

M.Sc. - BOTANY

PROGRAMME OUTCOMES

- To create interest in the students to pursue research on Plant Sciences.
- To use research-based knowledge and modern technology to develop herbal products.
- To gain knowledge on primitive and advanced characters based on morphology and molecular characters and appreciate the evolutionary relationship.
- To understand, comprehend and appreciate plant diversity, its conservation, sustainable utilization and its application for human welfare.
- To foster interaction of students regarding conservation of endemic plants.
- To inculcate and develop entrepreneurial skills based on quality education in herbal drug research and herbal formulations.
- The students would acquire the clear knowledge in different tools and techniques used in research work cutting-edge technologies that are currently used in the Botany.
- The knowledge of analytical techniques would help the students for choosing a carrier in pharmaceutical industry and allied branches.
- Students will be equipped to design/conduct experiments and analysing it for their independent research projects and also preparing research reports.

COURSE OUTCOMES

I SEMESTER

MS1BODNV1C-01: Diversity of Non-Vascular Plants Part-I

- To differentiate the various microbes and their effects on plants and humans.
- To learn the classification of the lower plant forms and also their structures and life cycles.
- To understand the gene regulation in the cells.
- To decipher the diseases of plants and means to tackle them.
- To learn the biochemical functioning of the cells.
- To understand the cell components of simplest life forms.

MS1BODNV2C-02: Diversity of Non-Vascular Plants Part II

- To study a few forms of Bryophytes and their economic importance.
- To understand the characteristics and phylogeny of the group Bryophyta and their classification.
- To understand the characteristics of the primitive group of algae, the cyanobacteria.
- To understand the features of algae and their classification.
- To study a few representatives of some of the algal classes.
- To understand the significance of this group of thallophyte- the algae.

MS1BODVPC-03: Diversity of Vascular Plants (Pteridophytes and Gymnosperms) and Palaeobotany

- The student gains knowledge about the diversity among the initial group of vascular plants.
- Will be able to understand the general characteristics and classification of the different members of pteridophytes which are the first group of vascular plants.
- Comprehend the general characters of gymnosperms and the classification of the different members of the group.
- Analyse the detailed lifecycle pattern of selected members of pteridophytes and gymnosperms.
- To appreciate the evolutionary significance and distribution of these plants.
- Able to connect the similarities and realize the importance of the various fossil forms of plants.

MS1BOMPAC-04: Medicinal plants and their application

- To understand the classification & analysis of poisonous and allergic plants.
- Discuss the remedial plants for different human and plant diseases.
- Appreciate the importance of medicinal plants, its database at the national and international level, commercial importance and concept of ethnobotany and discuss the tribes of India.
- To understand the history of medicinal plants, concept of AYUSH and Bach's flower remedy.

- To gain knowledge on psychoactive plants, their classification and uses.
- Discuss the sources of marine drugs, natural pesticides and antibiotics.

II SEMESTER

MS2BOAEC – 05: Anatomy and Embryology

- To understand the development of reproductive organs of a plant and get knowledge on endosperm and its relationship with embryo development.
- Apply skills in apomixis and polyembryony technique.
- Understand the origin of different meristems.
- Students would be able to understand the structure of vascular tissues and differentiate anatomically between monocot and dicot species and also the structural and developmental aspects of various cells and tissues.
- To comprehend the role of anatomy in food adulteration and forensic studies.
- Learn the anatomical details of various plants adapted to different environmental conditions.

MS2BOEPC – 06: Ecology and Phytogeography

- Gain knowledge on the different methods used to study plant geography.
- Foster interaction of students on the impact of pollution on health.
- Realize the need for the use of non-conventional sources of energy.
- Understand the role played by abiotic and biotic factors in maintaining homeostasis in different ecosystems.
- Instil a concern for maintaining a clean environment and help in sustainable solutions.
- Use research-based knowledge and modern technology to provide baseline data for biodiversity assessment and to conserve natural resources.

MS2BOPPC – 07: Plant Physiology

- Gain knowledge about the diversity in structure, classification and function of the building blocks of life like carbohydrates, proteins and enzymes.
- Able to analyse the mechanism by which plants are taking up water and minerals and using it for their nutrition.
- The students will gain knowledge about photosynthesis which is the process by which plants prepares food in the presence of light.
- Will know how the plants translocate the food that is prepared primarily in the leaves to the different parts of the plant.
- Appreciate the different types of respiration in plants.
- Understand the importance of the role of different plant growth regulators and their mode of action in plants.
- To distinguish between the different plant movements.

