

Teaching Plan for BSc. Botany

Name of the Department: Botany

Name of the Teacher: Dr. Jyoti

DSC 1A Biodiversity (Microbes, Algae, Fungi and Archegoniates) (BOTA 101)
&
DSC 1B Plant Ecology and Taxonomy (BOTA 102)

Month	Weeks	Book/ Unit/Topic	Teaching Method / Resources	Student Activities
July		UNIT (BOTA 101 TH)	Lecture	
	1 st	Microbes: General Introduction, Viruses, Bacteria, Economic Importance		Assignment
	2 nd	Algae: General Introduction , Nostoc, Oedogonium		Class Test
	3 rd	Algae: Vaucheia, Ectocarpus, Polysiphona, Economic Importance		
	4 th	Fungi : General Introduction, Phytophthora, Rhizophus, Penicillium		Discussion
August			Lecture	
	1 st	Fungi: Venturia, Puccinia, Agaricus, Economic Importance		Students Presentation
	2 nd	Fungi: Lichens; Bryophytes: General Introduction, Marchantia		Assignments
	3 rd	Bryophytes: Funaria, Economic Importance : Pteridophytes General Introduction, Cooksonia, Rhynia		
	4 th	Pteridophytes, Selaginella, Equisetum		Quiz
September			Lecture	
	1 st	Pteridophytes, Adiantum Stellar evolution, Economic Importance		Class Test
	2 nd	Gymnosperms General Introduction, Pinus		Assignments
	3 rd	Gymnosperms, Cycas		
	4 th	Economic Importance		Students presentations
October		UNIT (BOTA 102 TH)	Lecture	
	1 st	Plant Ecology, General Introduction, Soil, Water, Light, Temperature		
	2 nd	Xerophytes, Hydrophytes, Ecotone, Edge effect		Assignments

	3 rd	Succession, Ecosystem, Food Chain, Food Web		Class Discussion
	4 th	Ecological pyramids, Biogeochemical Cycles,		Class Test
November	1 st	Plant Taxonomy, General Introduction, Identification	Lecture	Quiz
	2 nd	Taxonomical evidences, Taxonomic hierarchy		
	3 rd	Botanical nomenclature		Assignment
	4 th	Artificial and Natural Classification		
December	1 st	Phylogenetic classification	Lecture	Class Test
	2 nd	Mid –Term Exams		
February	2 nd	Biometrics	Lecture	Students presentation
	3 rd	Numerical Taxonomy		Quiz
	4 th	Cladistic		Class Test
March	1 st			Class Test

**BSc 2nd Year DSC- IA BOTA 201 (Plant Anatomy and Embryology) &
DSC-IB BOTA 202 (Plant Physiology and Metabolism)**

Month	Weeks	Book/ Unit/Topic	Teaching Method / Resources	Student Activities
July		(BOTA 201TH)	Lecture	Class Test
	1 st	Tissues: Meristematic, Permanent, RAM, SAM		
	2 nd	Organs: Dicot & Monocot Root, Stem & Leaf; Adaptive, protective systems: Epidermis, Stomata Cuticle		Discussion
	3 rd	Secondary Growth: Vascular cambium, Wood		Assignments
	4 th	Anomalous Secondary Growth: <i>Boerhaavia, Dracaena</i>		Class Test
August			Lecture	
	1 st	Structural organization of flower: Floral parts, Microsporogenesis, Male gametophyte, Types of ovules		
	2 nd	Megasporangium, embryo sacs,		
	3 rd	Pollination Mechansim		Quiz
	4 th	Fertilization: Seed-structure, appendages,		
September			Lecture	
	1 st	Dispersal mechanisms,		Students presentations
	2 nd	Endosperm: Types, Function, Dicot and monocot embryo		
	3 rd	Embryo-endosperm relationship,		Quiz
	4 th	Polyembryony		Class test
October		(BOTA 202 TH)	Lecture	
	1 st	Plant Physiology and Metabolism: Introduction, Plant-water relations, Osmosis, Diffusion, Transpiration		
	2 nd	Mechanism of Stomatal movements, Mineral nutrition		Students presentations

	3 rd	Translocation in phloem		
	4 th	Photosynthesis: Photosynthetic Pigments, PSI, PSII, ETS		Quiz
November	1 st	Photosynthesis: C3, C4, CAM pathway, Photorespiration	Lecture	Group Discussion
	2 nd	Respiration: Glycolysis, TCA,		
	3 rd	Oxidative phosphorylation, Glyoxylate, Pentose Phosphate pathway		Assignments
	4 th	Enzymes: Structure, properties, Mechanism, inhibition		Class Test
December	1 st	Nitrogen metabolism: Biological nitrogen fixation; Nitrate and ammonia assimilation	Lecture	Quiz
	2 nd	Mid –Term Exams		
February	2 nd	Plant growth regulators	Lecture	Students presentation
	3 rd	Vernalization		Class Test
	4 th	Phytochrome, Photoperiodism		
March	1 st			Class test & Quiz

BSc. 3rd Year

DSE (IA) Economic Botany and Biotechnology (BOTA 301)

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DSE (IB) Cell and Molecular Biology (BOTA 303)

