

**F. Y. B. Sc. Botany [Semester - I]**  
**Course Code - BOT-101-T**  
**Course Title: Applied Aspects of Plant Sciences**

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**PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO1:** Recall the diversity, classification, evolution and developmental changes among the plants with reference to lower and higher plant groups and create a knowledge base in understanding the basis of plant diversity, economic values and taxonomy of plants.

**PSO2:** Understand the advanced concepts of Genetics, Cell biology and Plant Biotechnology of plants and its implementation for the improvement of crop productivity.

**PSO3:** Acquire and utilize the skills of post-harvest, flower design, fruit processing and dehydration techniques, organic farming and various plant processing technologies for developing the economy to the growing world.

**PSO4:** Know about the importance of Medicinal plants and its useful parts, economically important plants in our daily life and also about the traditional medicines and herbs, and its relevance in modern times.

**PSO5:** Inculcate the methodology followed in plant breeding, pharmacognosy, herbal drug technology, plant protection, propagation and improvement.

**PSO6:** Adapt methods of scientific research in plant improvement program and create entrepreneurships, employment to the society.

**PSO7:** Analyze the impact of scientific and technological advances on the environment and society and understand the importance of biodiversity conservation, green cover development, carbon sequestration and utilize the knowledge for sustainable development.

**PSO8:** Explore the knowledge of biotic and abiotic stress tolerance, plant microbe interaction and Integrate pest management for making the revolution in the agriculture.

**PSO9:** Enrich the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, and enhance communication skill.

**PSO10:** Apply the fruitful knowledge of plant sciences and plant resources for the sustainable development, betterment of society and environment by recognizing the ethical values.

**PSO11:** Become competent enough in various analytical and 21st century technical skills related to plant sciences for their exploration.

**PSO12:** Exhibit the potential to effectively accomplish tasks independently and as a member or leader in diverse teams, and in multidisciplinary settings.

**PSO13:** Employ critical thinking based problem solving and practical skills pertaining to botanical techniques and computational knowledge and apply strategies for environmental conservation.

**PSO14:** Demonstrate knowledge and scientific understanding to identify research problems, design experiments, use appropriate methodologies, analyze and interpret data and provide solutions. Exhibit organizational skills and the ability to manage time and resources.

## Course Outcome

**CO1:** 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.

**CO2:** Students will demonstrate the ability to implement and evaluate sustainable agricultural practices, including organic farming, integrated pest management, and the use of biofertilizers, to enhance soil health and crop yields while minimizing environmental impact.

**CO3:** 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.

**CO4:** Students will understand the role of plant-associated microbes in enhancing plant health and productivity, and be able to apply knowledge of beneficial microbes (e.g., *Rhizobium*, mycorrhizal fungi, PGPR) to improve soil fertility and plant growth in agricultural settings.

### F. Y. B. Sc. Botany [Semester - I]

#### Course Code – BOT-102-P

#### Course Title: **Practical Based on BOT-101-T**

#### Course outcome:

**CO.1:** Students will develop hands-on expertise in using essential laboratory instruments and equipment.

**CO2:** Students will gain practical knowledge in demonstrating and evaluating genetically modified crops and evaluate the agronomic performance, environmental impact, and socio-economic benefits of these genetically modified crops.

**CO3:** Students will acquire the ability to estimate soil organic carbon using methods like Walkley-Black or similar wet oxidation techniques and interpret the significance of these measurements in soil health and sustainable agriculture.

**CO4:** Students will demonstrate the ability to compost kitchen waste and convert it into biofertilizer, highlighting the principles of organic waste management and sustainable recycling.

**CO5:** Students will study the effect of Mycorrhiza on crop plant growth attributes and understand the role of various plant-associated microbes, such as Rhizobia, Mycorrhizal fungi, PGPR, endophytic fungi, and nitrogen-fixing cyanobacteria, in improving plant health and productivity.

**CO6:** Students will demonstrate post-harvest techniques, including the preparation, value addition and preservation of agricultural products.

**CO7:** Students will visit nurseries and plant-based industries to explore exotic ornamental plants and industry products and by-products, preparing visit reports to understand their applications in indoor gardening and economic importance.

**F. Y. B. Sc. Botany [Semester - I]**  
**Course Category – Open Elective / Generic Elective (OE)**  
**Course Code – OE-101-BOT-T**  
**Course Title: Agro-Tourism**

**CO-1:** Develop a comprehensive understanding of the concepts, principles, and practices of agro-tourism, including its history, development, and global trends.

**CO-2.** Gain knowledge of sustainable agricultural practices and their importance in the context of agro-tourism, including organic farming, biodiversity conservation, and soil health management.

**CO-3.** Acquire skills in planning, developing, and managing agro-tourism businesses, including business planning, marketing strategies, and customer relationship management.

**CO-4.** Understand the importance of cultural and community engagement in agro-tourism, including the preservation of local traditions, heritage, and culinary practices.

**CO-5.** Appreciate the role of agro-tourism in promoting environmental conservation, sustainable tourism practices, and responsible travel behavior.

**F. Y. B. Sc. Botany [Semester - II]**  
**Course Code - BOT-151-T**  
**Course Title: Basics of Plant Sciences**

**CO-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.

**CO-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.

**CO-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.

**CO-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.

**CO-5.** Students will demonstrate knowledge of the characteristics and importance of pteridophytes, gymnosperms, and angiosperms, including their ecological roles, economic significance, and contributions to ecosystems and human welfare.

**F. Y. B. Sc. Botany [Semester - II]**  
**Course Code - 152-BOT-P**  
**Course Title: Practical Based on BOT 151-BOT-T**

**C01:** Students will be able to identify and classify a wide range of plant species from different habitats, understanding their ecological roles and evolutionary relationships.

**C02.** 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.

**C03.** 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.

**C04.** Students will acquire the ability to investigate and describe the reproductive structures and life cycles of different plant groups, including algae, fungi, bryophytes, pteridophytes, gymnosperms, and angiosperms.

**C05.** Students will understand the morphology and function of inflorescences, flowers, fruits, and seeds, and will be able to identify key characteristics used in plant identification and classification.

**C06.** Students will gain hands-on experience in botanical fieldwork, including conducting botanical excursions, documenting vegetation, and studying plant diversity in natural habitats.

