

B. Sc. General in Botany

Programme Specific Outcome (PSO)

After completing this course outcomes are as follows:-

- Students will be able to know the discovery, structural features, replication processes of microbes, differences between lytic and lysogenic cycles, structural features of DNA(T phage) virus and RNA (TMV) virus , economic importance of **Virus**.
- Students will be able to know the discovery, general characteristics, reproduction techniques and economic importance of **Bacteria**.
- Students are able to know the salient features, ecology, distribution, classification, thallus organization, morphology , life cycle and economic importance of **Algae**.
- Students will be able to know the salient features, ecology and significance , distribution, classification, thallus organization, nutrition, reproduction and economic importance of **Fungi**.
- Students will be able to know the unifying features of **Arhegoniates** and their alternation of generation.
- Students will be able to know the general characteristic, classification (upto family), morphology, anatomy, reproduction process, ecological and economical importance of **Bryophytes, Pteridophytes and Gymnosperms**.

Course Outcome (CO)

BOTGDS 01P(C1P):

Biodiversity (Microbiology,Algae,Fungi and Arhegoniate)Practical

After completion of this practical course students will be able to learn and understand the following things:-

- Models of viruses(TMV and T-Phage), Line drawing of lytic and lysogeniccycle.
- Temporary and permanent slide preparation , Gram staining process ofbacterium.
- Vegetative and reproductive structure of different species of algae andfungi.
- Study of Herbarium of some selected diseased plant specimens (infected Barberry leaves, black stem rust of wheat) and study the causativeagent.
- Mycorrhiza- its types andstructures

Morphology, T.S. and L.S. of reproductive structures by study of permanent slide of Marchantia, Funaria, Selaginella, Equisetum, Pteris, Cycas,Pinus

BOTGDS -1B(C2T): Plant Ecology and Taxonomy

After completing this course outcomes are as follows:-

- Understanding the role of different Ecological factors like Soil, Water, light and temperature; Origin, composition of soil profile; precipitation types ,state of water in the environment, optimal-limiting factor of light andtemperature.
- Learning the Adaptive feature of Hydrophytes andXerophytes.
- Concept of Plant community, its characteristics, Ecotone, Edge Effect,succession.
- Knowing about different phytogeographical zones of india, endemic plant species, hotspots.
- Concept of Ecosystem, food web, food chain, biogeochemicalcycles.
- Learn the types of classifications- artificial, natural andphylogenetic.
- Gain knowledge about ICN , botanical nomenclature, its rules andlimitations.
- Brief study of Herbariumtechniques.
- Understanding the Taxonomic evidences from molecular , numerical andchemicals.
- Concept of taxonomic identification ,morphological characters, family, botanical name.

BOTGDS-1B(C2P):

Plant Ecology and Taxonomy Practical

After completion of this practical course, students will be able to learn and understand the following things:-

- Study of instruments like thermometer, anemometer, hygrometer etc.
- Concept of pH determination technique and rapid testtechnique.
- Study of morphological adaptation of hydrophytes andxerophytes.
- Principle and technique of determination of minimal quadrat size.
- Gain knowledge about v.s. of flower, floral diagram ,floral formula, ovary structure, systematic position of differentfamilies.

BOTGDS(C3T): Plant Anatomy and Embryology

After completing this course outcomes are as follows:-

- Idea about root , shoot, apical meristems, simple and complex tissue.
- Concept of vascular cambium, heart wood and sap wood, secondary growth.
- Understanding the structure of root, stem & leaf of dicot and monocot.
- Learn about the structural organization of flower.
- Learn about the double fertilization and their significance
- Know about the structure and development of dicot and monocot embryos; apomixis and polyembryony.

BOTGDS -1C(C3P):

Plant Anatomy and Embryology Practical

After completion of this practical course students will be able to learn and understand the following things:-

- Identifying features of Parenchyma , collenchymas and sclerenchyma
- Main characteristics of both monocot and dicot stem and root
- Structure of anther, tapetum
- Types of ovules; types of embryo sac
- Pollination types and dispersal mechanism
- Adaptive anatomy of Xerophytes and hydrophytes

Dissection technique from embryo/endosperm in developing seed

BOTGDS1D(C4T): Plant physiology and Metabolism

After completing this course outcomes are as follows:-

- Concept of Water potential ; significance of Transpiration, Root Pressure , Guttation.
- Significance of macro and micro elements in plant growth; brief idea of carrier, channels and pumps, active and passive transport.
- Understand the process of Photosynthesis, Respiration and Nitrogen Metabolism.
- Learn about sensory Photobiology
- Know about the plant growth hormones (auxin , gibberellin, cytokinin, ethylene)
- Understand the biosynthesis of terpenes , phenols , and nitrogenous compounds.
- Learn about mechanism of solute translocation, phloem loading –unloading method.
- Know about dormancy, senescence, stress physiology.

BOTGDS-1D(C4P): Plant Physiology and Metabolism Practical

After completion of this practical course students will be able to learn and understand the following things:-

- Determination method of osmotic potential of cell sap.
- Effect of light and wind on Transpiration.
- Principle of stomatal index and stomatal frequency calculation.
- Process of Hill reaction.
- Effect of pH and enzyme conc. on Catalase activity.
- Chromatography technique and Separation of Amino Acids.

BOTGDSE01:-

ECONOMIC BOTANY BIO TECHNOLOGY

On completion of the course, students will be able to:

- Understand the role plants in human welfare.
- Gain knowledge about various plants of economic use

- Know importance of plants & plant products
- Understand the chemical contents of the plant products
- Know about the utility of plant resources
- Understand current status and future of biotechnology in India.
- Gain knowledge of different instruments related to biotechnology.
- Understand the importance of interdisciplinary and industrial approaches of Biotechnology.
- Recognize impact of biotechnology on socioeconomic aspects of life.
- Develop the skills for employment and entrepreneurship.

