Department of Botany

Govt. Post Graduate College, Berinag, Pithoragarh

(Vision Mission, Program Outcome and Course Outcome)

Vision

To enhance the knowledge of plant sciences that will enable the one to understand conventional and recent trends in plant science. Through the high quality education and research students will pay back to the society will make whole nation proud.

Mission

1. To provide the highly innovative environment and so that students will have some quality education as well as their personality will develop for doing some great work in this field.

2. To encourage the students in such a way that they will learn the plant sciences in their higher education and we would produce some highly qualified students of the botany.

3. To motivate the post graduate students to do some innovative research in the flourishing filed of advanced plant sciences that will helps to make the healthy and better and society for our upcoming generation.

Program Outcome

This program will enable the students to understand the basic components of the plant biology. Students will able to explore the different aspects and field of plant biology that ultimately lead to apply the knowledge of this program in the various domain of biology.

Program specific outcome at UG level

After the completion of Bachelor's degree in Botany students will be able to:

PSO1

Learn the characteristic features of algae and bryophyta. They will also learn the life cycle of some common algae and bryophyta.

PSO2

Learn the characteristic features and diversity among the fungi, bacteria and viruses.

PSO3

Learn the characteristic features and diversity among the pteridophyta and gymnosperms in India & world.

PSO4

Learn and understand about the interaction between plant and environment and biostatistics.

PSO5

Identify plants in their natural habitats, their economic and ethno-botanical importance.

PSO6

Understand the life cycle pattern and morphogenesis among the angiospermic plants.

PSO7

Understand and identify the plants on their internal structural basis through practical.

PSO8

Understand the genetics and its principles and in-vitro techniques of plant propagation.

PSO9

Understand the physiology of plant by bio-geo chemical cycles.

PSO10

Learn and understand the physiochemical found in plants up to atomic level.

PSO11

Understand the structure and function of the cell up to molecular level.

PSO12

Understand the strategies using in modern day biotechnology.

Course Outcome at UG Level

In this course students will able to learn

B.Sc Sem I:

Algae and Bryophyta

CO1: Salient features of algae and bryophyta and their place among the organism**.**

CO2: Life cycles of some common algae and brophyta and their economic importance.

Fungi and El. Microbiology

CO1: Salient features of Fungi, bacteria and viruses.

CO2: A brief history of the study of fungi and their place among the organisms.

CO3: Life ycles of some common Fungi and multiplication in microbes.

B.Sc Sem II:

Pteridophyta and Gymnosprem

CO1: Salient features of pteridophyta and gymnosperms.

CO2: Life cycles of some common gymnosperms and pteridophyta and their economic importance.

Ecology and Biostatistics

CO1: Plant and environment: Principles of environment, atmosphere, light, temperature, water, soil.

CO2: Ecosystem, interaction between plants and environments.

CO3: Introduction, definition, scope and importance of statistics.

CO4: Classification, tabulation and graphic presentation of data.

B.Sc Sem III:

Taxonomy of Angiosperms and Economic Botany

CO1: Basic principles and broad outline of the classification proposal by Bentham and Hooker and Hutchinson.

CO2: Distinguishing features of some common plant families.

CO3: A brief knowledge of Botany and commercial utilization and uses of the following plants: cereals, sugars, fruits, fibers, vegetables, timbers, medicinal plants, oil.

Embryology and Morphogenesis

CO1: Structure of anther and pollen, microsporogenesis and male gametophyte.

CO2: Structure and types of ovules, megasporogenesis and female gametophyte.

CO3: Fertilization and General concept of morphogenesis.

CO4: Plant growth regulators and Physiology of Flowering.

B.Sc Sem IV:

Plant Anatomy

CO1: Types of tissues and anatomy of monocot and dicot plants.

CO2: Secondary growth in root and stem and types of woods.

Genetics and Plant Breeding

CO1: Structure and function of nucleic acid, Genetic code, Law of inheritance.

CO2: Sex determination, Gene Interaction.

CO3: Aims and objectives, basic techniques of plant breeding.

B.Sc Sem V:

Plant Physiology

CO1: Water and mineral absorption.

CO2: Bioenergetics such as respiration and photosynthesis.

Biochemistry

CO1: Forces and interaction of biomolecules; chemical bondscovalent and ionic bond; stabilizing interaction.

CO2: Classification into mono-, di- and poly- saccharides; Glyoxylate cycle, Pentose- phosphate pathway.

CO3: Basic aspects of protein, fats and enzymes.

B.Sc Sem VI:

Cell and Molecular Biology

CO1: Cell structure, Structure and functions of cell organelles, cell cycle, process and its significance.

CO2: DNA chemistry and DNA replication; replication error and repair mechanism.

