

DEPARTMENT OF BOTANY

B. Sc. Botany

Programme Outcomes:

Knowledge outcomes:

After completing B.Sc. Botany Programme students will be able to:

- PO1: demonstrate and apply the fundamental knowledge of the basic principles of major fields of plant sciences;
- PO2: Apply knowledge to solve the issues related to plant sciences with the help of computer technology
- PO3: Apply knowledge for conservation of endemic and endangered plant species

Skill outcomes:

After completing B.Sc. Botany Programme students will be able to:

- PO4: collaborate effectively on team-oriented projects in the field of life sciences.
- PO5: communicate scientific information in a clear and concise manner both orally and in writing
- PO6: explain Biodiversity, climate change and plant pathology.
- PO7: apply Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences
- PO8: apply knowledge of Medicinal and Economic botany in day to day life.
- PO9: apply the knowledge to develop the sustainable and eco-friendly technology in Industrial Botany

Generic outcomes:

Students will

- PO10: Have developed their critical reasoning, judgment and communication skills.
- PO11: Augment the recent developments in the field of Molecular and cell Biology, Biotechnology, Computational Botany and relevant fields of research and development.
- PO12: Enhance the scientific temper among the students so that to develop a research culture and Implementation the policies to tackle the burning issues at global and local level.

Programme Specific Outcomes

- PSO1: Students get acquainted with techniques which are used in industrially important plant products.
- PSO2: Students get conceptual knowledge of entrepreneurships in mushroom cultivation, Biofertilizers and Biopesticides production, plant tissue culture laboratories, Enzyme production, Fermentation, Single cell proteins etc.
- PSO3: Understand the diversity of the plants and structural organization of plants like monocots and Dicot.
- PSO4: Understand plant structures in the context of physiological and biochemical functions of plants.
- PSO5: Students will be well versed with various mechanisms of GMOs and molecular techniques.

Course Outcomes

F. Y. B.Sc. Botany (CBCS pattern 2019)

Semester First

Course 111: Plant Life and Utilization I

After successfully completing this course, students will be able to:

- CO1: Understand outline cryptogams and phanerogams.
- CO2: Define general characters of cryptogams and Phanerogams.
- CO3: Classify the members of plants groups in to cryptogams.
- CO4: Describe the Life cycle of plant forms of cryptogams.
- CO5: Identify lichens and other cryptogams and their economic values.

Course 112: Plant Morphology and Anatomy

After successfully completing this course, students will be able to:

- CO1: Discuss morphology of vegetative and reproductive parts of plants.
- CO2: Describe anatomy of Monocot and Dicot plants.
- CO3: Identity and explain types of plant tissues.

Course 113: Practicals Based on BO111 and BO112

After successfully completing this course, students will be able to:

- CO1: Recognize the live forms of Cryptogamic and Phanerogamic plants.
- CO2: Analyse and describe botanical concepts, including plant anatomy.
- CO3: Illustrate the floral parts, fruits, leaves and their types.
- CO4: Identify industrial applications of plants resources for welfare of human being and their techniques.
- CO5: Categorize the plants into Monocot and Dicot on the basis of anatomical characters.
- CO6: Identity and explain types of plant tissues

Semester Second

Course 121: Plant Life and Utilization II

After successfully completing this course, students will be able to:

- CO1: Understand outline of higher cryptogams and phanerogams.
- CO2: Define general characters of higher cryptogams and Phanerogams.
- CO3: Classify the members of plants groups in to cryptogams and phanerogams.
- CO4: Describe the Life cycle of plant forms.
- CO5: Identify the vascular plants and their economic values.

Course 122: Principles of Plant Sciences

After successfully completing this course, students will be able to:

- CO1: Define the terminologies: Plant water relations, Growth, Transpiration, Ascent of Sap and Plant growth regulators.
- CO2: Explain processes of mineral nutrition, absorption of water, ascent of sap, mechanisms of water loss from plants.
- CO3: Demonstrate processes of imbibition, Osmosis, Diffusion and Plasmolysis.
- CO4: Understand the cell organization, cell division and cellular compartmentation of working of a plant cell.
- CO5: Understand the molecular structures and interactions of DNA & RNA and their sustenance in cellular system.

