

Department of Botany

Programme Outcomes (PO) & Course Outcomes (CO) offered by the institution are stated and displayed on websites.

Programme Outcome : B.Sc. (Botany)	
PO1	Students completing this course will have understanding of morphology and anatomy of various groups of plants
PO2	Students know about different types of lower & higher plants their evolution inform algae to angiosperm & also their economic and ecological importance
PO3	Student can describe morphological & reproductive characters of plant and also identified different plant families and classification
PO4	Use modern Botanical techniques and decent equipment's
PO5	To inculcates the scientific temperament in the students and outside the scientific community
PO6	They knows economic importance of various plant products & artificial methods of plant propagation

Course Outcomes: B.Sc. (Botany)

Class	Semester	Course Title with Subject Code	Outcome
F.Y.B.Sc	I	BOT-101-T Applied Aspects of Plant Sciences	<p>1.Students will be able to apply advanced plant biotechnology techniques such as genetic engineering and tissue culture to improve crop productivity develop genetically modified crops and produce plant derived pharmaceuticals.</p> <p>2.Students will be proficient in utilizing precision agriculture technologies such as remote sensing GIS drones and sensors to monitor and manage crop health optimize resource use and improve overall farm management efficiency.</p>
F.Y.B.Sc	I	BOT-102-T Practical Based on BOT-101-T	<p>1.Studetns will develop hands on expertise in using essential laboratory instruments and equipment.</p> <p>2.Students will gain practical knowledge in demonstrating and evaluating genetically modified crops and evaluate the agronomic performance environmental impact and socio economic benefit of these genetically modified crops.</p> <p>3. Students will demonstrate post-harvest techniques, including the preparation, value addition and preservation of agricultural products.</p> <p>4.Students will demonstrate the ability to compost kitchen waste and convert it into biofertilizer, highlighting the principles of organic waste management and sustainable recycling.</p>
F.Y.B.Sc	I	OE-103-BOT-T Agriculture for Competitive Exams	<p>1.Develop a comprehensive understanding of key agricultural concepts, theories, and practices relevant to competitive exams.</p> <p>2.Improve time management skills to effectively answer exam questions within the allotted time frame.</p> <p>3. Develop effective test-taking strategies to improve performance in competitive exams.</p>

			4. Build confidence in tackling questions related to agriculture, agronomy, horticulture, and other related fields in competitive exams.
F.Y.B.Sc	I	SEC-102-BOT-P Post-Harvest Technology	<p>1.Acquire knowledge of various post-harvest treatments, such as washing, waxing, and irradiation, and their effects on shelf life and quality of harvested products.</p> <p>2. Understand the importance of quality control measures in post-harvest management and learn how to implement them effectively to ensure product quality and safety.</p> <p>3. Gain the ability to implement proper storage techniques, such as cold storage and controlled atmosphere storage, to prolong the shelf life of perishable products.</p> <p>4. Develop skills in developing value-added products from harvested crops, such as processing fruits into juices or snacks, to add value and increase marketability.</p>
F.Y.B.Sc	II	BOT-151-T Basics of Plant Sciences	<p>1.Students will demonstrate a clear understanding of the definition and concept of plant diversity, including the general outline of the plant kingdom and its major groups.</p> <p>2. Students will be able to identify and describe the characteristics of algae, and explain their economic and biotechnological importance, including their roles in food, industry, and future research prospects.</p> <p>3. Students will understand the ecological roles of fungi in nutrient cycling and symbiotic relationships, and recognize their economic importance in industry, agriculture, and food production.</p> <p>4. Students will identify different types of lichens and bryophytes, and describe their ecological significance and economic uses, including their roles in environmental monitoring and traditional medicine.</p>
F.Y.B.Sc	II	152-BOT-P Practical Based on BOT 151-BOT-T	<p>1. Students will be able to identify and classify a wide range of plant species from different habitats, understanding their ecological roles and evolutionary relationships.</p> <p>2. Students will be able to analyze and interpret the external and internal morphology of vegetative organs in various plant groups, enhancing their knowledge of plant anatomy and physiology.</p> <p>3.Students will gain practical skills in examining and describing the types and modifications of roots, stems, and leaves, understanding their structural adaptations and ecological functions.</p> <p>4. Students will gain hands-on experience in botanical fieldwork, including conducting</p>

