

Programme Outcome

Subject: Botany

Programme Outcome of Botany from Academic Year 2016-17 to 2018-19 for Second Year Students

The Botany program outcomes involve a deep understanding of plant diversity and classification. Students will explore the basics of bryophytes, focusing on the life cycles of Riccia and Funaria, and delve into pteridophytes with detailed studies of Selaginella and Adiantum. They will gain expertise in plant taxonomy, including systems of classification and the study of plant families. Practical skills will be developed through hands-on experience in botanic gardens and herbarium techniques, facilitating the collection, preservation, and identification of plant specimens. This knowledge equips students to contribute effectively to botanical research, conservation, and education.

Programme Outcome of Botany from Academic Year 2019-20 to 2023-24 for Second Year Students

The Botany program outcomes encompass a comprehensive understanding of plant biology through both theoretical and practical approaches. Students will grasp the structure and function of plant tissues, including protective, primary, and secondary tissues, and understand secondary growth mechanisms. They will learn about reproductive structures such as microsporangium (anther) and megasporangium (ovule), and processes like pollination, fertilization, and endosperm formation. Practical skills will include observing and analyzing plant tissues and reproductive structures, studying the development of embryos, and exploring phenomena such as apomixis and polyembryony. This foundation enables students to apply botanical knowledge in research, agriculture, and environmental science.

Programme Outcome of Botany from Academic Year 2018-19 to 2021-22 for First Year Students

The Botany program outcomes encompass a thorough understanding of plant contributions to human welfare. Students will explore food plants, spices, condiments, oils, fibers, non-alcoholic beverages, and medicinal plants, along with bio-energy sources. They will gain knowledge of fungal classification according to G.M. Smith (1955), including studying life cycles of Rhizopus and Agaricus, and understanding fungi's economic importance. Additionally, students will learn about lichens and plant pathology. Practical skills include analyzing fungal life cycles, understanding their roles in ecosystems and economies, and

applying this knowledge to solve plant-related challenges, preparing students for roles in research, agriculture, and biotechnology.

Programme Outcome of Botany from Academic Year 2022-23 to 2023-24 for First Year Students

The Botany program outcomes provide a robust understanding of microbial and plant diversity. Students will study various microorganisms, including viruses, bacteria, algae, fungi, lichens, and mycorrhiza, gaining insights into their classification and ecological roles. They will learn about taxonomic hierarchy and the classification of plant families, focusing on systematic positions, general and distinguishing characteristics, and economic significance. Practical experience includes working with botanical gardens and herbariums, where students will refine their skills in plant collection, preservation, and identification. This comprehensive approach equips students with the knowledge and skills necessary for research, conservation, and applied botanical sciences.



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Programme Outcome

Subject: Zoology

Programme Outcome of Zoology from Academic Year 2016-17 to 2018-19 for Second Year Students

Through theoretical and practical studies, students will gain in-depth knowledge of the biology, anatomy, and ecology of the sea star and *Columba livia domestica* (domestic pigeon). They will explore regenerative processes in sea stars and the physiological adaptations of pigeons. In medical and applied zoology, students will learn about the use of animals in medical research, disease control, and the development of biotechnological applications. Practical skills will include dissection, observation, and experimental techniques, preparing students for careers in biological research, medicine, and environmental conservation, with a strong foundation in both theoretical concepts and hands-on experience.

Programme Outcome of Zoology from Academic Year 2019-20 to 2023-24 for Second Year Students

Students will gain comprehensive theoretical and practical knowledge in physiology, biochemistry, apiculture, genetics, evolutionary biology, and medical diagnosis. They will understand organismal functions, biochemical processes, genetic mechanisms, and evolutionary relationships. Practical skills will include laboratory techniques in biochemistry and genetics, physiological experiments, beekeeping practices, and methods for medical diagnostics. This program will prepare students for careers in biological research, healthcare, agriculture, and environmental management, equipping them with the expertise to address complex biological and medical challenges through integrated theoretical knowledge and practical experience.

Programme Outcome of Zoology from Academic Year 2018-19 to 2021-22 for First Year Students

Students will acquire comprehensive theoretical and practical knowledge of animal diversity, comparative anatomy, and vertebrate developmental biology. They will learn to classify and understand the evolutionary relationships among animals, compare anatomical structures across vertebrate species, and analyze developmental stages from embryo to adult. Practical skills will include dissections, microscopy, and embryological studies. This program will prepare students for careers in biological research, wildlife conservation, and education by equipping them with a deep understanding of animal biology and hands-on experience in zoological techniques.

