B.Sc. Botany

Programme Outcomes

PO1. **Develop Knowledge and understanding** 1. The range of plant diversity in terms of structure, function and environmental relationships. 2. The evaluation of plant diversity. 3. The role of plants in the functioning of the global ecosystem. 4. Statistics as applied to biological data.

PO2. **Practical skills:** Students learn to carry out practical work, in the field and in the laboratory, with minimal risk.

PO3. **Skills:** 1. Use of IT (word-processing, use of internet, statistical packages and databases). 2. Communication of scientific ideas in writing and orally. 3. Ability to work as part of a team. 4. Ability to use library resources. 5. Time management. 6. Career planning.

PO4. **Scientific Knowledge:** Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

PO6. **The Botanist and society**: Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.

PO7. **Environment and sustainability**: Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation. Recognize the need for safe use of internet related to over usage of computers and mobile phones as well as cyber crimes and cyber laws.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

COURSE OUTCOME

	Course Title	Outcome
CO 1 BO 1141	Angiosperm anatomy, Reproductive botany and palynology	Students are able to understand the complexities of cell wall organization, microscopic and sub microscopic structures. • Students can distinguish various anatomical features of monocots and dicots. • Identify and differentiate male and female gametophyte development in angiosperms. Students will be familiarized with the basic features of pollen grain
CO 2 BO1221	Methodology and perspectives in plant science	• Develops an idea about involvement of science in improvement of human life. • Create awareness of scientific approach towards life and learns the values of ethics in science. • Develops skills to interpret scientific data using basic statistical methods. • Create skills to prepare specimens for microscopic and gross anatomical studies and familiarize with different

		microscopic methods for sample analysis. • Students become able to prepare buffers, measure pH, separate plant pigments and construct absorption spectrum of a sample
CO 3 BO1341	Microbiology, Phycology, mycology, Lichenology and plant pathology	The student can prepare micro preparations and identify the thallus and reproductive structures of lower plant groups like algae, fungi and lichen. • An awareness created among students about various microbes, structure and economic importance • Students can use effectively the methodology to isolate and identify bacteria present in curd and root nodules • Can identify various plant diseases, etiology of pathogens and control measures • Able to prepare fungicides like tobacco decoction and Bordeaux mixture
CO 4 BO1441	Bryology, Pteridology, Gymnosperms and Paleobotany	Students are able to make micro preparations of thallus and reproductive structures of as well as better understanding of the life cycle

		of selected members of Bryophytes, Pteridophytes and Gymnosperms • Can understand the economic and ecologic importance of lower groups of plant kingdom • Better understanding of fossilization and importance of Palaeobotany • Identify various parts of fossil plants through micro slides
CO 5 BO1541	Angiosperm morphology, Systematic botany, Economic botany ,Ethnobotany and pharmacognosy	Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position. • Familiarization of basic rules of Angiosperm classification and different types of classification. • Preparation and maintenance of Herbarium. • Identification of plants to their respective families. • Understanding of ethnobotanical and pharmacological significance of plants
CO 6	Environmental studies	Develops awareness about

BO1542	,Phytogeography and Research methodology	natural resources, its conservation and importance of sustainable lifestyles. ⌓ Understands and identify different ecosystems and ecosystem processes. ⌓ Develops deep understanding about biodiversity and importance of its conservation ⌓ Develops skills to identify polluted sites, its major pollutants and recognize the need to mitigate environmental pollution ⌓ Awareness about different types of disasters and to adopt strategies to overcome and reduce the impact ⌓ Identify the importance of phytogeographical sites in India ⌓ Can devise an experimental design and carry out a project
CO 7 BO1543	Cell biology , Genetics and evolutionary biology	Students have a better understanding of cell structure and cell organelles • Prepare microslides of cell divisions and identify various stages of mitosis and meiosis • Able to work out problems in classical genetics, modified

		mendelian ratios and population genetics • Able to understand genetic diseases and their inheritance • Understand evolutionary principles, theories and methods of speciation
CO 8 BO1641	Plant physiology and biochemistry	Students get a clear understanding of the basic concepts of Physiology and Biochemistry. •Understands photosynthesis, respiration, plant growth regulators, Nitrogen metabolism, and stress physiology • Familiarization of basic physiological practical procedures. • Students get the basic knowledge about the macromolecules and their overall role in cell metabolism; and secondary plant products. • Identification of protein, reducing and nonreducing sugar by qualitative tests.
CO 9 BO1642	Molecular biology , General informatics and Bio informatics	Understands DNA as genetic material, develops awareness about chemical composition and different types of DNA including their replication

		method. • Students understand various molecular aspects of gene expression and regulation of genes • Develops awareness about various academic services applied for their studies • Awareness about features of a computer, different application and system software. • Recognizes the need for safe use of internet and also become aware about health issues related to over usage of computers and mobile phones as well as cyber crimes and cyber laws.
CO 10 BO1643	Biotechnology , Nanobiotechnology, Horticulture and plant breeding	• Students will be familiarized to molecular phylogeny, Biological Databases, Sequence analysis, Genomics, Proteomics & Comparative genomics Students are familiarized in preparation of culture solutions, sterilization, inoculation

		of explants, induction of callus and morphogenesis • They are familiarized in biotechnological tools like RFLP, RAPD and PCR techniques • Appreciate the application of equipments and tools in biotechnology • Understanding of ethical and legal issues in biotechnology and basic knowledge about IPR • Better understanding of nano systems, and applications of nanomaterials • Students able to identify and use various horticultural implements • Can propagate plants through grafting, budding and layering & can prepare manures, fungicides etc. • Can effectively do plant breeding methods and understands their practical application in betterment of food crops
CO11 BO1551.1	Open course - Horticulture	Students are familiarized in horticulture implements and methods of gardening • Better understanding of commercial horticulture,

		flower arrangement, cut flowers • Can understand about land scaping, fertilizers and Plant protection