BA / BSc / BCom - Program Outcomes

On completion of undergraduate programme, the student is expected to achieve the following programme outcomes

PO1	Knowledge (Remembering)	• Demonstrate basic factual and procedural knowledge in the chosen field of study. • Recall and recognize key concepts, terms, and theories. • Summarize and explain fundamental principles and historical developments.
PO2	Comprehension (Understanding)	• Interpret and explain the significance of information and concepts. • Translate complex ideas into simpler terms for understanding. • Compare and contrast different theories or viewpoints within the discipline.
PO3	Application (Applying)	• Apply theoretical knowledge to practical situations or real-world problems. • Use appropriate methods and techniques to solve discipline-specific problems. • Demonstrate the ability to implement concepts in hands-on experiences or internships.
PO4	Analysis (Analyzing):	• Break down complex issues into their component parts. • Identify patterns, relationships, and causes within the discipline. • Evaluate the validity of arguments and evidence.
PO5	Synthesis (Creating)	• Integrate knowledge from various sources to develop innovative solutions. • Design and create original projects, research, or products. • Generate new ideas, hypotheses, or theories within the field.
PO6	Evaluation (Evaluating)	• Assess the quality and reliability of information and data. • Critically evaluate the strengths and weaknesses of different approaches. • Make informed judgments and recommendations based on evidence.

Principal

B.Sc Botany - Programme Specific Outcome (PSO)

On completion of undergraduate programme, the student is expected to achieve the following programme specific outcomes:

PSO1	Plant Taxonomy and Identification (Understanding and Applying)
PSO2	Plant Physiology Proficiency (Applying and Analyzing)
PSO3	Plant Ecology and Conservation (Analyzing and Evaluating)
PSO4	Botanical Research and Communication (Creating and Communicating)
PSO5	Ethical Plant Management (Evaluating and Ethical and Social Responsibility)

BSc Botany - Course Outcomes (CO)

Semester	Course Code	Course Title	Course Outcome Code	Course Outcome
1	CC-1	**Algae & Microbiology**	CO1	Identify and Classify Algae Species
			CO2	Analyze Algae Physiology and Ecology
			CO3	Understand Microbial Interactions with Algae
			CO4	Evaluate Algae Biotechnology Applications
			CO5	Conduct Microbiological Analyses of Algal Samples
1	CC-2	**Bio-molecules & Cell biology**	CO1	Comprehend the Structure and Function of Biomolecules
			CO2	Explain Cell Structure and Organelles
			CO3	Demonstrate Knowledge of Cellular Processes
			CO4	Apply Molecular Techniques in Cell Biology
			CO5	Analyze Cellular Regulation and Signaling
2	CC-3	**Mycology & Phytopathology**	CO1	Identify and Classify Fungi
			CO2	Understand Fungal Biology and Physiology
			CO3	Diagnose Plant Diseases
			CO4	Study Fungal Pathogenesis
			CO5	Develop Disease Management Strategies
2	CC-4	**Archegoniate**	CO1	Understand the Diversity of Archegoniate Plants
			CO2	Explain the Life Cycle of Archegoniate Plants
			CO3	Discuss the Ecology and Habitat Preferences of Archegoniates
			CO4	Analyze the Reproductive Strategies of Archegoniate Plants
			CO5	Appreciate the Evolutionary Significance of Archegoniate Plants
3	CC-5	**Morphology &**	CO1	Identify and Describe Anatomical Structures

		Anatomy		
			CO2	Explain the Functional Significance
			CO3	Apply Knowledge to Clinical and Research Settings
			CO4	Compare and Contrast Across Species
			CO5	Integrate Anatomy with Related Disciplines
3	CC-6	**Economic Botany**	CO1	Identify and Describe Economically Important Plants
			CO2	Understand Plant Use and Utilization
			CO3	Analyze Plant-Based Products and Industries
			CO4	Evaluate Sustainability and Conservation
			CO5	Apply Economic Botany Knowledge
3	CC-7	**Genetics**	CO1	Understand the Foundations of Genetics
			CO2	Apply Genetic Analysis Tools
			CO3	Explain Molecular Genetics
			CO4	Analyze Genetic Data
			CO5	Apply Genetics in Practical Contexts
4	SEC-2	**Mushroom Cultivation**	CO1	Explain cultivation methods of mushroom
			CO2	Understand the nutritional and medicinal use of mushroom
			CO3	Discriminate between edible and non-edible mushrooms
			CO4	Formulate cost-benefit analysis of mushroom marketing
			CO5	Prepare different recipes of mushroom based foods
4	CC-8	**Molecular Biology**	CO1	Comprehend Molecular Biological Principles
			CO2	Apply Molecular Techniques
			CO3	Examine Molecular Mechanisms
			CO4	Analyze and Interpret Molecular Data
			CO5	Apply Molecular Biology in Research and Biotechnology
4	CC-9	**Plant Ecology & Phytogeography**	CO1	Understand Plant Distribution Patterns
			CO2	Analyze Plant Interactions
			CO3	Examine Ecological Processes
			CO4	Apply Phytogeographic Concepts
			CO5	Evaluate Conservation and Restoration Strategies
4	CC-10	**Plant Systematics**	CO1	Demonstrate Proficiency in Plant Identification
			CO2	Understand Taxonomic Principles
			CO3	Analyze Phylogenetic Relationships
			CO4	Evaluate Taxonomic Diversity

