric and Magnetic properties of matter and superconductivity
3. Preliminaries of nanoscience

Nuclear and Particle Physics

1. Learn Nuclear forces, nuclear models and nuclear reactions
2. Details of Nuclear fission and fusion
3. Nuclear detectors, particle accelerator and Elementary particle physics

Advanced Electronics

1. Knowledge of Microprocessors, interfacing and embedded systems
2. Preliminaries of artificial intelligence
3. Knowledge of Television, Radar and satellite communications

Practical III Advanced Physics Practicals

Develop observational, analytical and evaluation skills in electrical and magnetic properties of materials.

Practical IV Advanced Electronics Practicals

Skill in performing advanced experiments using op-amps, ICs and microprocessors

Department of Political Science

PROGRAMME OUTCOME

Through this programme students attain information on Indian polity, understanding of government system, Citizenship, Rights, Duties, Indian Constitution, Environmental politics, cyber politics, Election process and government systems around the world.

PROGRAMME SPECIFIC OUTCOME

The programme offers this understanding to students and through them the society at large. The lethal growth and malicious spread of terrorism and anti-national activities are major threats to national safety and security and unfortunately these are vital alarming challenges to every nation today. This is also intended to imbibe national spirit and patriotism among youth which is fading away due to various reasons. India is a country with multiple cultures, religions and languages, following varied customs and traditions but united with the spirit of nationalism instigate patriotism which is the essence of India. This programme will infuse the students with values and essence of nationalism and thereby facilitate them to play their role as responsible citizens of India.

COURSE OUTCOME

CORE COURSE PS 1141 METHODOLOGY AND PERSPECTIVES OF SOCIAL SCIENCES

1. Familiar with the students with the broad contours of social sciences and their methodology.
2. Identify the main concerns of social science disciplines
3. Articulate the basic terminology and theories prevalent across disciplines
4. Understand qualitative and quantitative models within the social sciences
5. Apply the methods and theories of social science to contemporary issues
6. Critically analyse and read popular and periodical literature from a social science perspective

PS 1241 INTRODUCTION TO POLITICAL THEORY

1. Understand the various principles in political science discipline.
2. Understand the various aspects of political theory.
3. Understand the Political theory and the basic concepts
4. Identify various approaches to the study of Political theory
5. Knowledge about various theories and concepts of Political Theory
6. Familiar with the structure and functions of the organs of government.

FOUNDATION COURSE II PS 1321 CYBER POLITICS

1. Gain broad perspective on Cyber Space and the politics involved in it. To introduce the student to Information Communication Technology (ICT)
2. Familiar with the importance of ICT in Governance and Development
3. Understand the importance of democratization of Cyber Space and its security issues

CORE COURSE - III PS 1341 INDIAN CONSTITUTION

1. Knowledge about the legal and ideological framework of the Indian Constitution.
2. Aware about the political processes and the actual functioning of the political system.
3. Knowledge about the political structure – both constitutional and administrative.
4. Gain insight into the rights and privileges granted by the constitution.

IV CORE COURSE - IV PS 1441 DYNAMICS OF INDIAN POLITICS

1. Knowledge about the actual working of the Indian Political system in a plural set up.
2. Identify the unique characteristics of the Indian federal system.
3. Analyse critically the functioning of the constitution.
4. Aware about major issues in Indian Political system.

CORE COURSE - V PS 1442 INTRODUCTION TO COMPARATIVE POLITICS

1. Knowledge about the theoretical evolution and approaches to the study of Comparative Politics
2. Skill to analyse in a comparative way political developments across world in the light of various theories.

3. Familiar with the students basic features about the constitutions of major political systems.

CORE COURSE -VI PS 1541PUBLIC ADMINISTRATION

1. understand the fundamental principles of Public Administration
2. aware about the basic pillars of Public Administration like Organisation, Personnel Administration, Financial Administration.
3. knowledge about Planning and its machinery.
4. aware about Citizen's defender mechanisms.

CORE COURSE -VII PS 1542ANCIENT AND MEDIEVAL POLITICAL THOUGHT

1. familiar with the Ideas of ancient and medieval political thinkers.
2. Develop an overall outlook about political thought.
3. Knowledge about the relevance of ancient and modern political thought in the modern world.