Programme Outcome of Zoology from Academic Year 2022-23 to 2023-24 for First Year Students

After successful completion of this course, students are expected to:

- Know the basic concept of Invertebrate Zoology.
- Acquire the ecological relationships of the local species.
- Know common and unknown invertebrate species.
- Understand of the – Invertebrate phyla, anatomy, natural history, collection, preservation, behavior and evolution.
- Acquire knowledge about external morphological features of grasshopper
- Understand internal structural and functional details of grasshopper
- Develop deeper knowledge about reproduction and life cycle of grasshopper
- Know the basic concept of Invertebrate Zoology.
- Understand common and unknown invertebrate species.
- Acquire practical knowledge about structural and functional aspects of grasshopper
- Gain the knowledge of the systematic position, habit and habitat of vertebrate animals
- Acquire the knowledge about classification of vertebrates
- Understand the general topics related to vertebrate animals.
- Understand the systematic position, habit and habitat of Frog
- Acquire the knowledge about structural and functional details about Frog.
- Enlighten themselves with knowledge related to systematic features of vertebrate animals.
- Enrich themselves with understandings of accessory organs.
- Know the poisonous and non-poisonous snakes.



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Programme Outcome

Subject: Geography

Programme Outcome of Geography from Academic Year 2018-19 to 2020-21 for First Year Students

After successful completion of this Programme Student acquaint utility and applications of Physical Geography in different areas and environment. understand various applications of Climatology. They understand the basic knowledge of elements of Processes in Atmosphere. the concept of scale at the initial stage. know how to draw the maps on various scale. Understand external forces operating on the Earth surface. knowledge of their physical environment. Basic concepts regarding Hydrosphere. Information regarding Marine Deposits and Coral reefs. acquaint with the principles of Classification and Choice of map projections.

Programme Outcome of Geography from Academic Year 2022-23 to 2023-24 for First Year Students

After completion of this Programme, the students will be able...

understand the geographical phenomena. the formation, types and importance of rocks and minerals. the landforms and their origin. external and internal forces that acting on the earth surface. understand various cartographic techniques used in geographical study. knowledge of drawing graphs, diagrams and distributional maps. analyse geographical data with the help of cartographic techniques. Identify the layers of earth's atmosphere. key features of each layer of the atmosphere interpret global energy budgets. understand the application of the climatology. Benefited with different kind of map projections & their importance. Expert in drawing projections according to requirement. Identify & choose map projections for different regions. Enhance basics of latitudes, longitude & great circle among students.

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Programme Outcomes

Subject: Chemistry

F Y B Sc Programme Outcomes from 2018-19 to 2021-22

Student acquire knowledge Electrolytic conductance, Surface Chemistry, Mathematical Preparation in Chemistry, Graphical representation of equations, Derivative, Periodic properties, Atomic and ionic size Ionisation energy, Electron affinity, Electronegativity, S block element, Organic Chemistry, Hydrocarbons Alkanes, Alkenes, Alkynes, Haloalkanes and haloarenes, Alcohols, phenols and ethers, Ionic equilibria, VSEPR theory and shapes of covalent molecules, Physical Chemistry Experiments, Analytical Chemistry Experiments, Inorganic Qualitative Analysis, The Gaseous State, Liquid State, Second Law of Thermodynamics, Metals and metallurgy, P block elements, Aldehydes and ketones, Reactions of aliphatic aldehydes & Ketones, Aromatic aldehydes and ketones, Carboxylic acids and their derivatives, Amines, Volumetric analysis, Chemical bonding and structure, Physical Chemistry Experiments, Analytical Chemistry Experiments, Organic Qualitative Analysis

F Y B Sc Programme Outcomes from 2022-23 to 2023-24

Student acquire knowledge about Various theories and principles applied to reveal atomic structure. Nature of matter and experiments which confirmed it. Significance of quantum numbers. Apply the rules of logarithm for solving numerical in chemistry. Draw, calculate the slope of various graphs for chemistry experiments. Calculate derivative and integration of some simple functions especially related to chemical problems. The basics of kinetics theory and concepts therein. Factors causing the deviations from ideal behaviour of gases. Compressibility, liquification and related critical constants of a system. To know about the structure of atom. To acquire the knowledge about the arrangement of elements in a periodic table to familiar with the classification of elements in periodic table. To know about the principle involved in arrangements of electrons in atoms. To understand the shapes of different types of orbitals present in atoms. To understand the periodic law and systematic study of elements. To find the factors affecting periodic properties. To understand periodic properties and their general trends in groups and periods. (Atomic size, Ionization energy, Electron affinity, Electro negativity, Metallic properties). To correlate these periodic properties with the chemical behaviour of elements. To understand the different methods used to determine electronegativity. The properties of organic compounds. Different types of bonds and structures of organic compounds. Different types of structural effects and their effect on the strength of acids and bases. Fundamentals of organic reaction mechanism, structural isomerism, methods of purification of organic compounds. Different types of solvents used

in organic reactions.SP3, SP2 and SP hybridizations. Nomenclature of alkanes, alkenes and alkynes. Different methods of preparation of alkanes, alkenes and alkynes. Different reactions of alkanes, alkenes and alkynes.To gain knowledge about origin of surface tension. To determine surface tension. To get idea regarding viscosity. To determine viscosity. To familiar with the Inorganic Qualitative Analysis. To understand the basic principles behind the group precipitation of basic radicals like solubility product and common ion effect. To understand the role of some compounds in qualitative analysis viz. Use of Cobalt nitrate, Sodium carbonate, Hydrogen sulphide and Ammonium chloride in detection of basic radicals. To focus on systematic separation and detection of ions in aqueous solutions.

