Course Outcomes

B.Sc. Botany

1. Critically evaluation of ideas and arguments by collection relevant information about the plants, so as recognize the position of plant in the broad classification and phylogenetic level.
2. Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise in the field of Plant Identification.
3. Accurately interpretation of collected information and use taxonomical information to evaluate and formulate a position of plant in taxonomy.
4. Students will be able to apply the scientific method to questions in botany by formulating testable hypotheses, collecting data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses.
5. Students will be able to present scientific hypotheses and data both orally and in writing in the formats that are used by practicing scientists.
6. Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.
7. Students will be able to apply fundamental mathematical tools (statistics, calculus) and physical principles (physics, chemistry) to the analysis of relevant biological situations.
8. Students will be able to identify the major groups of organisms with an emphasis on plants and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics of plants, algae, and fungi that differentiate them from each other and from other forms of life.
9. Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth. They will be able to use specific examples to explicate how descent with modification has shaped plant morphology, physiology, and life history.
10. Students will be able to explain how Plants function at the level of the gene, genome, cell, tissue, Flower development. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and mode of life cycle followed by different forms of plants.
11. Students will be able to explain the ecological interconnectedness of life on earth by tracing energy and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.
12. Students will be able to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization within biology.

F. Y. B. Sc. Botany

BO. 111 Plant Life and Utilization I

1. Student will understand the diversity of plant kingdom.
2. Students can learn the character and classification of plats.
3. Students can learn and able to understand the economic importance of plants from different plant groups.
4. Student can learn and understand how evolution has occurred in plant kingdom.

BO 112 Plant Morphology and Anatomy

1. Student willable to understand industrial aspects of various plant resources and plant based industries.
2. Students will learn understand various techniques in floriculture and its advantages and limitations.
3. Student will understand the plant nursery technique and different methods of
4. Plant propagation other than the natural plant propagation.
5. Students will also learn understand the concept of plant tissue culture and its commercial significance.
6. Student will be able to understand agriculture based industries, mushroom cultivation and its commercial significance.

BO 121 Plant Life and Utilization II

1. Student will learn and able to understand two important branches of botany i.e. morphology and anatomy.
2. Student will learn and able to understand morphological characters of vegetative and reproductive plant parts.
3. Student will learn and able to understand anatomy of wood, types of tissues of plants their distribution, location and functions.
4. Student will learn and able to understand the internal organization of root, stem and leaf of angiospermic plants

BO 122 Principles of Plant Science

1. Student will learn and able to understand concept scope and commercial significance of 'Biofuel'
2. Student will learn and able to understand Integrated Pest Management (IPM), biopesticides its type and commercial significance of it
3. Student will learn and able to understand Industrial mycology and commercial significance of it.
4. Student will learn and able to understand concept need of a biofertilizers industry, types of a biofertilizers and its commercial significance.
5. Student will learn and able to understand concepts of pharmaceuticals, neutraceuticals, cosmeceuticals and its commercial significance

S. Y. B. Sc. Botany

BO-231: Taxonomy of Angiosperms and Plant Ecology

1. Student will learn about Plant taxonomy, their system of classification and literature.
2. Student able to understand botanical Nomenclature.
3. Students will learn various plant families' w.r.t. systematic position, features, and their economic importance.
4. Able to understand ecology concept, ecosystems and ecological pyramids as well as ecological grouping of various plants.

BO-232: Plant Physiology

1. Students able to understand the concept, history, applications of plant physiology.
2. Able to understand water absorption, ascent of sap, transpiration process.
3. Students will learn nitrogen metabolism, plant growth regulators seed dormancy physiology of flowering plants.

BO-241: Plant Anatomy and Embryology

1. Able to understand concept and scope of plant anatomy as well as types of various tissues.
2. Able to understand the concept and scope of plant embryology.
3. Students will learn micro and mega sporangium, fertilization as well as embryo formation w.r.t its types.

BO-242: Plant Biotechnology

1. Able to understand concept and scope of pant biotechnology.
2. Students will learn enzyme technology, fermentation technology, single cell protein, as well as environmental biotechnology. Able to understand plant genetic engineering, methods of gene transfer in plants.
3. Students will learn and able to understand the application of genetic engineering in crop improvement.
4. Students will learn Nano-biotechnology.

T. Y. B. Sc. Botany

BO 351 Algae and Fungi

1. Students learn the general characters, economic importance and classification of Algae & Fungi
2. Student can learn the taxonomic position of different plant groups.
3. Students able to understand the life cycles of various plant groups.
4. Students will learn the reproduction of these plant groups.
5. Student will learn economic importance and commercial applications of these plant groups.

BO 352 Archegoniate

1. Students learn the general characters, economic importance and classification of Bryophytes and Pteridophytes.
2. Student can learn the taxonomic position of different plant groups.
3. Students able to understand the life cycles of various plant groups.
4. Students will learn the reproduction of these plant groups.
5. Student will learn economic importance and commercial applications of these plant groups.

