

Programme & Course outcomes

B.Sc. Botany (Generic Elective)

Papers:

BOT-HG-1016: Biodiversity (Microbes, Algae, Fungi and Archegoniate)

1. Knowledge on structure and reproduction of viruses and bacteria, and their economic importance.
2. Describe general characteristics, morphological diversity, thallus organization, life cycles, ecological and economic importance of algae.
3. Describe general characteristics, morphological diversity, thallus organization, life cycles, ecological and economic importance of fungi.
4. General characteristics, classification, morphological diversity and evolutionary significance of bryophytes.
5. General characteristics and classification of pteridophytes; evolution of stele, heterospory and seed habit in pteridophytes.
6. Classify gymnosperms, and describe their general characteristics and economic importance.
7. Practical knowledge on staining and slide preparation to study bacteria, algae and fungi under the microscope.
8. Practical knowledge on vegetative and reproductive structures of some representative bryophytes, pteridophytes and gymnosperms.

BOT-HG-2016: Plant Ecology and Taxonomy

1. Understanding soil, water, light and temperature as ecological factors.
2. Knowledge on adaptive characters of hydrophytes and xerophytes.
3. Knowledge on plant community types and their succession.
4. Knowledge on ecosystem, trophic levels and energy flow in ecosystems.
5. Knowledge on biogeochemical cycling with an emphasis on carbon, nitrogen and phosphorus cycles
6. General idea on phytogeography and endemism.
7. Knowledge on plant taxonomy, principles, ICN rules, ranks and hierarchy.
8. Knowledge on different systems of plant classification and cluster analysis.
9. Practical knowledge on soil temperature measurement, humidity measurement, rainfall estimation and light intensity measurement.
10. Adaptive morphological characterization of hydrophytes and xerophytes.
11. Quadrate size determination for herbaceous plant studies in ecology.
12. Estimation of frequency distribution of herbaceous plants using quadrat method.
13. Practical knowledge on plant identification upto the family level that belongs to Brassicaceae, Solanaceae and Lamiaceae; Preparation of herbarium specimens.

BOT-HG-3016: Plant Physiology and Metabolism

1. Understanding the roles of water in plant physiology, transpiration, and Guttation.
2. Knowing of macro- and micro-nutrients and mineral uptakes in plants.
3. Understanding the transportations of minerals and foods in plants.
4. Knowledge on photosynthetic pigments, photosynthetic reactions and photorespiration.
5. Understanding of respiration processes – glycolysis, TCA and PPP pathways.
6. Knowledge on enzyme properties, actions and inhibitions.
7. Knowledge on biological nitrogen fixation.
8. Knowledge on plant hormones, and plant responses to light and temperature.
9. Determine osmotic potentials of plant cells and effect of light on transpiration.
10. Calculate stomatal index and frequency.
11. Demonstrate the effect of pH and concentrations in catalase activity.

12. Demonstrate the effect of bicarbonate concentration on O₂ evolution in photosynthesis.

BOT-HG-3026: Environmental Biotechnology

1. Knowledge on environment and the cause of environmental pollution.
2. Knowledge on the methods of pollution measurement and bioremediation.
3. Knowledge on waste water treatment processes.
4. Knowledge on xenobiotics – their types and bioremediation.
5. Knowledge on application of immobilized cells/enzymes in industries.
6. Knowledge on national legislations and international treaties for environmental protection and pollution management.
7. Practical knowledge on determining basic properties of soil and water like DO, salinity, pH, total hardness, etc.
8. Practical knowledge on gravimetric analysis of effluents.
9. Practical knowledge on the assessment of microorganisms in air and water samples.

BOT-HG-4016: Plant Anatomy and Embryology

1. Knowledge on different types of tissues and their organizations in plants.
2. Knowledge on secondary growth and anomalous structures in plants.
3. Knowledge on adaptive and protective characters of plants.
4. Understanding the reproductive units of a flower; ovule types, ovary types, pollination and fertilization mechanisms; embryo and endosperm developments and functions.
5. Hands on experiences on slide preparation for anatomical studies of leaf, stem and root.
6. Flower dissection and study of flower reproductive parts and events.

BOT-HG-4026: Economic Botany and Plant Biotechnology

1. Understanding the concept of ‘centre of origin of crop plants’ and their distribution with a special emphasis on wheat.
2. Overall knowledge on economically important crops with their botanical characters and parts used.
3. Knowledge on plant tissue culture and the basic molecular techniques used in biotechnology.
4. Basic concept of bioinformatics and its application