CORE COURSE -VIII PS 1543INTERNATIONAL RELATIONS

1. equipped with the students with the basic concepts, theories,
2. Understand ideologies and approaches to the study of International Relations.
3. Analyse the changing nature of power relations.
4. understand about issues in global politics

CORE COURSE-IX PS 1544RESEARCH METHODS IN POLITICAL SCIENCE

1. familiar with the students with the research methods in Political Science
2. apply the methods for the practical use of in Project/Dissertation in the Sixth Semester
3. identify the different methods and techniques applicable to Political Science Research.

CORE COURSE -X PS 1545HUMAN RIGHTS IN INDIA

1. Understand the concept of Human Rights, its evolution and importance in our society.
2. understand about various rights, including political, civil, social, economic and cultural rights
3. familiar with the Human rights condition in India including constitutional provisions
4. skill to evaluate the Human Rights enforcement methods.

CORE COURSE -XI PS 1641MODERN POLITICAL THOUGHT

1. understand about modern political thought.
2. develop their own ideas about various political and social issues.
3. compare eastern and western political thought.

CORE COURSE -XII PS 1642STATE AND SOCIETY IN KERALA

1. comprehensive analysis of the socio-political structure of Kerala
2. familiar with the students with the state and social structure of Kerala
3. analyse the socio-political evolution of the state of Kerala

4. analyze the key issues in the state and society in Kerala

CORE COURSE PS : 1643DECENTRALISATION AND PARTICIPATORY DEMOCRACY

1. understand about democratic decentralization, participatory governance with emphasis on India and Kerala
2. knowledge about tools of participatory democracy
3. acquire skills for capacity building activities in local self-governing institutions.

CORE COURSE - XIV PS 1644NEW SOCIAL MOVEMENTS

1. gain broad perspective on power and resistance in the era of neoliberal globalisation
2. understand the dynamics of social conflicts, activism and social change
3. familiarize with contemporary social movements in the civil society with an emphasis on the movements by the marginalized sections in the era of neoliberal globalization

OPEN COURSE - II (ELECTIVE) PS 1651.1 GLOBALISATION AND INDIAN POLITICAL SYSTEMS

1. understand the principles and practice of the programme of globalisation and its impact in India.
2. knowledge about the new global Order with special emphasis on India.
3. aware about the impact of globalisation on the life of the people of India.

OPEN COURSE - II (ELECTIVE) PS 1651.2INTRODUCTION TO PUBLIC POLICY ANALYSIS

1. solving practical problems which are brought to the agenda of government.
2. familiar with the actual situations of Public Policy formulation.
3. Aware about the determinants of public policy.

PS 1645PROJECT /DISSERTATION

1. aptitude for research in Political Science
2. proficiency to identify appropriate research topics and presentation

COMPLEMENTARY COURSE

PS 1131 INTRODUCTION TO POLITICAL SCIENCE

1. familiar with the the fundamental Principles of Political Science
2. understand the major principles of Political Science
3. understand the major concepts of Political Science
4. analyse various political ideologies.

PS 1231 INDIAN GOVERNMENT AND POLITICS

1. knowledge about the functioning of the constitution of India.
2. understand the basic principles of the Indian constitution

3. analyse about the Political System in India.

PS 1331 PUBLIC ADMINISTRATION

1. understand of the basic elements of Public Administration
2. develop insight into some theoretical understanding about Public Administration
3. able to describe about Organization, Personnel Administration and Financial Administration.

PS 1431 INTERNATIONAL POLITICS

1. understand the basic concepts, theories, ideologies, and approaches in the study of International Politics
2. understand the changing power relations in the international arena
3. aware about major issues in global politics

OPEN COURSE - I

PS 1551.1 DEVELOPMENT ADMINISTRATION

1. aware of origin, development and concepts in development administration.
2. Analysis of the developmental process taking place in the third world countries
3. familiar with various instances of development Administration.

PS 1551.2 HUMAN RIGHTS IN INDIA

1. familiar with the concept of Human Rights and impart awareness about the Human Rights conditions in India
2. understand about the constitutional provisions dealing with Human Rights
3. aware about the Rights of socially excluded people

PS 1551.1 GREEN POLITICS

1. aware about the environmental issues confronted by the humanity in the present global scenario and to equip the students to understand the environmental movements .
2. understand the basic theoretical aspects about environmental issues and activism
3. familiar with the major environmental movements.
4. Understand major conventions and laws in the protection of environment.

DEPARTMENT OF SANSKRIT

PROGRAMME OUTCOME OF B.A

Students seeking admission for B.A programme are expected to imbue with following quality which help them in their future life to achieve the expected goals.

