

Teaching Plan

Department of Botany

Session- 2023-24

Month	Class	Name of the teacher	Topics to be covered	Teaching Methods	Student Activity
August, 2023	B.Sc. 1 st Year (BOTA-101 and BOTA-102)	Mr. Bhagwati Charan	* Microbes (Viruses – Discovery, general structure, replication (general account), DNA virus (T phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance. *Introduction to plant ecology and ecological factors (up to soil profile)	Lecture	Discussion
September, 2023			* Algae (General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Brief account of classification of algae; Morphology and life-cycles of the following: Nostoc, Oedogonium) * Water : States of water in the environment, precipitation types. Light and temperature, Shelford law of tolerance. General account of adaptations in xerophytes and hydrophytes.	Lecture/PPT	Discussion
October, 2023			* Algae : Vaucheria, Ectocarpus, Polysiphonia. Economic importance of algae. Fungi: Introduction- General characteristics. * Plant communities , Characters; Ecotone and edge effect; Succession; Processes and types (Hydrosere and Xerosere)	Lecture and PPT	Discussion/Class tests
November, 2023			* Fungi : range of thallus organization, cell wall composition, nutrition, reproduction and classification; Morphology and life cycles of Phytophthora, Rhizopus (Zygomycota) Penicillium, Venturia (Ascomycota), Puccinia * Ecosystem Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling- Cycling of Nitrogen and Phosphorus.	Lecture and PPT	Assignments/Class tests
December, 2023			* Fungi : Agaricus (Basidiomycota); Symbiotic Associations Lichens: General account, reproduction and significance. * Bryophytes : General characteristics, adaptations to land habit, Range of thallus organization. Classification (up to family),	Lecture and PPT	Discussion/Q & A

			morphology, anatomy and reproduction of Marchantia and Funaria. * Plant taxonomy House examination		
January, 2024			Winter Break		
February, 2024			* Pteridophytes: General characteristics, Early land plants (Cooksonia and Rhynia). Classification (up to family), morphology, anatomy and reproduction of Selaginella, Equisetum and Adiantum. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance. *Botanical nomenclature and classification	Lecture and PPT	Presentation
March, 2024			* Gymnosperms: General characteristics, Classification (up to family), Morphology, anatomy and reproduction of Cycas and Pinus (Developmental details not to be included). Economic importance. *Biometrics, numerical taxonomy and cladistics	Lecture	Presentation
			HPU examination in April-May 2024		
August, 2023	B.Sc. 2nd Year (BOTA-201, BOTA-202, BOTA-203 BOTA-204)	Dr. Renu Rana	*Meristematic and permanent tissues *Applications of plant physiology in agriculture & horticulture. Plant-water relations *Fertilizers *Landscape Gardening and Floriculture	Lecture	Discussion
September, 2023			* Organs: Structure of dicot and monocot root stem and leaf. Adaptive and protective systems * Rhizobium Actinorrhizal Symbiosis Gardening operations	Lecture/Charts	Discussion/Class tests
October, 2023			Secondary Growth Mineral nutrition Translocation in phloem * Azospirillum: Isolation and mass multiplication, Carrier based inoculant, Crop response * Azotobacter: Characteristics, Isolation and mass multiplication, Application and Crop response. Gardening operations	Lecture/Charts	Discussion/Class tests
November, 2023			Structural organization of flower Phosphate Solubilizing Organisms: Introduction, Isolation, Culture and Applications Cyanobacteria (Blue Green Algae) Garden Designs, Principles, Types and Features	Lecture/Charts	Discussion/Class tests and Assignments

			Propagation of Garden Plants		
December, 2023			Pollination and Fertilization Photosynthesis Respiration Mycorrhizal Association: Types of mycorrhizal association, Taxonomy, Occurrence and distribution, Phosphorus nutrition, Growth and yield; VAM– Isolation and inoculum production, Influence on growth and yield of crop plants. *Ornamental Plants House examination	Lecture/Charts	Discussion/Question answers
January, 2024			Winter Break		
February, 2024			Embryo and endosperm Enzymes and nitrogen metabolism Organic Farming Commercial Floriculture Post Harvest Management	Lecture	Presentation/Question answers
March, 2024			Plant growth regulators Plant response to light and temperature	Lecture	Presentation
			HPU examination in April-May 2024		
August, 2023	B.Sc. 3rd Year (BOTA-301 BOTA-303 BOTA 307 BOTA-308)	Ms. Indu Chauhan	Cultivated Plants and Cereals Techniques in biology and cell as a unit of life Traditional Systems of Medicine Ethnobotany Introduction to mushroom cultivation technology	Lecture and PPT/ videos	Discussion
September, 2023			Pulses & Vegetables and spices Mitochondria: Structure, marker enzymes, composition; Semiautonomous nature; Symbiont hypothesis; Proteins synthesized within mitochondria; mitochondrial DNA. Chloroplast: Structure, marker enzymes, composition; semiautonomous nature, chloroplast DNA , ER, Golgi body & Lysosomes *Plants Used by the Tribals Cultivation practices of Agaricus bisporus, Pleurotus sp. and Volvoriella volvacea. Composting technology in mushroom production, Low cost technology, Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation.	Lecture and PPT/Charts	Discussion/Class tests
October, 2023			Beverages Oils and Sugar Nucleus, cell memberane and cell wall Methodology of Ethnobotanical Studies Role of ethnobotany in modern Medicine Storage of mushrooms: Short-term storage	Lecture and PPT	Discussion

			(Refrigeration - upto 24 hours) Long term Storage (canning, pickels, papads), drying, storage in salt solutions.		
November, 2023			Cell cycle, Genetic Material, Reoplication Introduction to biotechnology Food Preparation: Types of foods prepared from mushroom. Research Centres -National level and Regional level. Cost benefit ratio - Marketing in India and abroad, Export Value Role of ethnic groups in conservation of plant genetic resources. Endangered taxa and forest management (participatory forest management).	Lecture and PPT	Discussion/Class tests/ Assignments
December, 2023			Biotechnological Techniques Transcription, Translation and regulation of gene expression Ethnobotany and Legal Aspect Diseases and Pests of Mushrooms House examination	Lecture and PPT/videos	Discussion/ Q & A
January, 2024			Winter Break		
February, 2024			Revision and Class tests		Presentation
March, 2024			Revision		Presentation
			HPU examination in April-May 2024		