

Course Outcome M.Sc., Botany

CORE COURSE-I-PLANT DIVERSITY (ALGAE, FUNGI, LICHENS, BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY)

Learning Outcome:

- ➔ Gain adequate knowledge on comparative account of various algal divisions
- ➔ Study and impart knowledge about the occurrence, distribution, structure and life history of lower plants such as algae, fungi, lichens, bryophytes, pteridophytes and gymnosperms
- ➔ Learn the phylogeny and evolutionary concepts in lower group of organisms
- ➔ Know about role of fossil in oil exploration and coal excavation, study of paleopalynology.

CORE COURSE - II – METHODS IN BOTANY

Learning outcome:

- ➔ Learn about basics of biosafety and good lab practices like safe chemical handling, Hazardous wastes management, Safe and proper use of lab equipments.
- ➔ Learn about the principles of various basic and advanced microscopy
- ➔ Know about Camera lucida, Digital cameras, photomicrography and image analysis.
- ➔ Gain knowledge on methods of molecular separation and characterization
- ➔ Familiarize with floristic survey methods like RI, IVs, QUVs & CI

CORE COURSE - III – MICROBIOLOGY AND PLANT PATHOLOGY

Learning outcome:

- ➔ Learn about classification, characteristics, ultra structure of Prokaryotic and Eukaryotic microbes
- ➔ Know about organisms and causal factor responsible for plant diseases & methods of studying plant diseases
- ➔ Familiarize with some common plant diseases of India
- ➔ Gain knowledge on Host parasite interaction process

CORE COURSE - IV – CELL BIOLOGY AND BIOPHYSICAL CHEMISTRY

Learning outcome:

- ➔ Learn about structural organization and function of intracellular organelles
- ➔ Gain knowledge on the organization of genes and chromosomes
- ➔ Study about the structure of atoms, molecules and chemical bonds & Composition, structure and function of biomolecules
- ➔ Gain knowledge on the principles of biophysical chemistry & Bioenergetics

- ➔ Familiarize on conformation studies of proteins & nucleic acids

CORE COURSE - V – PRACTICAL – I (Covering Core Courses I, II, III & IV)

Outcome

- ➔ Familiarize with the external and internal structure of lower group organism
- ➔ Learn the microscopic technique
- ➔ Learn the survey techniques for evaluating the values of medicinal plants
- ➔ Know about the cellular drawing
- ➔ Gain knowledge on plant pathological diseases
- ➔ Gain knowledge on various biological methods of analysis

ELECTIVE COURSE - I (A) – MUSHROOM CULTIVATION

Outcome

- ➔ Know about nutritional and medicinal value of edible mushrooms & Poisonous mushrooms
- ➔ Learn about the Cultivation techniques of White button mushroom and Oyster mushroom
- ➔ Gain knowledge on the present status of mushroom industry in India.

ELECTIVE COURSE - I (B) – ETHNOBOTANY

Outcome:

- ➔ Bring out the relevance of ethnobotany in the present context
- ➔ Know about the major and minor ethnic groups or Tribals of India, and their life styles.
- ➔ Learn about the Methodology of Ethnobotanical studies
- ➔ Gain knowledge on the role of Role of ethnobotany in modern Medicine
- ➔ Get awareness on the conservation practices of medicinal plants

CORE COURSE - VI – TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY

Outcome

- ➔ Learn about system of classification with merits and demerits
- ➔ Familiarize with the methods of plant Identification
- ➔ Know about the National and International Herbaria and Botanical gardens

- ➔ Study of the some families and their economic importance

CORE COURSE - VII – GENETICS AND EVOLUTION

Outcome

- ➔ Learn about Mendelian principles
- ➔ Know about gene mapping methods & Extra chromosomal inheritance
- ➔ Familiarize about Evolution & Emergence of evolutionary thoughts
- ➔ Gain knowledge on Population genetics

CORE COURSE -VIII – FUNDAMENTAL PROCESSES, CELL COMMUNICATION AND CELL SIGNALING

Outcome

- ➔ Learn about the DNA damage and repair mechanisms, RNA synthesis and processing
- ➔ Know about Protein synthesis and processing, Control of gene expression
- ➔ Gain knowledge on Cellular communication & Cell signaling
- ➔ Learn about Innate and adaptive immune system of Cells
- ➔ Understand about the immune response during bacterial (tuberculosis), parasitic (malaria) and viral (HIV) infections

CORE COURSE - IX – PRACTICAL – II (Covering Core Courses VI, VII & VIII)

Outcome

- ➔ Study of economically useful plants
- ➔ Learn to solve various genetic problems
- ➔ Know to construct Chromosome mapping
- ➔ Solve Problems from population genetics – Hardy Weinberg law
- ➔ Institutional visit to BSI and a field study and plant collection for herbarium