- a) Realisation of human values

- b) Sense of social service
- c) Responsible and dutiful citizen
- d) Critical temper
- e) Creative ability

PROGRAMME SPECIFIC OUTCOME-B.A SANSKRIT GENERAL

- A) Developing reading, writing, listening and speaking skills.
- B) Availing the job opportunities in translation.
- C)Increasing the critical attitudes about the literary writing.
- D) Creating an interest in literature.
- E) Imbuing the literary research attitude and moral.
- F) Improving cultural , social and moral values.

COURSE OUTCOME

METHODOLOGY AND PERSPECTIVES OF HUMANITIES – SK(1141)

1. Understand the methodological issues.
2. Knowledge on the critical perspective to approach the disciplines under humanities.
3. Understand language and culture , Indian philosophy and humanities, difference between natural , social and human sciences.

DRAMA AND GRAMMAR- SK(1131)

1. Develop talent in usage of language.
2. Understand the indebtedness of Malayalam dramas to Sanskrit.
3. Familiar with growth of the school of drama
4. Understand the interface of literature and performing arts.
5. Develop communicative skill

SANSKRIT IN MODERN ERA- SK(1132)

1. Understand the linguistic , literary , scientific and cultural glories of Sanskrit.
2. Gain an insight to develop a link to Sanskrit language and literature.

3. Familiar with computer applications in the subject
4. Aware of moral values through learning subashithas and appreciate Sanskrit literature

METHODOLOGY SPECIFIC TO SANSKRIT GENERAL SK (1241)

1. Knowledge in the language teaching methods with special reference to Sanskrit
2. understand the aims of language learning.
3. Familiar with the principles and methods of teaching Sanskrit pros, poetry, and grammar.
4. Aware about the modern methods in learning Sanskrit.

POETICS IN SANSKRIT SK(1231)

1. Comprehend Guna and Dhvani School of literary criticism.
2. motivated to learn more about other schools of poetics in Sanskrit.
3. Critical evaluation of the poetic excellence of Kavyas.

LYRIC POEM , FABLES, AND TRANSLATION.SK(1232)

1. Develop leadership qualities
2. Maintain good relationship
3. Develop better communicative skill
4. understand our traditional culture.
5. Understand translation as a linguistic and cultural activity.
6. understand all the Malayalam sandesakavyas are mere adaptation of Meghaduta of Kalidasa

INFORMATICS FOR SANSKRIT

1. aware about basic information and communication technology skills
2. equipped to effectively use ICT tools and techniques for accessing , processing and using electronic information sources.
3. Understand the basic concepts in informatics.
4. Develop skill and functional knowledge.
5. familiar with the language technology especially related to Sanskrit for computer processing.
6. Analyse the digital knowledge resources in Sanskrit and Indology.

FUNCTIONAL SANSKRIT SK(1341)

1. Develop the basic knowledge in Sanskrit.
2. Aware about various terms in Sanskrit.
3. Aware about verbal words .
4. Develop the skills of communication and writing.

KAVYA AND GRAMMAR SK(1331)

1. Insight about the esthetic , cultural and social aspects of literary appreciation.
2. Develop self discipline, secular outlook on life, a sense of fraternity .
3. Develop solidarity among students.
4. Aware about the impact of Sanskrit on Hind language and literature.
5. Familiar with great works of famous writers.

SOCIAL INSTITUTIONS IN ANCIENT INDIA - SK(1332)

1. Familiar with ancient Indian concept of dharma and classical works.
2. Comprehend the idea of family life.
3. understand the Indian wisdom on origin of universe.
4. Knowledge of the important schools of Dharmashastra.

SAMSKRITHA SAHITHYA PRAVESHAM SK(1441)

1. Develop the basic knowledge in Sanskrit literature and its relation with other description like grammar, women study, environmental study, human right, socio-cultural aspects, aesthetic study, philosophic aspect
2. understand Sanskrit literature .
3. imbibe human values.
4. Gain a general knowledge in Sanskrit.

VYAKARANA PRAVESHANA.SK(1442)

1. Develop the talent to know Sanskrit grammar , practical grammar .
2. Understand the peculiarities of Sanskrit language and develop language skills.
3. Skill to use language freely without any doubt.
4. understand the language by splitting words , compounding the words etc.
5. develop critical and analytical knowledge.
6. Familiar with the technical terms in vyakaranashastra.
7. Develop the practical knowledge in sanskrit

THE EPICS SK(1431)

1. Familiar with ancient Indian classical works especially epics.
2. Skill to articulate the idea of keeping morality In life.
3. Knowledge on goals of life depicted in the epics.

