B.Sc. Botany

Programme Outcomes

. 1. **Knowledge and understanding of:** 1. The range of plant diversity in terms of structure, function and environmental relationships. 2. The evaluation of plant diversity. 3. Plant classification 4. The role of plants in the functioning of the global ecosystem.

. 2. **Intellectual skills :**1. Think logically and organize tasks into a structured form. 2. Assimilate knowledge and ideas based on wide reading and through the internet. 3. Transfer of appropriate knowledge and methods from one topic to another within the subject. 4. Understand the evolving state of knowledge in a rapidly developing field. 6. Plan, conduct and write a report on an independent term project.

. 3. **Practical skills:** Students learn to carry out practical work, in the field and in the laboratory, with minimal risk. They gain introductory experience in applying each of the following skills and gain greater proficiency in 1. Interpreting plant morphology and anatomy. 2. Plant identification. 3. Vegetation analysis techniques.

. 4. **Transferable skills:** Use of IT (word-processing, use of internet.

. 5. **Scientific Knowledge:** Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.

. 6. **Problem analysis**: Identify the taxonomic position of plants, formulate the research literature, and analyze non reported plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.

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. 7. **Design/development of solutions**: Design solutions from medicinal plants for health problems, disorders and disease of human beings and estimate the phytochemical content of plants which meet the specified needs to appropriate consideration for the public health

. 8. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and development of the information to provide valid conclusions.

. 9. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

. 10. **The Botanist and society**: Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.

. 11. **Environment and sustainability**: Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

. 12. **Ethics**: Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.

. 13. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

. 14. **Communication**: Communicate effectively and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

. 15. **Project management and finance**: Demonstrate knowledge, understanding and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

16. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE OUTCOMES BOTANY:

B.Sc.Ist Year

Paper- DSC 1 :BIODiVERSITY-

On completion of the course, students are able to:

1.Understand the diversity among Algae.Know the systematic, morphology ,structure, reproduction and life cycle of Algae. Understand the useful and harmful activities of Algae.

2.Understand the diversity ,classification of Fungi,its structure, ways of reproduction and also know the Economic Importance of Fungi.

3.Understand the morphological diversity of Bryophytes. Understand the economic importance of the Bryophytes.

4.Understand the morphological diversity of Pteridophytes,life cycle and stellar evolution and also their economic importance .Paleobotany and study of fossil plants Cooksonia and Rhynia.

5. Understanding the morphological diversity and life cycle of Gymnosperms and economic importance of Gymnosperms.

Paper IIDSC : Plant Taxonomy &Plant Ecology

On completion of the course, students are able to:

1. Know the scope and importance of the discipline.

2. Know the concept of methodology in taxonomy and the keys used in identification of plants .

3. Learn about the characters of biologically important families of angiosperms.

4. Know the floral variations in angiospermic families, their phylogeny and evolution.

5. Understand various rules, principles and recommendations of plant nomenclature produces in plant id

6. Understand the classification of angiosperms

7. Understand the habit of the angiosperm plant body.Know the vegetative characteristics of the plant.Learn about the reproductive characteristics of the plant.

8.Discover botanical regions of India and vegetation types of India .

9.Learn about Herbarium ,botanical gardens of the world.

10. Understand plant communities and ecological adaptations in plants.

11. Learn about conservation of biodiversity, Non-conventional Energy and Pollution

12. Understand Bioremediation, Global warming and climate change.

13. Learn about Ecological Sucession and Ecosystems

B.Sc. 2nd Year

Paper-1 DSC- Plant Physiology

On completion of the course, students are able to:

1. Know importance and scope of plant physiology.
2. Understand the plants and plant cells in relation to water.
3. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.
4. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.
5. Learn about the movement of sap and absorption of water in plant body
6. Learn about effects plant growth regulators.
7. Understand the response of plants to light and temperature.
8. Understand Nitrogen metabolism
9. To know about Mineral Nutrition in Plants.