			botanical excursions, documenting vegetation, and studying plant diversity in natural habitats.
F.Y.B.Sc	II	OE-152-BOT-P Mushroom technology	<p>1.Students will demonstrate a thorough understanding of the biology, taxonomy, and ecological roles of different mushroom species, recognizing their nutritional and economic importance.</p> <p>2. Students will acquire practical skills in various mushroom cultivation techniques, including substrate preparation, inoculation, spawn production, and environmental control, successfully cultivating different species.</p> <p>3.Students will understand the economic aspects of mushroom production, including cost analysis and market trends.</p> <p>4. Students will successfully apply their theoretical knowledge to practical scenarios, demonstrating the ability to solve problems and optimize mushroom production processes.</p>
F.Y.B.Sc	II	SEC-153-BOT-P Plant Propagation Techniques	<p>1.Students will gain hands-on experience and proficiency in the use and maintenance of various tools and equipment used in plant propagation, enabling effective and efficient handling of nursery operations.</p> <p>2.Students will be able to operate and manage different types of controlled environments for plant propagation.</p> <p>3.Students will develop skills in identifying, categorizing, and cultivating different types of ornamental plants for enhancing their ability to design and maintain aesthetic garden spaces.</p> <p>4.Students will master both natural and artificial vegetative propagation methods with diverse methods to propagate various plant species.</p>
S.Y. B.Sc.	III	BO-211: Taxonomy of Angiosperms and Plant community	<p>1.Know principals of taxonomy, methods in taxonomy</p> <p>2.Types of taxonomy, Sources of data for taxonomy</p> <p>3.Methods of preparation of Herbarium, EHerbarium</p>
S.Y. B.Sc.	III	BO-212 Plant Physiology	<p>1: Applications of plant physiology, Mechanism of Absorption of water, Transpiration</p> <p>2.Plant growth and growth regulators, Nitrogen Metabolism in plants, Physiology of flowering.</p>
S.Y. B.Sc.	III	BO 233: Practical based on theory courses	<p>1.Classify & identify the plant families.</p> <p>2.Draw the floral diagram of plants belonging to specific families.</p> <p>3.Demonstrate physiological experiments, and Fermentation products.</p> <p>4.Demonstrate& perform pH, plasmolysis, osmosis,DPD</p>

			5. Describe internal structure of plant organs.
S.Y. B.Sc.	IV	BO-221 Plant Anatomy and Embryology	1. Know different tissue systems in plants 2. Normal secondary growth and different types of anomalous secondary growth. 3. Study of male and female gametes in angiosperms, Process of fertilization and types of endosperms and structure of embryo.
S.Y. B.Sc.	IV	BO-222 Plant biotechnology	1. Know various application of biotechnology like Enzyme technology, Fermentation technology 2. Single Cell Proteins and Environmental biotechnology Know Basics of Plant Genetic Engineering, Methods of gene transfer in plants and applications of plant genetic engineering in crop improvement 3. Knowledge about Nanotechnology and its applications in Agriculture
S.Y. B.Sc.	IV	BO 243: Practical based on theory courses	1. Know practical knowledge of plant family of angiosperms. 2. Study of different ecological groups and methods
T.Y.B.Sc	V	BO 351: Cryptogamic Botany (Algae and Fungi)	1. Understand the diversity among Algae. 2. Know the systematics, morphology and structure of Algae. 3. Understand the life cycle pattern of algae. 4. Understand the applications of algae. 5. Understand the classification and diversity of fungi. 6. Know the Economic Importance of fungi.
T.Y.B.Sc	V	BO352: Archegoniate- 2	1. Know the scope and importance of the Discipline. 2. Understand the morphological, anatomical and reproductive diversity in bryophytes, pteridophytes and gymnosperms. 3. Understand the origin and thallus organization in bryophytes. 4. Understand the origin of pteridophytes. 5. Know the evolution of bryophytes and pteridophytes.
T.Y.B.Sc	V	BO 353: Spermatophyta and Paleobotany	1. Know the origin of angiosperms. 2. Understand concept of speciation. 3. Learn classification systems and selected families. 4. Know about leading botanic gardens of world and India. 5. Study of Gymnosperms along with classification 6. Learn the types of fossils.
T.Y.B.Sc	V	BO 354: Plant Ecology	1. Understand about the inter relationship between living world and environment. 2. Know Biogeography and various biogeochemical cycles. 3. Learn about the population and community ecology.

			4. Understand Ecological Impact Assessment (EIA), Environmental Audit, Remote Sensing, Ecological management.
T.Y.B.Sc	V	BO 355: Cell and Molecular Biology	<ol style="list-style-type: none"> 1. Know the structure of cells in relation to functional aspects. 2. Understand the internal organization of the cell. 3. Study the details of cell signaling mechanism. 4. Learn the functioning of cell at molecular level.
T.Y.B.Sc	V	BO 356: Genetics	<ol style="list-style-type: none"> 1. Learn the concepts of genetics 2. Understand mechanism of inheritance. 3. Know the different types of genetic interactions. 4. Understand about mutation and its types. 5. Know about sex linked inheritance mechanism.
T.Y.B.Sc	V	BO 357: Practical based on BO351 and BO352 (<ol style="list-style-type: none"> 1. Learn the techniques of staining and mounting of Algae, Fungi, Bryophytes and Pteridophytes. 2. Learn about recognition and collection of Algae, Fungi, Bryophytes and Pteridophytes from natural habitat. 3. Understand the diversity among Algae, Fungi, Bryophytes and Pteridophytes. 4. Know the systematic and occurrence of Algae, Fungi, Bryophytes and Pteridophytes. 5. Know the thallus structure, anatomy and reproduction of Algae, Fungi, Bryophytes and Pteridophytes.
T.Y.B.Sc	V	BO 358: Practical based on BO353 and BO354	<ol style="list-style-type: none"> 1. Learn local plants families in details. 2. Prepare the identification keys of locally available plants. 3. Identify fossil plant specimens. 4. Determine physicochemical properties of water. 5. Assess the ecological data of local area. 6. Understand the techniques of biodiversity study. 7. Know the systematic, morphology and structure of Gymnosperms.
T.Y.B.Sc	V	BO 359: Practical based on BO355 and BO356	<ol style="list-style-type: none"> 1. Understand different cytological and staining techniques. 2. Know about mitotic and meiotic stages of cell division. 3. Isolate and extract plant genomic DNA and RNA. 4. Learn to dissect larvae to study polytene chromosomes. 5. Understand relationship between phenotype and genotype in human genetic traits; 6. Induce polyploidy in plants.