ELECTIVE COURSE - II (A) – HERBAL BOTANY

Outcome

- ➔ Know about history and relevance of herbal drugs in Indian system of medicine
- ➔ Learn the macroscopic and microscopic characters, chemical constituents, adulterants, therapeutical and pharmaceutical uses of medicinal plants
- ➔ Understand the techniques for drug evaluation (Chemical, Physical and Biological), Phytochemical investigations, standardization and quality control of herbal drugs
- ➔ Know the technique of medicinal gardening - Cultivation practices, marketing and utilization of selected medicinal plants

ELECTIVE COURSE - II (B) – ORGANIC AGRICULTURE

Course outcome

- ➔ Learn about land and water management
- ➔ Learn various aspects of organic farming systems
- ➔ Know about the significance of green Manuring & Biofertilisers
- ➔ Learn the technique of composting and vermitechnology
- ➔ Familiarize on Pest, insect, weed, disease, crop residue management using biological means

ELECTIVE COURSE - III (A) – FOOD PROCESSING TECHNOLOGY

Course outcome

- ➔ Concept of food and nutrients and energy value of food
- ➔ Understand the problems of Food adulteration
- ➔ Learn about Therapeutic diets & Diet planning
- ➔ Learn the methods in food processing – thermal processing, refrigeration, freezing etc.
- ➔ Learn about food Quality & food standards

ELECTIVE COURSE - III (B) – WOOD SCIENCE

Course outcome

- ➔ Learn about composition and cell types of wood
- ➔ Know about growth rings, annual rings, dendro-chrono-logy.
- ➔ Know about the commercial value of timber, fuel wood, pulp and paper making, match –stick wood, plywood and economic importance of pulp and wood species.

CORE COURSE - X – PLANT PHYSIOLOGY

Course outcome

- ➔ Know about the requirement of mineral nutrition for plant growth
- ➔ Understand the process of Photosynthesis, Respiration and Nitrogen metabolism
- ➔ Learn about Sensory photobiology
- ➔ Know about the Plant Growth hormones (Auxins, Gibberellins. Cytokinins, Ethylene)
- ➔ Understand the biosynthesis of terpenes, phenols and nitrogenous compounds
- ➔ Stress physiology – Responses of plants to biotic and abiotic stresses

CORE COURSE - XI – DEVELOPMENTAL BIOLOGY AND PLANT BIOTECHNOLOGY

Course outcome

- ➔ Learn the micro and megasporogenesis
- ➔ Know about the morphogenesis and organogenesis in plants
- ➔ Learn the specific and non-specific methods of gene transfer
- ➔ Recombinant DNA technology
- ➔ Applications of Biotechnology in Plant, Animal and Human welfare
- ➔ Biotechnology and IPR, Biosafety, Biopiracy, Bioterrorism and Bioethics.

CORE COURSE - XII – PLANT ECOLOGY

Course outcome

- ➔ Approaches to the study of Ecology (Autecology, Synecology and Genecology)
- ➔ Population Ecology - concept of metapopulation
- ➔ Community Ecology - General account on Forests of Tamilnadu
- ➔ Principles of Toxicology and types of Toxins, sources, metabolism and Biological monitoring

ELECTIVE COURSE - IV (B) – HORTICULTURE AND LANDSCAPING

Course outcome

- ➔ Learn the importance of horticulture – career and occupational opportunities
- ➔ Know about hydroponics and its importance
- ➔ Learn the techniques of gardening - Types, Methods & Tools
- ➔ Learn about Olericulture - Cultivation of commercial flower crops
- ➔ Learn the techniques in Pomology - Cultivation of important fruit crops & tree species

ELECTIVE COURSE- V (A) – COMMERCIAL PLANT TISSUE CULTURE

Course outcome

- ➔ Understand the history, Scope and Concepts in plant tissue culture
- ➔ Learn the Techniques in Commercial plant tissue culture

- ➔ Understand the process of somatic embryogenesis
- ➔ Know about the significance of secondary metabolites in tissue culture
- ➔ Know about the application of tissue culture in forestry, horticulture, agriculture and pharmaceutical industry.

ELECTIVE COURSE - V (B) – PLANT BREEDING

Course outcome

- ➔ Know in detail about breeding systems
- ➔ Learn the techniques of Hybridization
- ➔ Learn about the selection methods for self pollinated, cross pollinated plants
- ➔ Understand the role of mutations in plant breeding

ELECTIVE COURSE - V (C) – RESEARCH METHODOLOGY, BIOINFORMATICS, BEHAVIOUR AND TEACHING SKILLS

Course outcome

- ➔ Learn the planning and preparing thesis
- ➔ Learn the methods of Biostatistics and its application in biology
- ➔ Know about the bioinformatic concepts
- ➔ Learn the approaches and methods in study of behavior
- ➔ Gain good knowledge on teaching skills

CORE COURSE – XIV - PROJECT WORK

Each candidate should take up a Project Work; submit Project Report at the end of the second year. The candidate concerned will have to defend his project work in a open Viva– Voce examination.