Month	Weeks	Book/ Unit/Topic	Teaching Method / Resources	Student Activities
July		UNIT (BOTA 301 TH)	Lecture	
	1st	Cultivated Plants: Introduction, Research centres, centres of origin, Vavilov's work		Assignments
	2 nd	Cereals : Wheat, Rice		
	3 rd	Pulses & Vegetables: Gram , soybean and Potato		
	4 th	Spices: clove, black pepper, cinnamon, Ginger, Turmeric		Class Test
August			Lecture	
	1st	Beverages: Tea and Coffee: Oils and Sugar		
	2 nd	Fibre Yielding Plants		Assignments
	3 rd	Medicinal Plants: <i>Ocimum, Tinospora, Aloe, Rauwolfia, Emblica</i> and <i>Cathranthus</i>		
	4 th	Biotechnology, Tissue culture: Micropropagation, haploid production		Discussion
September			Lecture	Quiz
	1st	Embryo & endosperm culture, Applications		
	2 nd	Biotechnological Techniques: r-DNA, Gene transfer, Agarose electrophoresis,		Assignments
	3 rd	Blotting techniques, DNA Fingerprinting; Molecular DNA markers, DNA sequencing		
	4 th	PCR, ELISA, Hybridoma, Monoclonal antibodies, Molecular diagnosis of human disease, Human gene Therapy.		Students presentations
October		UNIT (BOTA 303 TH)	Lecture	
	1st	Techniques in Biology, Principles and type of microscopy		Assignments
	2 nd	Cell Theory, Cell Organelles		

	3 rd	Cell Organelles		Class discussion
	4 th	Cell Organelles		
November	1 st	Cell Membrane	Lecture	
	2 nd	Cell Wall, Class Test		
	3 rd	Cell Cycle		Assignment
	4 th	DNA, RNA		
December	1 st	Genetic material experiments	Lecture	Quiz
	2 nd	Mid –Term Exams		
February	2 nd	Replication	Lecture	Students presentation
	3 rd	Transcription		
	4 th	Regulation of gene expression		Class Test
March	1 st			Class Test

BSc. 2nd Year Skill Enhancement Courses

Biofertilizers (BOTA 203)

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**Gardening and Floriculture
(BOTA 204)**

Month	Weeks	Book/ Unit/Topic	Teaching Method / Resources	Student Activities
July		UNIT (BOTA 203 TH)	Lecture	
	1st	Fertilizers : Introduction, Types, Advantages, Disadvantages, Marketable forms		
	2 nd	Rhizobium : Isolation, Identification, Mass multiplication, Carrier based inoculants, Application, Crop response		Class Test
	3 rd	Actinorrhizal Symbiosis - Frankia, Host-microsymbiont relationship, Isolation, Culture, Application and Advantages		Assignments
	4 th	Azospirillum : Isolation and mass multiplication, Carrier based inoculant, Crop response		
August			Lecture	
	1st	Azotobacter : Characteristics, Isolation, mass multiplication, Application and Crop response		Discussion
	2 nd	Phosphate Solubilizing Organisms : Introduction, Isolation, Culture, Applications.		
	3 rd	Cyanobacteria (Blue Green Algae): Azolla and Anabaena azollae association		Assignments
	4 th	Nitrogen fixation, Factors affecting growth, Blue green algae and Azolla in rice cultivation.		
September			Lecture	
	1st	Mycorrhizal Association : Types of mycorrhizal association, Taxonomy, Occurrence and distribution, Phosphorus nutrition, Growth		Quiz

		and yield;		
	2 nd	VAM – Isolation and inoculum production, Influence on growth and yield of crop plants		Assignments
	3 rd	Organic Farming – Green manuring and organic fertilizers		Class Test
	4 th	Organic Farming: Recycling of biodegradable municipal, agricultural and Industrial wastes; Biocompost making methods, Types and method of vermicomposting, field Application		Students presentations
October		(BOTA 204 TH)	Lecture	
	1 st	Landscape Gardening and Floriculture: Definitions, history, importance, status and scope , landscaping of homes, educational institutions, highways and public parks.		Assignments
	2 nd	Gardening operations: Soil laying, Manuring, Watering, Management of pests and diseases, Soil sterilization, Seed sowing; Pricking; Planting and transplanting, Shading, Stopping or pinching, Defoliation, Mulching, Pruning, Topiary making		
	3 rd	Garden Designs, Principles, Types and Features: Principles and Elements of Garden Designs, Formal and Informal gardens, English, Mughal and Japanese gardens;		Discussion
	4 th	Garden Designs, Principles, Types and Features: Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flower beds, Shrubbery, Borders, Rock garden, Water		

		garden. Some Famous gardens of India.		
November	1st	Propagation of Garden Plants: Sexual and vegetative methods of propagation; Role of plant growth regulators.	Lecture	
	2nd	Ornamental Plants: Flowering annuals; Herbaceous perennials; Shrubs, Climbers; Ornamental trees;		
	3rd	Ornamental Plants: Ornamental bulbous plants; Palms and Cycads; Potted plants and indoor gardening; Bonsai.		Assignments
	4th	Commercial Floriculture: Factors affecting growth and flower production of ornamentals;		Class Test
December	1st	Commercial Floriculture: Cultivation of Important flower crops (Carnation, Chrysanthemum, Gerbera, Gladiolus, Marigold, Rose, Liliun)	Lecture	Quiz
	2nd	Mid –Term Exams		
February	2nd	Post Harvest Management: Post- harvest handling of important flower crops,	Lecture	Students presentation
	3rd	Post Harvest Management: , methods to prolong vase life, packaging, storage and transport of flower crops,		
	4th	Flower arrangements and other floral crafts.		Class test
March	Ist			Class test