CO3: Molecular basis of gene mutation, C-DNA and C-DNA library,

CO4: A general idea of PCR and non PCR based markers.

Biotechnology

CO1: Role in modern life, history and ethical issues connected with Biotechnology.

CO2: Recombinant DNA Technology, Basic requirements of Tissue culture.

CO3: Biotechnology with regard to microorganisms: Mycotoxin based health hazards and their control, single cell protein

Program specific outcome at PG level

After the completion of Master's degree in Botany students will be able to:

PSO1: Apply knowledge of botany in many applied fields like Agriculture, Horticulture, Sericulture, Forestry, Pharmacology and Medicine.

PSO2: Able to qualify competitive exams like UPSC, NET, SET, GATE, etc

PSO3: Understand the multi-functionality of plants in production of secondary metabolites and there widespread industrial applications.

PSO4: Understand the plant pathology and, diseases causing agent and its cure.

Course Outcome at PG Level

M.Sc Sem I:

Microbiology (Bacteria, Viruses and Lichens)

CO1: General account of Microorganisms, Culture Study of Microorganisms, Morphology and structure of Bacterial cells.

CO2: Morphology and structure of viruses, Role of microorganism.

CO3: General account of lichens.

Phycology

CO1: History and Classification of Algae, Ecology of Algae.

CO2: Useful and harmful aspects of algae, life cycle of commonly found algae form each class of classification.

Mycology

CO1: General characteristics and classification of fungi, Phylogeny of fungi.

CO2: General account of the classes of fungi, economic importance of algae.

Bryology and Pteridology

CO1: Origin, relationship and evolutionary trends in Bryophytes and pteridophyta, fossil, Bryology in India.

CO2: General idea about the morphological, cytological and ecological characteristics of Bryophytes and pteridophytes, Economic importance of Bryophytes.

CO3: Modern systems of classification of Bryophytes and Pteridophytes and life cycle of commonly found genera.

M.Sc Sem II

Gymnosperms and Palaeobotany

CO1: Introduction: History, classification, distribution and evolution of Gymnosperms.

CO2: Preservation of fossil plants. Types of fossils, modes of formation of different kinds of fossils, Gondwana flora.

Taxonomy of Angiosperms

CO1: Important system of classifications of angiosperms (Bentham and Hooker, .I. Hutchinson and A. Takhtajan).

CO2: Origin of intra-population variation, The species concepts, Origin and evolution of angiosperms.

CO3: Concepts of Phytogeography, Distinguishing features only of the plant families and their economic importance:

Plant Morphology, Anatomy and Embryology

CO1: Morphology, Shoot Development, Root development, Male gametophyte, Female gametophyte.

CO2: Pollination, Pollen-pistil interaction and fertilization, Seed development and fruit growth, Latent Life-dormancy, and anatomy of flowering plant.

Cell and Molecular Biology

CO1: Introduction to cell biology, structure and function of cell organelles.

CO2: Techniques in cell biology.

M.Sc Sem III

Plant Ecology

CO1: Climate, soil and vegetation patterns of the world, Population dynamics, Ecological succession.

CO2: Ecosystem, Biological diversity, Environmental pollution, Climate change.

Cytogenetics and Plant Breeding

CO1: Chromosome structure, Structural and numerical alterations in chromosomes, Gene structure and expression, Genetic recombination and gene mapping.

CO2: Cytogenetics of aneuploids and structural heterozygotes, Molecular Cytogenetics.

Plant Biotechnology

CO1: Principle and scope, bio-safety guidelines, Recombinant DNA technology, Detection and characterization of transformants.

CO2: Plant cell and tissue culture, Biological databases (gene and protein). DNA restriction map analysis, DNA and protein sequence alignment. BLAST, and FASTA.

Plant Physiology and Biochemistry

CO1: Membrane transport and translocation of water and solutes, bioenergetics.

CO2: General aspects, allosteric mechanism, regulatory and active sites, isozymes, kinetics of enzymatic analysis, Michaelis-Menten equation and its significance.

CO3: Plant growth regulators, Photoperiodism and vernalization, Stress physiology, secondary metabolites.

M.Sc Sem IV

Plant Resource, Utilization and Conservation

CO1: Sustainable development, Important fire-wood and timber-yielding plants and non-timber forest products.

CO2: Green revolution, Strategies for in-situ conservation, Strategies for ex-situ conservation.

Plant Pathology

CO1: History of plant pathology in India, Plant-microbe interaction.

CO2: Genetics of host parasite interactions, Dissemination of pathogens, Physiology of diseased hosts.

CO3: Brief account, structure, importance, disease cycle and control of the diseases.

CO4: General characteristics, importance, disease cycle and control of the bacterial, viral and mycoplasma diseases.