BOTGDS01:-

ECONOMIC BOTANY BIO TECHNOLOGY (PRACTICAL)

- Know about the utility of plant resources
- Understand current status and future of biotechnology in India.
- Gain knowledge of different instruments related to biotechnology.
- Understand the importance of interdisciplinary and industrial approaches of Biotechnology.
- Recognize impact of biotechnology on socioeconomic aspects of life.

Develop the skills for employment and entrepreneurship.

BOTGDSE02 T:-

Genetics, Cell and Molecular Biology

On completion of the course, students will be able to:

- Gain knowledge about "Cell Science".
- Understand Cell wall, Cell membrane, organelles and cell division.
- Learn the scope and importance of molecular biology.
- Understand the nature of biomolecules, their role in living systems.

Understand the process of central dogma.

BOTGDSE02 P:-

Genetics, Cell and Molecular Biology (PRACTICAL)

On completion of the course, students will be able to:

- Gain knowledge about "Cell Science".
- Understand Cell wall, Cell membrane, organelles and cell division.
- Learn the scope and importance of molecular biology.
- Understand the nature of biomolecules, their role in living systems.

Understand the process of central dogma.

BOTGSE01:-

BIO -FERTILIZER

- After completion of this course students will be able to learn and understand the following-

- General account about the microbes used as bio fertilizer.

BOTGSE03:-

ETHNOBOTANY

- After completion of this course students will be able to learn and understand the following-
- Know about the uses of traditional plants.

BOTGSE04:-

PLANT DIVERSITY AND HUMAN WELFARE.

- After completion of this course students will be able to learn and understand the following-
- Bio-diversity information management and communication.

BOTGE01T:-

Biodiversity (Microbiology,Algae,Fungi and Arhegoniate

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BOTHGE01P:-

Biodiversity (Microbiology,Algae,Fungi and Arhegoniate)Practical

After completion of this practical course students will be able to learn and understand the following things:-

- Models of viruses(TMV and T-Phage), Line drawing of lytic and lysogenic cycle.
- Temporary and permanent slide preparation , Gram staining process of bacterium.
- Vegetative and reproductive structure of different species of algae and fungi.
- Study of Herbarium of some selected diseased plant specimens (infected Barberry leaves, black stem rust of wheat) and study the causative agent.
- Mycorrhiza- its types and structures
- Morphology, T.S. and L.S. of reproductive structures by study of permanent slide of Marchantia, Funaria, Selaginella, Equisetum, Pteris, Cycas, Pinus.

BOTHE02T:-

Plant Ecology and Taxonomy

After completing this course outcomes are as follows:-

- Understanding the role of different Ecological factors like Soil, Water, light and temperature; Origin, composition of soil profile; precipitation types ,state of water in the environment, optimal-limiting factor of light and temperature.
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- Concept of Ecosystem, food web, food chain, biogeochemical cycles.
- Learn the types of classifications- artificial, natural and phylogenetic.
- Gain knowledge about ICN , botanical nomenclature, its rules and limitations.
- Brief study of Herbarium techniques.
- Understanding the Taxonomic evidences from molecular , numerical and chemical.
- Concept of taxonomic identification , morphological characters, family, botanical name.

BOTHGE 02(P)

PLANT TAXONOMY AND ECOLOGY (PRACTICAL)

After completion of this practical course, students will be able to learn and understand the following things:-

- Study of instruments like thermometer, anemometer, hygrometer etc.
- Concept of pH determination technique and rapid test technique.
- Study of morphological adaptation of hydrophytes and xerophytes.
- Principle and technique of determination of minimal quadrat size.
- Gain knowledge about v.s. of flower, floral diagram, floral formula, ovary structure, systematic position of different families.

BOTHGE03T:-

ECONOMIC BOTANY BIO TECHNOLOGY.

On completion of the course, students will be able to:

- Understand the role plants in human welfare.
- Gain knowledge about various plants of economic use
- Know importance of plants & plant products
- Understand the chemical contents of the plant products
- Know about the utility of plant resources

BOTHGE03P:-

On completion of the course, students will be able to:

- Understand current status and future of biotechnology in India.
- Gain knowledge of different instruments related to biotechnology.
- Understand the importance of interdisciplinary and industrial approaches of Biotechnology.
- Recognize impact of biotechnology on socioeconomic aspects of life.
- Develop the skills for employment and entrepreneurship.

BOTHGE04T:-

PLANT PHYSIOLOGY AND METABOLISM

After completing this course outcomes are as follows:-

- Concept of Water potential ; significance of Transpiration, Root Pressure, Guttation.
- Significance of macro and micro elements in plant growth; brief idea of carrier, channels and pumps, active and passive transport.
- Understand the process of Photosynthesis, Respiration and Nitrogen Metabolism.
- Learn about sensory Photobiology
- Know about the plant growth hormones (auxin, gibberellin, cytokinin, ethylene)
- Understand the biosynthesis of terpenes, phenols, and nitrogenous compounds.
- Learn about mechanism of solute translocation, phloem loading –unloading method.
- Know about dormancy, senescence, stress physiology.

BOTHE04P:- PLANT PHYSIOLOGY AND METABOLISM (PRACTICAL)

After completion of this practical course students will be able to learn and understand the following things:-

- Determination method of osmotic potential of cellsap.
- Effect of light and wind on Transpiration.
- Principle of stomatal index and stomatal frequency calculation.
- Process of Hill reaction.
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