			CO5	Apply Plant Systematics in Research and Conservation
5	CC-11	**Reproductive Biology of Angiosperms**	CO1	Understand Angiosperm Reproductive Structures
			CO2	Analyze Pollination Mechanisms
			CO3	Examine Fertilization and Seed Development
			CO4	Evaluate Reproductive Strategies
			CO5	Apply Reproductive Biology Knowledge
5	CC-12	**Plant Physiology**	CO1	Understand Plant Growth and Development
			CO2	Analyze Plant Water and Nutrient Uptake
			CO3	Examine Photosynthesis and Respiration
			CO4	Evaluate Plant Responses to Environmental Factors
			CO5	Apply Plant Physiology in Agricultural and Ecological Contexts
5	DSE-1	**Horticulture practices & Post-harvest technology**	CO1	Master Horticultural Techniques
			CO2	Apply Sustainable Horticultural Principles
			CO3	Understand Post-harvest Management
			CO4	Analyze Food Safety and Quality Assurance
			CO5	Apply Technology for Value Addition
5	DSE-2	**Analytical Techniques in plant Science**	CO1	Mastery of Analytical Methods
			CO2	Data Collection and Analysis
			CO3	Identify Plant Compounds and Structures
			CO4	Apply Techniques in Research
			CO5	Understand Instrumentation and Laboratory Safety
6	CC-13	**Plant Metabolism**	CO1	Understand Fundamental Metabolic Pathways
			CO2	Examine Plant Responses to Environmental Factors
			CO3	Analyze Metabolic Regulation
			CO4	Apply Metabolic Knowledge in Agriculture and Biotechnology
			CO5	Evaluate the Role of Metabolism in Plant Growth and Development
	CC-14	**Plant Biotechnology**	CO1	Comprehend the Principles of Plant Biotechnology
			CO2	Apply Genetic Modification Techniques

			CO3	Evaluate Plant Biotechnology Applications
			CO4	Understand Ethical and Regulatory Considerations
			CO5	Apply Plant Biotechnology in Research and Industry
6	DSE-3	**Plant Breeding**	CO1	Understand the Principles of Plant Breeding
			CO2	Apply Breeding Techniques
			CO3	Evaluate Plant Breeding Strategies
			CO4	Assess Impact on Agriculture
			CO5	Apply Plant Breeding in Research and Industry
	DSE-4	**Research Methodology**	CO1	Understand Research Design
			CO2	Master Data Collection Techniques
			CO3	Analyze Data
			CO4	Evaluate Ethical Considerations
			CO5	Communicate Research Effectively

B.Sc Botany Practicals

Laboratory provides a wide space for students to nurture their hidden scientific potential, creative thinking and systematic analyzing skills. Through B.Sc Botany programme, students will realize how theory, experiment and observation are mutually correlated and help each other to expand the frontiers of knowledge of the physical universe. By conducting various experiments, students will be able to internalize a number of skills and they will be benefited in life in many ways as follows:

CONSOLIDATED STRUCTURE OF PRACTICALS

FOR SEMESTERS I - VI

Semester	**Title of the Practical**	**CO**	**COURSE OUTCOME**
Sem-1	Algae & Microbiology	CO1	Master microorganism identification, culturing, and applied microbiology skills for environmental monitoring and bioremediation.
	Bio-molecules & Cell biology	CO2	Acquire lab techniques for biomolecule analysis, cell culture, PCR, microscopy, data analysis, and scientific communication.
Sem-2	Mycology & Phytopathology	CO1	Develop expertise in diagnosing and managing plant diseases caused by fungi, studying fungal morphology, and conducting pathogen control strategies.
	Archegoniate	CO2	Understand the diverse group of non-vascular plants, including mosses and liverworts, and their ecological roles, life cycles, and adaptations.
Sem-3	Morphology & Anatomy	CO1	Develop proficiency in plant structure identification, microscopy, dissection techniques, and hands-on exploration of plant anatomy and morphology.
	Economic Botany	CO2	Apply knowledge of economically important plants in agriculture, industry, and conservation, emphasizing sustainable utilization and management.
	Genetics	CO3	Acquire laboratory skills in genetic analysis, including Mendelian genetics, molecular techniques, and data interpretation for applications in research and breeding.
Sem-4	Molecular Biology	CO1	Gain hands-on experience in molecular techniques including DNA isolation, PCR, gel electrophoresis, and cloning, fostering skills for genetic research and biotechnology applications.
	Plant Ecology & Phytogeography	CO2	Acquire field research skills for studying plant communities, ecological interactions, and plant distribution, with a focus on biodiversity conservation and ecosystem management.
	Plant Systematics	CO3	Develop proficiency in plant identification, taxonomy, and phylogenetic analysis using morphological and molecular methods, enabling contributions to plant classification and evolutionary studies.

Sem-5	Reproductive Biology of Angiosperms	CO1	Gain hands-on experience in pollination experiments, flower dissection, and seed development studies, fostering a deep understanding of plant reproductive processes.
	Plant Physiology	CO2	Acquire lab skills for studying plant growth, metabolism, and responses to environmental factors, enabling the hands-on exploration of plant physiological processes and adaptation mechanisms.
	Analytical Techniques in plant Science	CO3	Develop proficiency in using advanced laboratory equipment and techniques for analyzing plant samples, preparing students for plant research and analysis in diverse scientific fields.
Sem-6	Plant Metabolism	CO1	Gain hands-on experience in studying plant metabolic processes, including photosynthesis, respiration, and biosynthesis, using laboratory techniques to analyze and interpret metabolic data effectively.
	Plant Biotechnology	CO2	Acquire skills in genetic modification, tissue culture, and molecular techniques for plant improvement and biotechnological applications, preparing students for research and biotech careers.
	Research Methodology	CO3	Develop practical research skills, including data collection, analysis, and reporting, to conduct independent and rigorous research in various scientific disciplines and real-world applications.