Paper -2 DSC Plant Anatomy & Embryology

On completion of the course, students are able to:

1. To understand the meristematic and permanent Tissues and organs.

2. To know the adaptive and protective systems.

3. To Know the methods of pollination and fertilization.

4. Know fertilization, endosperm and embryogeny.

5. Understand the normal and anomalous secondary growth in plants.

6. To Perform the techniques in anatomy.

7. To understand the structural organization of the flower.

Paper –3 SEC-Gardening & Floriculture

On completion of the course, students are able to:

1. To understand landscape gardening and Floriculture.
2. To know various gardening operations
3. To understand various gardening designs,principles ,types and features.
4. To learn about the propagation of garden plants.
5. To know about the diverse kinds of ornamental plants .
6. To gather information about making Floriculture commercial.
7. To understand post harvest management.

Paper -4 SEC Biofertilizer

On completion of the course, students are able to:

1. To understand what are Biofertilizers , its types and advantages and disadvantages
2. To learn about the general account, Isolation, Identification, Mass multiplication , Carrier based innoculants, Application and Crop response of Rhizobium.

3. To understand Actinorrhizal Symbiosis.
4. To know about the isolation,mass multiplication ,crop response and carrier based inoculant of Azospirillium, Azotobacter, Phosphate Solubilizing Organisms
5. To understand Cyanobacteria ,Nitrogen fixation ,Azolla Anabaena association.
6. To know about Mycorrhizal Associations and its influence on growth and yield of crop plants.
7. To understand the concepts of Organic Farming

B.SC 3RD YEAR

Paper -1 DSC -Economic Botany &Biotechnology

On completion of the course, students are able to:

1. To know about the cultivated Plants and its importance w.r.t Wheat and Rice.
2. To understand the morphology , Cultivation practices and economic uses of Cereals- Gram, Soyabean and vegetable –Potato.
3. To know about various spices and their values.
4. To understand the cultivation ,morphology ,processing and uses of Beverages.
5. To know about the description of oil yielding plant -groundnut and sugar yielding plant- Sugarcane.
6. To understand the morphology and uses of fibre yielding plant Cotton .
7. To understand the importance of various Medicinal plants.
8. To understand Tissue culture techniques and ots applications in Agriculture, horticulture and forestry.

. 9 To understand Biotechnology techniques ,Recombinant DNA technology Blotting techniques,DNA finger printing ,Molecular markers,PCR,ELISA,Hybridoma and monoclonal antibodies. Human gene therapy.

. 10 Principle, working and applications of instruments viz, pH meters, spectrophotometer, centrifuge, , and laminar air flow.

Paper 2nd DSC Cell and Molecular Biology

On completion of the course, students are able to:

1. To learn about the various techniques in Biology (Microscopy and X-ray Diffraction anaylsis).
2. To understand Cell as aunit of life
3. To understand the structure ,Functions of various cell organelles.
4. To understand the structure and function of cell wall and cell membrane.
5. To understand the cell cycle and cell divisions (Mitosis & Meiosis).
6. To understand the structure of DNA and its types
7. To understand the process of Replication in Prokaryotes and Eukaryotes .
8. To understand transcription ,translationin prokaryotes and Eukaryotes.
9. To understand the regulation of gene expression.

Paper -3rd SEC Mushroom Cultivation Technology

On completion of the course, students are able to:

1.To understand the history of Mushroom cultivation

2. To know about the nutritional and Medicinal values of Edible Mushrooms .

3. To understand the technology of Mushroom Cultivation.

4. To understand the cultivation practices of Agaricusbisporous, Pleurotus and Volvariellavolvacea

5. To know about the storage practices used in Mushroom Cultivation.

6. To understand about the common diseases and pests of Mushrooms.

7.To know about different food preparations of Mushrooms

Paper -4 SEC Medicinal Botany and Ethnobotany

On completion of the course, students are able to:

1. To learn about the traditional systems of Medicine.
2. To understand the concept of Ethnobotany and the methodology of Ethnobotanical studies.

3. To understand the role of Ethnobotany in modern Medicine.
4. To understand the roleof ethnic groups in conservation of plant genetic resources.
5. To understand ethnobotany and legal aspects.

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