4. Aware of ancient indian culture and traditions .
5. Develop good personality in social life.

INDIAN CULTURE, YOGA AND MODERN SCIENCE. SK (1432)

1. Understand the yogic tradition of india through Sanskrit.
2. Aware on physical, mental and spiritual pleasure.
3. Understandthe philosophy of yoga in India.
4. Get an insight into the theory of yoga practice through aasana, pranayama, kriya.
5. Understand the relevance of yoga in modern science.
6. Understandthe basics and stream of yoga.

INDIAN LITERARY CRITICISM SK(1551- OPEN COURSE)

1. Sensitive to the esthetic aspects of literary appreciation.
2. Understand literary works of famous poets.
3. Analyse about the essence of poetry by the help of different types of literary theories.

TECHNICAL LITERATURE IN SANSKRIT AND MODERN SCIENCE SK(1543)

1. Positive attitude towards Sanskrit.
2. Aware of the science in Sanskrit.
3. Knowledge about technical literature in Sanskrit.
4. Distinguish different disciplines and their relation with Sanskrit.
5. Application of the knowledge in our day to day life.

VYAKARANA SOPANAM SK(1544)

1. Develop the talent to know Sanskrit grammar and practical grammar.
2. Develop language skills.
3. Formulatethe forms of “bhu” and “edha” roots.
4. Understandthe verbs with the relation of words and their meanings.
5. Understandthe change of meanings when the padhas change.
6. Critically understand the language and their use.

DRAMA AND DRAMATERGY SK(1545)

1. Develop sensitivity to aesthetic , cultural and social aspect of drama.
2. Understand the origin and development of drama.
3. Appreciation of drama using the best techniques.
4. Practising drama techniques.
5. Analyse the interphase of literature and performing arts, koodiyattam.

HISTORY OF SANSKRIT LITERATURE.SK(1542)

1. Aware about the vast history of Sanskrit Literature.
2. Aware about the cultural heritage of our Nation.
3. Develop an aptitude towards Literature.
4. Develop creativity,imagination&innovation.
5. Knowledge of the different forms of Literary works in Sanskrit.

LINGUISTICS SK(1643)

1. Aware of the origin of language, use of speech organs for pronounciations .
2. Understand grammatical unit of words.
3. Knowledge the changes of word meanings.
4. Understand the origin and development of language.
5. Ability to compare language families with I.E family.
6. Understand the structure of different languages.
7. Appreciate the semantic change.

ELEMENTS OF INDIAN PHILOSOPHY SK (1641)

1. Understand and analyse the content of indian philosophy.
2. Understand the fundamentals of indian philosophy
3. Ability to think logically.

PROSODY AND ALANKARAS SK(1642)

1)

1. Gain knowledge about vritta and alankara.
2. Understand the meters .
3. Understand the figure of speech.
4. Gain knowledge about the eight Ganas and their peculiarities.
5. Differentiate each alankaras from other alankaras.

2) VEDIC HYMNS AND UPANISHADIK PHILOSOPHIES SK (1644)

1. Development of culture into the new generation.
2. Understand the virtues and values form Upanishads.
3. Transfer of knowledge from Vedas and Upanishads.
4. Learn the ideas of Bhagavad Gita.
5. Insight into the knowledge of Upanishads .

3) ANCIENT INDIAN VISION ON QUALITY AND ADMINISTRATION SK(1651)

1. Aware about the rich heritage of Sanskrit literature regarding politics , administration etc.
2. Knowledge about the important schools of political learning in ancient india.
3. Aware about the significance of education.
4. Familiar with the ancient indian theory on interstate relation.

COMMON COURSE FOR B.A/ B.Sc.

DRAMA PROSE AND TRANSLATION SK(1111.1)

- A) Develop aesthetic sense in Sanskrit literature To enrich morality.
- B) Redeeming ego.
- C) Improvise the vision of life, sense of aesthetic and rhythm.
- D) Understand the different types of rupakas.