Course 123: Practicals Based on BO121 and BO122

After successfully completing this course, students will be able to:

- CO1: Understand the physiological processes by experimentation.
- CO2: Estimate and amount of pigments in the plant tissues.
- CO3: Study and understand morphology and anatomy of examples of different plant groups.
- CO4: Understand organization of DNA within cell.
- CO5: Understand the steps in cellular divisions in vegetative and reproductive cells.
- CO6: Identity and explain types of plant tissues.
- CO7: Understand genetic exchange between the non sister chromatids during formation of gametes.

S. Y. B.Sc. Botany (CBCS pattern 2019)

Semester Third

BO 231: Taxonomy of Angiosperms and plant Ecology

After successfully completing this course, students will be able to:

- CO1: Define plant taxonomy and taxonomic related terminologies.
- CO2: Explain classification systems of angiosperms.
- CO3: Use required data sources for classification of angiosperms.
- CO4: Determine Botanical Nomenclature of angiosperm plants.
- CO5: Recognize ecological plant groups with examples.
- CO6: Explain plant families with examples.
- CO7: Apply proper herbarium methods - collecting, mounting, and keeping records.

BO 232: Plant Physiology

After successfully completing this course, students will be able to:

- CO1: Define the terminologies: Plant water relations, Growth, Transpiration, Ascent of Sap, Plant growth regulators and Nitrogen metabolism.
- CO2: Explain processes of mineral nutrition, absorption of water, ascent of sap, mechanisms of water loss from plants.
- CO3: Demonstrate processes imbibition, Osmosis, Diffusion and Plasmolysis, and Plant growth by arc auxanometer, Bose Cresco graph.
- CO4: Describe Plant growth regulators and their types.
- CO5: Discuss nitrogen metabolism in plants
- CO6: Explain mechanisms and application of photoperiodism
- CO7: Explain Mechanism of vernalisation.
- CO8: Classify the plants based on Photoperiodism.

BO 233: Practical based on BO 231 and BO 232

After successfully completing this course, students will be able to:

- CO1: Define the botanical terms to identify the plant families.
- CO2: Identify the plant families.
- CO3: Draw the floral diagram of plants belonging to specific families.
- CO4: Understand Vegetation structure in an ecosystem.
- CO5: Understand and use different ecological instruments.
- CO6: Understand morphological and anatomical adaptations in the plants as per ecological groups.
- CO7: Estimate DPD
- CO8: Describe the Transpiration process.

Semester Fourth

BO 241: Plant Anatomy & Embryology

After successfully completing this course, students will be able to:

- CO1: Define terms related to plant Anatomy, Embryology.
- CO2: Describe various tissue systems in plants like epidermal, mechanical and vascular.
- CO3: Interpret the Principles involved in distribution of mechanical tissues.
- CO4: Explain the process of normal and abnormal secondary growth in plants.
- CO5: Differentiate between normal and abnormal secondary growth.
- CO6: Identify the process of pollination and fertilization.
- CO7: Discuss the Structure and development process of male and female gametophyte
- CO8: Illustrate the types of microspore, ovules, embryo, seed and endosperm.

BO 242: Plant Biotechnology

After successfully completing this course, students will be able to:

- CO1: Define the terminologies related to plant biotechnology.
- CO2: Describe the fermentation process.
- CO3: Explain enzyme technology and their industrial scale production.
- CO4: Interpret the production of Single cell proteins.
- CO5: Illustrate the gene structure and organization in prokaryotic and eukaryotic cells.
- CO6: Describe General method of gene isolation from the plants and their application.
- CO7: Explain Methods of gene, transfer in plants.
- CO8: Illustrate Application of plant genetic engineering and Nano-biotechnology in crop improvement.

BO 243: Practical based on BO 241 and BO 242

After successfully completing this course, students will be able to:

- CO1: Define the anatomical terms to identify the plant tissue and their organization.
- CO2: Identify the tissue systems in plant organs.
- CO3: Understand types of normal and abnormal secondary growth.
- CO4: Understand concept of tissue culture and different steps involved in it.
- CO5: Demonstrate the Electrophoresis and its use.
- CO6: Understand types of ovules and embryos.