SY B Sc Programme Outcomes from 2016-17 to 2018-19

Student acquire knowledge about Chemical Thermodynamics:SolutionsColligative PropertiesElectrochemistryChemistry of Transition ElementsThe Metallic BondThe Metallurgy of Aluminium (Electrometallurgy)Chemistry of Lanthanoids ElementsChemistry of Actinoids ElementsMolecular Orbital Theory (MOT)StereoisomerismAminesOrganometallic compoundsChemistry of Heterocyclic Compounds.Synthetic ReagentsElimination ReactionsIntroduction to Analytical ChemistryVolumetric (Titrimetric) AnalysisGravimetric analysisChromatographyPhysical Chemistry ExperimentsVolumetric AnalysisChromatographyOrganic PreparationsInorganic Preparations

S Y B Sc Programme Outcomes from 2019-20 to 2022-23

Student acquire knowledge about SolutionsColligativePropertiesThe d-block elementsStereoisomerism(L-12, M-24 / 36Projection formulae,Optical isomerismGeometrical isomerismConformational isomerismStereochemistry of CyclohexaneHeterocyclic and polycyclic aromatic compounds, ElectrochemistryChemical ThermodynamicsBasic concepts of coordination chemistrySynthetic ReagentsOrganometallic compoundsMolecular Orbital Theory (MOT)Acid base titrationsPrecipitation titrationsChromatographyRedox titrationsComplexometric titrationsGravimetric analysisPhysical Chemistry ExperimentsVolumetric AnalysisChromatography

T Y B Sc Programme Outcomes from 2017-18 to 2019-20

Student acquire knowledge about Electrochemical Cell and its Applications.PhotochemistryPhase RuleRadioactivity and its ApplicationsInvestigation of Molecular Structure.Chemical kineticsSolid StateElementary Quantum MechanicsBasic concepts of coordination ChemistryWerner's coordination theoryModern Theories of M-L Bonds: V.B.T.Modern Theories of M-L Bonds: C.F.T.Modern Theories of M-L Bond - M.O.T.The Copper group Coinage MetalsSolvents, Solutions, Acids and Bases.Corrosion and passivityStructure and Reactivity of Molecules.Some Transition and Inner Transition Elements.Structural EffectsNucleophilic Substitution at Saturated CarbonElectrophilic Addition to C=C,Nucleophilic Addition to C=OAromatic SubstitutionRearrangement reactionsSpectroscopyUltraviolet spectroscopyInfrared SpectroscopyNMR SpectroscopyProblems based on UV, IR and NMR SpectroscopyDesigning Organic

Synthesis Natural products Solvent Extraction Ion Exchange Chromatography Size Exclusion Chromatography Gas chromatography High-performance Liquid Chromatography Electrophoresis-Spectrometry Emission Spectrometry Atomic Absorption Spectrophotometry Nephelometry and Turbidimetry Thermal Methods General Aspects of industrial Chemistry Sugar Industry Fermentation Industry Fertilizers Small Scale Industries Petroleum Industry Industrial Organic Synthesis from Petroleum Soaps and Detergents Drugs and Pharmaceuticals Dyes, Pigments and paints Carbohydrates Amino Acids and Proteins Enzymes Lipids Nucleic Acids Energy rich compounds (L6, M6) Metabolism (L12, M12) Environmental Chemistry Polymer Chemistry, Chemistry in Everyday Life

T Y B Sc Programme Outcomes from 2020-21 to 2022-23

After successful completion of this Programme, students are acquire the significance of wave function and postulates of quantum mechanics. half-life equations for first and second order reactions the principles of electrode processes and apply them during Practical's. Analyse the rotational spectra of diatomic molecules and determine the bond length. apply the radioactivity principles for various chemical and biological investigations. mechanism of fluorescence, phosphorescence and photochemical reactions. the given crystal structure and determine the indices of planes, interplanar distances and type of crystal structure. Learn about the VSEPR theory and how it can be used to explain molecular shapes. the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap. stability of complexes using CFSE. about MOT to draw energy diagrams and to predict bond order. Learn about basic principles and synthesis of nanomaterials. classification, composition and processing of cement. classification and composition of alloys. types manufacture and applications of fertilizers. Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination. able to write/ explain mechanisms of those types of reactions. how a reaction takes place in one or more steps. the types of intermediates formed in different reactions. learn how reagent attacks the substrate molecule and accordingly how bonds break and formed. learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry. able to predict the products and to suggest the mechanisms. Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters. learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum. understand principle of UV spectroscopy and nature of UV spectrum. learn types of electronic excitations. able to calculate maximum wavelength for any conjugated system. And from the value of λ -max they will be able to find out extent of conjugation in the compound. understand principle of IR spectroscopy, types of vibrations and the nature of IR spectrum.



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