1) KAVYA AND PRAKARANA IN SANSKRIT SK(1211.1)

1. Develop the communication skill.
2. Improve the conversational skill.

KAVYA . NATAKA , VRITTA AND ALANKARA SK (1311.1)

- A) Develop the skill to use translation as a tool for communication.
- B) Develop communication skills.
- C) Develop translation skill.

INFLUENCE OF SANSKRIT ON INDIDAN CULTURE SK(1411.1)

- A) Aware about culture and civilization.
- B) General awareness about vedic literature and indian culture.

COMMON COURSE FOR B.Com(Finance)

FIRST SEMESTER

1. KAVYA AND DRAMA.SK (1111.3)

1. Ability to know the Sanskrit Poetry and Sanskrit Drama.
2. Understand the characteristics of Sanskrit Drama.

SECOND SEMESTER

1. PROSE AND FABLES IN SANSKRIT.SK(1211.3)

1. Skill in simple Prose writing.
2. Aware in Sanskrit Fables.
3. Understand the Prose in Sanskrit.

COMMON COURSE FOR B.Com (TAX)

FIRST SEMESTER

1. POETRY AND DRAMA.SK(1111.3)

1. Develop the ability to know the Sanskrit Poetry and Sanskrit Drama.
2. Develop reading ability.
3. Understand the characteristics of Sanskrit Drama.

SECOND SEMESTER

1. PROSE AND KAVYA IN SANSKRIT.SK(1211.3)

1. Develop the ability to know the Sanskrit Prose and Poems.
2. Awareness in Sanskrit fables.
3. Knowledge about the Prose in Sanskrit.

COMPLEMENTARY COURSE FOR MALAYALAM

FIRST SEMESTER

1. POETRY AND GRAMMAR – I SK(1131.2)

1. Develop talent for creative writing in Malayalam.
2. Develop the knowledge in Sanskrit.
3. Develop creativity imagination and innovation.
4. Generate the humanistic outlook on life.

SECOND SEMESTER

1. POETRY AND GRAMMAR – II SK(1231.2)

1. Develop talent for creative writing in Malayalam.
2. Knowledge in Sanskrit.
3. Develop creativity imagination and innovation.
4. Generate the humanistic outlook on life.

THIRD SEMESTER

1. DRAMA AND GRAMMAR.SK (1331.2)

1. Develop student's talents in usage of language properly.

2. Understand the indebtedness of Malayalam Dramas to Sanskrit.
3. Get an insight into the growth of the school of Drama through Bharathamuni's Natyasastra.

FOURTH SEMESTER

1. LYRIC POEM,FABELS AND TRANSLATION SK(1431.2)

1. Understand Mahakavya of kalidasa
2. Understand our Traditional culture.
3. Understand translation as a linguistic and cultural activity.

CO -REVISED SYLLABI FOR FIRST DEGREE PROGRAMME IN SANSKRIT GENERAL (2018 ADMISSION ONWARDS)

FIRST SEMESTER

1. HISTORY OF SANSKRIT LITERATURE SK (1141)

1. Aware about the vast history of Sanskrit literature.
2. Aware about the heritage of sanskrit literature
3. Develop aptitude towards literature.
4. Generate creativity,imagination and innovation

2. POETY AND PROSE SK(1131)

1. Knowledge of the basic forms of literature.
2. Imbibe the human values.
3. Improvement of elementary skills in learning sanskrit.
4. Understand gramatical concepts.

3. FUNCTIONAL SANSKRIT SK (1132)

1. Devolving the basic knowledge in Sanskrit.
2. Knowledge in various noun forms in Sanskrit.
3. Aware about verbal forms.
4. Development of skills of communication and writing

SECOND SEMESTER

1. OUTLINES OF INDIAN CULTURE SK (1241)

1. Understand the cultural heritage of India.
2. Understand the south Indian culture.
3. Imbibe moral values.
4. Awareness about reform movements in Kerala.

2. ANCIENT INDIAN VISION ON ETHICS SK(1231)

1. ancient Indian concept on ethics.
2. Understand the Indian visions.
3. Develop moral values.
4. Develop integrity in action, morality.

3. LYRIC AND PROSODY SK (1232)

1. Understand the nature of sandeshakavyas.
2. Sencitized on the aesthetic, cultureal and literary aspects of poem.
3. Knowledge an practice various metres.
4. Familiar with kalidasa's approach to nature and literature.

