Programme Outcomes and Course Outcomes

B.Sc. Botany

Programme Outcome

This programme will produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development. It will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solution, improve practical skills, enhance communication skill, social interaction, increase awareness in judicious use of plant resources by recognizing the ethical value systems. The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.

Programme specific outcome

- PSO1: Develop a conceptual understanding of principles and importance of Botany. They will be able to demonstrate knowledge on selected topic of microbiology, cytology, and genetics, plant Biotechnology, angiosperm and be able to apply this knowledge to analyze a broad range of different phenomenon.
- PSO2: Understand the nature and basic concept of Diversity of lower and higher plants, taxonomy, Anatomy, Physiology and Ecology Applied Botany, Cytogenetic and identify & classify the plant that occurs locally.
- PSO3: to develop laboratory skill and be able to test soil, water, different physiological experiment. Applied course of Botany have tremendous scope in Vermicomposting, Apiculture, Floriculture.
- PSO4: to demonstrate written and oral communication skills in communicating Botany – related topics and will provide and wok independently.
- PSO5: to develop an understanding of the impact of botany and science on society and develop respect for conservation of environment.

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B.Sc. Part I: Applied Botany (Major I)

- Understand the importance and scope of botanical science in the industries.
- Understand the applied botany.History and evolution of botany and pollution.
- Know about Various disciplines of botany and their applications to human welfare.
- Know about Phytoremediation and Bioremediation.
- Know about Ancient agricultural practices. Modern agriculture practices.
- Know about Ethnomedicine, Ethnofibers and Ethnofood crops.
- Understand technique of DNA Recombinant technique, bioinformatics, plant tissue culture and its application.

B.Sc. Part I: Basic Botany (Major II, Minor, Open Elective)

- Understand the History of botany and Indian contributions.
- Know the Morphological characteristics of lower and higher plants (Angiosperms).
- Understand the leaves, inflorescence, flowers and fruits.
- Know the Structure of plant cell and cell organelles, prokaryotic and Eukaryotic cells, types of cell division.
- Know about Various types of microscopes.
- Understand the diversity among Bacteria, Viruses, and Algae.
- Know the morphology and structure of Bacteria, Viruses and Algae.
- Understand the life cycle pattern of Bacteria Viruses and Algae.
- Understand the useful and harmful activities of Bacteria, Viruses and Algae.
- Understand the Biodiversity of Fungi.
- Know the Economic Importance of Fungi.
- Understand the features of Lichens.
- Understand the morphological diversity of Bryophytes and Pteridophytes.
- Understand the economic importance of the Bryophytes and Pteridophytes.
- Know the evolution, morphology, anatomy, reproduction of Bryophytes and Pteridophytes.
- Archaebacteria, Eubacteria, Cyanobacteria, Mycoplasma, Actinomy-cetes and Virus. Beneficial and harmful roles.

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Course Title: Project in Botany for Pre-graduation

Course outcomes:

• Project work will supplement field experimental learning and deviations from classroom and laboratory

• transactions. project work will enhance the capability to apply gained knowledge and understanding for selecting, solving and decision-making processes. It will promote creativity and the spirit of enquiry in learners

• They will learn to consult Scientists, libraries, laboratories and herbariums and learn importance of discussions,

• Botanical & field trips, print and electronic media, internet etc. along with data documentation, compilation, analysis & representation in form of dissertation writing. It will enhance their abilities, enthusiasm, and interest.

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B.Sc. Part II: Plant Anatomy And Embryology (Major I)

- Understand the scope & importance of Anatomy and Embryology.
- Know meristemetic and permanent tissue system..
- Understand the normal and anomalous secondary growth in plants and their causes. Perform the techniques in anatomy.
- Know about Adaptation and denrochronology.
- Understand structure of flower, anther and pollen.
- Understand structure and development in microsporangium and megasporangium.
- Understand structure of ovules and embryo sac.
- Understand microsporogenesis and megasporogenesis.
- Understand male and female gametophytes.
- Know Pollinatition, fertilization, endosperm and embryogeny.

B.Sc. Part II: Industrial Botany (Major II, Minor, Open Elective)

- Gain thorough knowledge about various plant groups from primitive to highly evolved plants. Become aware of applications of different plants in various industries.
- Know About Plants in timber industries.
- Know About Leaf based industries.
- Know About Flower based industries.
- Know About Fruit and seed based industries.
- Know About plants other parts based industries.
- To highlight the potential of these studies to become an entrepreneur.
- To equip the students with skills related to laboratory as well as industries based studies.
- To make the students aware about conservation and sustainable use of plants.
- To address the socio-economic challenges related to plant sciences.

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B.Sc. Part III: Paper 1 : **Plant Physiology And Metabolism**

- Know importance and scope of plant physiology.
- To understand the plants and plant cells in relation to water.
- Learn about the movement of sap and absorption of water in plant body.
- Know the nitrogen metabolism and its importance.
- Understand lipid metabolism in plants.
- Learn and understand about mineral nutrition in plants.
- Understand the growth and developmental processes in plants.
- Know about movement in plants.
- Understand the process of translocation of solutes in plants.
- Know about Structure, classification and functions of biomolecules.
- Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3, C4, cam and hatch - slack pathways.
- Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.
- Understand the process of respiration in higher plants with glycolysis, Krebs cycle,pentose phosphate and electron transport system.
- Learn and understand concept of enzymes with classification, Nomenclature, charecterstics and mechanism of enzyme action.
- Learn and understand Plant harmones with discovery, structure, mode of action and role such as auxin, gibberellins, cytokinin, ABA and ethylene.

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B.Sc. Part III: Paper 2 : Cell Biology, Genetics And Biotechnology

- Gain knowledge about "Cell Science.
- Understand Cell wall, Plasma membrane, Cell organelles and cell division.
- Learn the Chromosomal organization.
- Learn the DNA structure and replication.
- Students will understand the genetic terminology of genetics and laws of mendelism.
- Students will understand and solve the various example of interaction of genes and multiple alleles
- Students will able to understand Mutation.
- Know about DNA damage and repair system.
- Know about gene and its structure.
- Student get idea and easily differentiate various types of inheritance and structural changes in chromosome.
- Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material.
- Understand the process of synthesis of proteins and role of genetic code in polypeptide formation.
- Understand the "Science of Heredity".
- Realize the role of genes in evolution of species.
- To understand linkage, segregation and mutation of genes during evolution.
- Understand the science of plant breeding.
- To introduce the student with branch of plant breeding for the survival of human being from starvation.
- To study the techniques of production of new superior crop verities.
- Understand the principle and basic protocols for Plant Tissue Culture.
- Understand the applications of biotechnology for human welfare
- Know the gene mapping, DNA finger printing.
- Understand the importance of Transgenic plants
- Understand the fundamentals of Recombinant DNA Technology.
- Know about the Genetic Engineering and Biostatics.

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