T.Y.B.Sc	V	BO 3510: Medicinal Botany - 2	<p>1.Aim to equip students with the knowledge and skills to understand and utilize the therapeutic properties of plants, including their identification, cultivation, and potential applications in traditional and modern medicine.</p> <p>2.Students will gain proficiency in identifying medicinal plants, understand their traditional uses, and potentially contribute to drug discovery and development</p>
T.Y.B.Sc	V	BO 3511: Plant Diversity and Human Health	<p>1. Influencing food security, providing essential compounds for medicine, and supporting healthy ecosystems that reduce exposure to pollutants.</p> <p>2.Exposure to green spaces and diverse plant life has been linked to improved well-being, reduced risk of certain diseases, and even improved immune function.</p>
T.Y.B.Sc	VI	BO 361: Plant Physiology and Metabolism -	<p>1. Understand fundamentals of plant physiology.</p> <p>2. Learn different nutrients and their role in plants life.</p> <p>3. Understand the details of photosynthesis and its role in plants life.</p> <p>4. Study the respiration metabolism and its significance.</p> <p>5. Learn the lipid metabolism and its functioning in plant cell.</p>
T.Y.B.Sc	VI	BO 362: Biochemistry	<p>1. Understand nature and functions of biomolecules.</p> <p>2. Learn interactions of bio molecules with water.</p> <p>3. Know structure and functions of amino acid and proteins.</p> <p>4. Understand the properties and functions of enzyme.</p> <p>5. Learn carbohydrate and lipid metabolism.</p>
T.Y.B.Sc	VI	BO 363: Plant Pathology	<p>1.Understand organisms and causal factor responsible for plant diseases and methods of studying plant diseases.</p> <p>2. Know about the early development and role of different micro-organism in development of plant disease.</p> <p>3. Acquire knowledge on general concepts and classification of plant diseases.</p> <p>4. Learn different strategies for management of plant diseases</p>
T.Y.B.Sc	VI	BO 364: Evolution and Population genetics	<p>1. Understand process of organic evolution.</p> <p>2. Study of Lamarckism and Darwinism.</p> <p>3. Know the evidences of evolution.</p> <p>4. Study of fossilization process.</p> <p>5. Study of population genetics.</p>

T.Y.B.Sc	VI	BO 365: Advanced Plant Biotechnology	<ol style="list-style-type: none"> 1. Understand concept of traditional and modern biotechnology. 2. Learn and apply the techniques of plant tissue culture. 3. Know the techniques of genetic engineering and methods of gene transfer in plants. 4. Understand the concept of cryopreservation and germplasm conservation.
T.Y.B.Sc	VI	BO 366: Plant Breeding and Seed Technology	<ol style="list-style-type: none"> 1. Understand the concept and methods of Plant breeding. 2. Learn various methods of plant breeding. 3. Learn the methods of hybridization. 4. Implement their knowledge in agriculture field for crop improvement.
T.Y.B.Sc	VI	BO 367: Practical based on BO361 and BO362	<ol style="list-style-type: none"> 1. Understand mechanism and process of plasmolysis. 2. Understand process of nitrogen metabolism in plants. 3. Learn the technique of biomolecules separation. 4. Know the separation and estimation of amino acids and proteins
T.Y.B.Sc	VI	BO 368: Practical based on BO363 and BO364	<ol style="list-style-type: none"> 1. Identify various plant diseases and their control measures. 2. Learn media preparation and different culture techniques for plant pathogen. 3. Start small scale biopesticide industry. 4. Understand the allele and genotype frequency.
T.Y.B.Sc	VI	BO 369: Practical based on BO365 and BO366	<ol style="list-style-type: none"> 1. Preparation method of plant tissue culture media and nano-particles. 2. Learn quantitative and qualitative estimation of biomolecules. 3. Acquire knowledge of fermentation process. 4. Know about transgenic plants and their benefits.
T.Y.B.Sc	VI	BO 3610: Nursery and Gardening Management	<ol style="list-style-type: none"> 1. Understand the different types of nurseries. 2. Know the seed viability and germination methods. 3. Learn the different propagation techniques. 4. Understand the process of gardening operations and tools of gardening.
T.Y.B.Sc	VI	BO 3611: Biofertilizers	<ol style="list-style-type: none"> 1. Increased crop yields, enhanced soil health, and reduced reliance on chemical fertilizers. 2. They can improve nutrient availability, stimulate plant growth, and even protect plants from diseases. 3. Additionally, biofertilizers can be cost-effective and environmentally friendly.