PG DEPARTMENT OF ZOOLOGY

Program - **Science-Zoology**
Specific Program- **B.Sc. Zoology**
Courses - **Core Course**
Open Course
Complementary Course

Programme Specific Outcomes (PSOs) and Course Outcomes (COs) for all courses

Program Outcome (PO)

1. Apply the knowledge of various branches of Zoology and General biology meant both for a graduate terminal course and for higher studies.
2. Develop positive attitude towards sustainable development
3. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance
4. Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation

Program Specific Outcome(PSO)

1. students gain an in-depth knowledge of the diversity in form, structure and habits of vertebrates.

2. students are able to systematically pursue Zoology in relation to other disciplines that come under the rubric of science, as the methodology and perspectives of Science is introduced in general
3. student understands the fundamental structure, biochemistry and function of the cell.
4. provide a hands- on training experience in anatomy through simple dissection and mountings is obtained.
5. students understand the underlying genetic mechanism operating in man and state of the art bio-techniques
6. student get updated on the scope and importance of clinical immunology and become aware of the inherent dangers of microbes
7. student's perspective of health and biology is improved through in-depth study of human physiology
8. improve the student's perspective of health and biology through in-depth study of human physiology
9. expand basic informatics skill and attitudes relevant to the emerging society and also to equip the student to effectively utilize the digital knowledge resources for the study of Zoology
10. familiarize the student with the principle of developmental biology and provide him a bird's eye view of sophisticated embryological techniques
11. enhance the student's concept of nature and her resources and appreciating the process and product of organic evolution
12. expertize the student to carry out routine hematological and microbiological techniques
13. demonstrate basic principles in physiology
14. redress problem associated with health and sex thereby promoting fitness and well being
15. develop an aptitude for research in Zoology

B.Sc. ZOOLOGY COURSE OUTCOMES (COs)

Core Course I Animal Diversity I ZO1141

1. students gain an in-depth knowledge of the diversity in form, structure and habits of invertebrates.
2. understand basics of systematics and the hierarchy of different categories.
3. Get familiarised with the economically important invertebrate fauna.

Core Course II Animal Diversity II ZO1241

1. learn the general characteristics and classification of different classes of vertebrates.
2. understand the vertebrate evolutionary tree.
3. understand general aspects of applied interest.

Core Course III Methodology and Perspectives of Zoology ZO1341

1. understand the fundamental characteristics of science as a human enterprise
2. gains an insight about how science works
3. apply scientific methods independently

Core course IV Cell Biology ZO1441

1. get an insight of the ultra-structure of prokaryotic and eukaryotic cells

Core Course V Practical I - Methodology and Perspectives of Zoology, Animal Diversity I and IIZO1442

1. understand the plan of conventional organ system in common, easily available animals.
2. learn the adage that 'seeing is believing' typical examples and economically important specimen (preserved) to be studied.

Core Course VI Genetics and BiotechnologyZO1541

1. knowledge of the mechanism of crossing over and inheritance patterns in man.
2. understand the principles and techniques involved in DNA technology and get an overview of modern techniques like PCR, Hybridoma technology, gene therapy and human cloning

Core course VII Immunology and Microbiology ZO1542

1. understand the principles and mechanisms of immunology
2. learn the malfunctioning and disorders of the immune system
3. get a broad understanding of microbes and their economic importance with special reference to pathogenic forms.

Core Course VIII Physiology and Biological chemistry ZO1543

1. describe the different systems and the inherent disorders/ deficiencies involved therein.
2. understand the structure and functions of bio-molecules and their role in metabolism

Foundation course II General Informatics, Bioinformatics and Molecular Biology ZO1621

1. familiar with the basic concepts and functional knowledge in the field of informatics
2. aware about nature of the emerging digital knowledge society
3. Diligent about social issues and concerns in the use of digital technology
4. Aware the nature, application and scope of Bioinformatics

Core Course IX Developmental Biology and Experimental Embryology ZO1641

1. Understand various stages involved in the developing embryo
2. Understand initial developmental procedures involved in Amphioxus, Frog and chick
3. Familiarise with information on state-of-the-art experimental procedures in embryology.

Core Course X Ecology, Ethology, Evolution and ZoogeographyZO1642

1. Get an insight about the principles, applications and management of environmental science.

2. Understand the inherent morphological and physiological bases of behavioural pattern exhibited by vertebrates.
3. Gain an exhaustive knowledge of organic evolution with special reference to man.