BO 353 Spermatophyta and Paleobotany

1. Students will learn the Characters, Classification and economic importance of various spermatophytic plant groups (Gymnosperms and Angiosperms).
2. Student will learn the life cycles w.r.t. distribution, morphology, anatomy, reproduction of Gymnospermic plants.
3. Student able to understand the origin, classification of Angiospermic Plants.
4. Students able to understand and study the various plant families with the help of various plant classification systems
5. Student will learn about the process of fossil formation, classification of fossils.
6. Student will lean and able to understands the various fossil groups.

BO 354 Plant Ecology and Biodiversity.

1. Students able to understand the concept of Ecology, its relation with living world.
2. Students will learn about various Ecosystems. Students will learn and able to understand environmental crisis, audit, impact assessment as well as remote sensing areas.
3. Students able to understand the concept, characters, scope and importance of biodiversity.
4. Student will able to understand the biodiversity loss and its conservation.

BO 355 Cell and Molecular Biology

1. Students learn the brief history of Cell as well as chemical organization of cell. Student able to understands the morphology, Ultrastructure and functions of various cell organelles.
2. Students able to understand the history and evidences of molecular biology.
3. Student will learn and able to learn the characters, nature of genetic material (DNA, RNA) Students learn DNA replication, DNA damage and repair, Transcription, Translation methods.

BO 356 Genetics

1. Students will learn the concept, applications and branches of genetics.
2. Students will learn and able to understand the concept of Mendelism.
3. Students will understand interactions of various genes, multiple alleles and linkage and crossing over concepts.
4. Student learn the various chromosome Changes, Euploidy and aneuploidy terms.

5. Student will learn about evidence and evolution of genetics.

BO 3510 Medicinal Botany

1. Students will learn about Pharmacognosy w.r.t. history and scope Students be able to identify medicinal plants (family/genus-level)
2. Identify by name and understand the effects of plant chemical constituents on humans.
3. Students able to understand the concept ethanobotany and economic botany w.r.t. its scope and importance.

BO 3511 Plant Diversity and Human Health

1. Students able to understand the concept, characters, scope and importance of biodiversity.
2. Student will able to understand the biodiversity loss and its conservation.
3. Students will understand various organizations associated with biodiversity

BO 361 Plant Physiology and Metabolism

1. Students able to understand the concept, history, applications of plant physiology.
2. Able to understand Mineral nutrition, photosynthesis and respiration process.
3. Students will learn stomatal biology, translocation and plant growth regulators and physiology of flowering plants.

BO 362 Biochemistry

1. Student will able to understand all type of biomolecules and its relevance with respect to origin of life.
2. Students will able to explain/describe the synthesis of carbohydrates proteins, lipids, nucleic acids, and their role in metabolic pathways.
3. Student will be able to describe the basic structure, function, properties and their mode of action of enzymes with their classification.
4. Students understand the importance of specific vitamins to the functioning of the life.
5. Student will able to demonstrate and understand biochemistry principles, including topics specific to fundamental of biochemistry.

BO 363 Plant Pathology

1. Students will learn the history as well as various terms in plant pathology.
2. Students able to understand the process of dieses development and its defense mechanism.
3. Students will learn various types of plant dieses like fungal, bacterial, Nematodal, mycoplasmic and viral.
4. Students will learn about transgenic plants.

BO 364 Evolution and population genetics

1. Students will know about various concepts of population genetics and how they integrate that knowledge to explain the theories of Evolution.

2. Student will understand how populations evolve in response to demography and natural selection, and understanding and interpreting genetic diversity and variation.
3. Student able to understand evolutionary biology and its relation to population dynamics.
4. Student will learn about the evidences of evolution and biogeographically relations with respect to speciation.
5. Student will demonstrate knowledge of relationship between population genetics and evolution.

BO 365 Advanced Plant Biotechnology

1. Students able to understand the history, significance and achievements of plant Biotechnology.
2. The students will develop fundamental knowledge in Plant Molecular Biotechnology and its application in laboratory and industry settings.
3. The laboratory teaching of this course will provide students an opportunity to get hands on training with some of the most basic, yet widely utilized techniques in Micropropagation, plant molecular diagnostics, DNA structure and Gene/Genome organization.
4. The students will become familiar with sterile techniques, media preparation, DNA extraction methods, gene isolation and nucleotide sequence analysis,
5. Students will understand the terms Bioinformatics, Genomics and
6. Proteomics w.r.t its classification and functions.

BO 3610 Nursery and Gardening Management

1. Student will identify a plant's needs and provide basic maintenance and care.
2. Student will know the basic and importance skill of nursery and gardening management. Student will understand cultural practice and implementation of nursery practices which helps to improve seedling quality.
3. Student will able to apply basic business principle to nursery and gardening management.

BO 3611 Biofertilizers

1. Student will understand what types of microbes constitute potential biofertilizers candidates (nitrogen fixers, phosphate solubilizes, plant growth hormone producers, siderophore producers, symbionts, endophytes)
2. Student will be able to analyze factors affecting and conditions required for improvement of crop productivity viz. soil type, soil composition, climatic conditions, irrigation and fertilizer/ nutrient requirements. Student will understand the importance and methodology for application of biofertilizers in the field to yield higher crop productivity in a sustainable manner.
3. Students will understand sustainable practices for of application biofertilizers, organic manure and vermicompost.
4. Student will understand commercial production of biofertilizers and marketing for economic growth.