MS2BOHWIC – 08: Herbal Wealth I

- Appreciate the importance of food flavours and plant sweeteners.
- Understand the need and importance of raw drug repository.

- Get acquainted with information on the use of common medicinal plants from their herbal garden to meet their primary health care needs.
- Gain knowledge on cultivation, extraction of active principles and quality control of some important medicinal plants.
- Encourage students to actively participate in maintaining a home herbal garden.
- Provide data for assessment of conservation status of a species and cataloguing of rare and endangered species for conservation programmes.

III SEMESTER

MS3BOTOAC-01: Taxonomy of Angiosperms

- Inculcates an appreciation for fundamentals of Angiosperm systematics.
- Appreciate the basic concepts and principles of plant systematics.
- Introduce to adequate characterization of plants along with correct identification.
- Introduces the students to identification, nomenclature and classification of plants.
- Throws insight into new facts and methods to approach in taxonomy.
- Brings awareness on the importance of taxonomic relationship in plant systematic studies.

MS3BOCPBEC-02: Cytogenetics, Plant Breeding and Evolution

- The students will be able to understand difference between euchromatin and heterochromatin and aberrations in chromosomes and learn the different processes involved in the cell division.
- Able to gain knowledge on the structure and functions of different cell organelles.
- Successfully able to understand the formation and development of cell through cell cycle.
- Able to understand the process of mutations and protein synthesis in organisms.
- Comprehend the role of genes in transporting information and variations in the organisms.
- Able to get knowledge about hybridization technique and apply in the improvement of agricultural and horticultural crops and Knowledge about population genetics which helps to work on gene level.

MS3BOPC-03: Pharmacognosy

- To gain knowledge on the classification of plant drugs and secondary metabolites present in some common medicinal plants which yield drugs.
- Understand the different methods of extraction of phytopharmaceuticals and types of herbal preparations.
- Get knowledge on aromatic plants and aromatherapy
- Insight on safety and efficacy of plant drugs.
- Gain knowledge on evaluation of natural products and significance of pharmacopoeia standards.
- Get acquainted with protocol for preparation of pharmaceuticals and Plant fibres used in surgical dressing.

MS3BOAPC-04: Applied Phycology

- Analyse the role of algae as nitrogen fertilizer and nutrient supplement.

- Understand the mechanism of immobilization in algae.
- Assess the water quality, cultivation methods of algae.
- Understand the different aspects of toxins and biochemical in algae.
- Gain knowledge on distribution and ecology of algae.
- Understand the tissue culture and biotechnology methods in algae.

IV SEMESTER

MBOT4APPEC-05: Advanced Plant Physiology

- Will be able to appreciate the various metabolic activities happening in plants.
- Gain knowledge about the importance of secondary metabolites in plants.
- Learn about the significance of dormancy and analyse the methods to break it and the various mechanisms involved in it.
- Gain competence in knowing the advanced aspects of plant physiology
- Realize the importance of the effect of stress on plants and also understands the signalling pathways associated with it.

MBOT4BMBEC-06: Biotechnology and Molecular Biology

- Gain knowledge on importance of morphogenesis in plants.
- Analyse the transformation and fermentation techniques in the field of industry.
- Understand DNA replication and mechanism.
- Will be able to understand the tools and techniques in genetic engineering
- Gain knowledge on the genomics and proteomics
- Learn the basic concepts in Bioinformatics.

MBOT4TTPSEC- 07: Tools and Techniques in Plant Science

- Acquire the clear knowledge in different tools and techniques used in research work cutting-edge technologies that are currently used in the Botany.
- Detail understanding of the working principle and applications of the instruments for identification, separation and purification of active principles in plants.
- The knowledge of analytical techniques would help the students for choosing a carrier in pharmaceutical industry, research and allied industries.
- Students will be equipped to design/conduct experiments and analysing it for their independent research projects and also preparing research reports.
- Acquaint with different tools and techniques used in research work, basic computer skills necessary for conducting research and numerical skills necessary to carry out research.