Core course XI Practical II - Cell Biology, Genetics, Biotechnology, Immunology and MicrobiologyZO1643

1. prepare and observe chromosomal arrangements during cell division
2. identify and distinguish chromosomal aberrations in man
3. gain broad knowledge of conventional biotechnological procedures
 - a. perform routine blood analysis.
 - b. Perform clinical procedures for blood & urine analysis
 - c. Develop skill in simple biochemical laboratory procedures.

Core Course XII Practical III - Physiology and Biological Chemistry, Molecular Biology and Bioinformatics. Course Code - ZO1644

1. Understand and apply basic principles in physiology
2. Apply clinical procedures for blood & urine analysis
3. Develop skill in simple biochemical laboratory procedures

Core Course XIII Practical IV - Developmental Biology , Ecology, Ethology, Evolution and ZoogeographyZO1644

1. develop practical skills in the concerned subject
2. able to relate scientific knowledge with life
3. gain application level knowledge of procedural practices

OPEN COURSE I Human Health and Sex Education ZO1551.2

1. understand the importance of good health.
2. Become aware of clean sexual habits thereby warding off sexually transmitted diseases

OPEN COURSE II Economic Zoology - Vermiculture and Apiculture Course Code – ZO1651.1

1. Aware about self employment and self reliance
2. Understand the basic procedure and methodology of vermiculture is learned
3. Learn the scope and methodology of apiculture.

Zoology Project and Field study ZO1646

1. proficient in identifying appropriate research topic and presentation

B.Sc. ZOOLOGY COMPLEMENTARY COURSE

PSO

1. Inculcation of a love and understanding of the fascinating world of invertebrates in students
2. Familiarize students on the physiology of their own body and urge them to take precautionary measures to safeguard their health.
3. Introduce the methodology and perspectives of applied branches of zoology with a view of educating youngsters on the possibilities of self-employment
4. Providing a hands- on training experience in anatomy through simple dissections and mountings

Complementary Course I Animal Diversity I Course Code – ZO1131

1. Get a concrete idea of the evolution, hierarchy and classification of invertebrate phyla
2. Understand the basics of systematics by learning the diagnostic and general characters of various groups
3. Get an overview of typical examples in each phyla
4. Understand and study the economic importance of invertebrates with the special reference to insect pests

Complementary Course II Animal Diversity II Course Code – ZO1231

1. Learn the evolution, hierarchy and classification of different classes of chordates
2. Get an overview of the morphology and physiology of typical examples.
3. study the adaptations and economic importance of specific vertebrates

Complementary Course III Functional Zoology Course Code – ZO1331

1. understand the structure and function of each system in the human body.
2. Familiar with the etiology of common physiological disorders, syndromes and diseases

Complementary Course IV Applied Zoology Course code – ZO1431

1. Understand the basic principles involved in the culture and breeding of common edible and ornamental fishes of Kerala and the art of aquarium keeping.
2. Get a basic understanding of human genomics and reproductive biology including stem cell research and prenatal diagnostic techniques

Complementary Course V Practical I -Animal Diversity I &II, Functional Zoology and Applied Zoology Course Code – ZO1432

1. Develop skill to distinguish conventional organ system in common, easily available animals.
2. understand the adage that ‘seeing is believing’ typical examples and economically important specimen (preserved) to be studied. .
3. apply theoretical knowledge perform routine clinical analysis of blood and urine

M.Sc. ZOOLOGY

Program Outcomes

1. Enable the learners to take certification of Master's degree in Zoology.
2. Equipped with an in-depth knowledge in the area of Zoology
3. Enable them to specialize in one of the branches of Zoology that would be offered as elective courses.
4. Opportunities of continuing education and professional development.
5. Widen the scope of the learners for careers in different sectors of employment.
6. Enable the students to avail career opportunities in teaching, industry and research.

PSO

1. Developing academically sound future researchers and intellectuals in the area of general biology, Molecular biology, Biotechnology, Genetics, Cell biology, and Environmental Conservation.
2. Producing Contributors in the area of Biological Research, Teaching and Biodiversity Conservation
3. Cultivating a generation with Scientific Ethics and Temper.

COURSE OUTCOMES

Systematics and Evolutionary biologyZO211

CO1. Understand in the principles and practice of systematics.

CO2. Acquire an in-depth knowledge on the diversity and relationships in animal world.

CO3. Develop a holistic appreciation on the phylogeny and adaptations in animals.

CO4. Able to understand the evolution of universe and life.

CO5. Understand the process and theories in evolutionary biology.

CO6. Develop an interest in the debates and discussion taking place in the field of evolutionary biology

BiochemistryZO212

CO1. Understand the chemical nature of life and life process.

CO2 Get an idea on structure and functioning of biologically important molecules.

CO3. Able to explore new developments in biochemistry.

CO4. Ability to illustrate various Biochemical pathways.

CO5. Develop an interest in the debates and discussions associated with Lifestyle Diseases.

Biophysics, instrumentation and computer scienceZO213

CO1. Understand the importance of Physics to recognize life process.

CO2 Get an idea on tools and techniques available for studying biochemical and biophysical nature of life.

CO3. Equipped the learner to use the tools and techniques for project work and research.

CO4. Develop skill to carry out original research in biology.

CO5. Develop analytical and critical thinking skills through problem solving.

CO6. Apply techniques and tools for scientific study.

Practical I- Systematics and Evolutionary biology, Biochemistry, Biophysics, instrumentation and computer ZO214

CO: Develop Observational, Analytical and Evaluation skills related to ZO211, ZO212 &ZO213.

Advanced Physiology and functional anatomy ZO221

CO1. Compare the functioning of organ systems across the animal world.

CO2. Gain an insight into human physiology and anatomy.

Genetics quantitative analysis and research methodsZO222

CO1. understand the principles and mechanisms of inheritance in-depth

CO2 Explain the fine structure and molecular aspects of genetic material.

CO3. Learn the mechanism of Inheritance in Man.

CO4. Aware about the emerging field of research and understand various research methodologies.

Cell and Molecular BiologyZO223

CO1. Understand details of the basic unit of life at the molecular level.

CO2 Explain the fine structure and functions of cell organelles.

CO3. Gain an insight to the new developments in molecular biology and its implications in human welfare.

CO4. Get an overview about the emerging field of research in Molecular Biology.

Practical II-Advanced Physiology and Functional Anatomy, Genetics quantitative analysis, Cell and Molecular Biology and BioinformaticsZO224

Develop Observational, Analytical and Evaluation skills related to ZO221, ZO222 &ZO223

Microbiology and Biotechnology ZO231

CO1. Get an over view of the microbial world, its structure and function.

CO2. Familiar the learner with the applied aspects of microbiology.

CO3. Intensive and in-depth learning in the field of biotechnology.

CO4. Understand the modern biotechnology practices and approaches with an emphasis in technology application, medical, industrial, environmental and agricultural areas.

CO5. Familiar with the students with public policy, biosafety, and intellectual property rights issues related to biotechnology.

Ecology, Ethology and Biodiversity ConservationZO232

CO1. Understand on the basic theories and principles of ecology.

CO2. Aware about current environmental issues based on ecological principles.

CO3. Gain critical understanding on human influence on environment.

CO4. Understand the basics and advances in ethology.

CO5. Gain an indepth knowledge in Ethology in order to understand the complexities of both animal and human behavior.

CO6. Positive attitude towards Biodiversity conservation.

Immunology and Advanced Developmental BiologyZO233

CO1. in-depth knowledge about immunology.

CO2. Understand the role of immunology in human health and well-being.

CO3. Familiar with new developments in immunology.

CO4. Understand concepts and process in developmental biology.

CO5. Understand and appreciate the genetic mechanisms and the unfolding of the same during development.

CO6. Familiar with the new developments in embryology and its relevance to man.

Practical- Microbiology and Biotechnology, Ecology, Ethology and Biodiversity, Immunology and Advanced Developmental Biology.ZO234

CO: Develop Observational, Analytical and Evaluation skills related to ZO231, ZO232 &ZO233.

ZO241—Pollution Biology and environmental physiology

CO1. Broad and deep understanding on environment and influence of man on environment.

CO2. Equip the students to use various tools and techniques for the study of environment.

ZO242-Environmental management

CO1. Enable the learner to understand, think and evolve strategies for management and conservation of environment for sustaining life on earth.

CO2. Motivation for further studies and research in the field.

ZO243-Practical I-Pollution Biology and Environmental Physiology

CO: Develop Observational, Analytical and Evaluation skills related to ZO241.

ZO244-Practical II-Environmental Management

CO: Develop Observational, Analytical and Evaluation skills related to ZO242.

ZO201-Project

CO: Develop scientific attitude and Problem solving ability.

ZO202-Comprehensive Viva Voce