



**M. P. GOVT. COLLEGE, AMB****DEPARTMENT OF BOTANY****Lesson Plan****Name of Department: Botany****Name of Teacher: Dr. Nitin Kumar Sharma****Class: B.Sc. 3rd****Course Type: Theory****Course Code/ Title: DSE-I :Economic****Botany and Biotechnology (BOTA 301)**

<b>Month/ Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit-I,2,3 & 4  Cultivated Plants, Cereals, Pulses & Vegetables, Spices	Introduction, Research centers, Concept of centers of origin, their importance with reference to Vavilov's work Wheat and Rice -Origin, morphology, uses General account with special reference to Gram, soybean and Potato, General account with special reference to clove, black pepper, cinnamon, Ginger and Turmeric	10	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprisetest 5. PDFNotes 6. You tube lectures
September	Unit 5,6 &7 Oils and Sugar; Oils and Sugar; : Fibre Yielding Plants,	Tea and Coffee (morphology, processing, uses); General description with special reference to groundnut and sugarcane; General description with special reference to Cotton (Botanical name, family, partused, morphology and uses)	8	1. Chalk & talk Method 2. Digital board 3. Group Discussion 4. Surprisetest 5. PDFNotes 6. You tube lectures

October	Unit -8,9  Medicinal Plants, Introduction to Biotechnology	Brief account of Ocimum, Tinospora, Aloe, Rauwolfia, Emblica and Cathranthus; Tissue culture techniques, Micropropagation; haploid production through androgenesis and gynogenesis; brief account of embryo & endosperm culture; Applications of plant tissue culture in agriculture, horticulture and forestry.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-10  Biotechnological Techniques	Introduction to r-DNA, cloning vehicles, Gene transfer techniques in plants, Transgenic plants, Agarose electrophoresis, Blotting techniques: Northern, Southern and Western Blotting, DNA Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA sequencing, PCR and Reverse Transcriptase-PCR. ELISA,.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December-24	UNIT10	Hybridoma and monoclonal antibodies, ELISA.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
Feburary-24	Unit 10	Immunodetection. Molecular diagnosis of human disease, Human gene therapy	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
March		Revision		

  
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**M. P. Govt. College Amb**

**M. P. GOVT. COLLEGE, AMB**

**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Course Type: Theory**

**Class: B.Sc. 3rd**

**Course Code/ Title: DSE- :Cell and  
Molecular Biology; BOTA 303**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit-I, 2  Techniques in Biology; Cell as a unit of Life	Principles of microscopy; Light Microscopy; Phase contrast microscopy; Fluorescence microscopy; Electron microscopy (EM)- Scanning EM and Scanning Transmission EM (STEM); Sample ; X-ray diffraction analysis; The Cell Theory; Prokaryotic and eukaryotic cells; Cell size and shape; Eukaryotic Cell components	10	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit 3 Cell Organelles	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: Structures and roles. Peroxisomes and Glyoxisomes: Structures, composition, functions in animals and plants and biogenesis. Nucleus: Nuclear Envelope- structure of nuclear pore complex; chromatin; molecular organization, DNA packaging in eukaryotes, euchromatin and heterochromatin, nucleolus and ribosome structure (brief)	8	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures 7. Problem solving

October	Unit -,4,5 Cell Membrane and Cell; : Cell Cycle	The functions of membranes; Models of membrane structure; The fluidity of membranes; Membrane proteins and their functions; Carbohydrates in the membrane; Faces of the membranes; Selective permeability of the membranes; Cell wall; Overview of Cell cycle, Mitosis and Meiosis; Molecular controls.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> <li>7. Problem solving</li> </ol>
November	Unit-6 Genetic material, Transcription (Prokaryotes and Eukaryotes)	DNA: Miescher to Watson and Crick- historic perspective, Griffith's and Avery's transformation experiments, Hershey-Chase bacteriophage experiment, DNA structure, types of DNA, types of genetic material. A replication prokaryotes and eukaryotes bidirectional replication, semi-conservative, semi discontinuous R A priming, $\theta$ theta mode of replication, replication of linear, ds- A, replicating the end of linear chromosome including replication enzymes.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	Unit-7 Transcription and Translation	Types of structures of RNA (mRNA, tRNA, rRNA), RNA polymerase- various types; Translation (Prokaryotes and eukaryotes), genetic code	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	UNIT8 Regulation of gene expression	Prokaryotes: Lac operon and Tryptophan operon ; and in Eukaryotes.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> <li>7. Problem solving</li> </ol>
March		Revision		

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**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Class: B.Sc. 3rd**

**Course Type: Theory**

**Course Code/ Title: SEC- :Medicinal**

**Botany and Ethnobotany; BOTA 306**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1,2 Traditional Systems of Medicine; Ethnobotany	Brief history of use of medicinal herbs; Introduction to indigenous systems of medicines- Ayurveda, Unani and Siddha system of medicine; Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science. The relevance of ethnobotany in the present context; Major and minor ethnic groups or Tribals of India, and their life styles.	5	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit 3,4 Plants Used by the Tribals; :Methodology of Ethnobotanical Studies:	a) Food plants b) intoxicants and beverages c) Resins and oils and miscellaneous uses. d Sacred plants; a) Field work b) Herbarium c) Ancient Literature d) Archaeological findings e) temples and sacred places	4	2. Chalk & talk Method 3. Digital Board 4. Group Discussion 5. Surprise test 6. PDF Notes 7. You tube lectures

October	Unit -5 Role of ethnobotany in modern Medicine	Medico-ethnobotanical sources in India; Significance of the following plants in ethnobotanical practices (along with their habitat and morphology) a) Azadiractha indica b)Ocimum sanctum c) Vitex negundo. d) Gloriosa superba e) Tribulus terrestris f) Pongamia pinnata g) Cassia auriculata h) Indigofera tinctoria. Role of ethnobotany in modern medicine with special example Rauvolfiasepentina, Taxus wallichiana, Trichopuszeylanicus, Artemisia, Withania.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
November	Unit-6	Role of ethnic groups in conservation of plant genetic resources. Endangered taxa and forest management (participatory forest management)	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
December	UNIT7 Ethnobotany	Ethnobotany as a tool to protect interests of ethnic groups. Sharing of wealth concept with few examples from India..	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
February	Unit-7 Legal Aspects	Biopiracy, Intellectual Property Rights and Traditional Knowledge	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
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**DEPARTMENT OF  
BOTANY  
Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Course Type: Theory**

**Class: B.Sc. 3rd**

**Course Code/ Title: SEC- :Mushroom**

**Cultivation Technology; BOTA 307**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1 Introduction, history	Nutritional and medicinal value of edible mushrooms; Nutrition and nutraceuticals – Proteins, amino acids, mineral elements nutrition, carbohydrates, crude fiber content, vitamins; Poisonous mushrooms.	5	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
September	Unit 2 Cultivation Technology	Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, Sterilization, Preparation of spawn, Multiplication.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>

October	Unit -3 Cultivation practices	Agaricusbisporus, Pleurotus sp. and Volvariellavolvacea. 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.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp;talkMethod</li> <li>2. Digital Board</li> <li>3. GroupDiscussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
November	Unit-4 Storage	Short-term-storage (Refrigeration - up to 24 hours) Long termStorage (canning, pickels, papads), drying, storage in salt solutions;	4	<ol style="list-style-type: none"> <li>1. Chalk &amp;talkMethod</li> <li>2. Digital Board</li> <li>3. GroupDiscussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
December	Unit 5 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	4	<ol style="list-style-type: none"> <li>1. Chalk &amp;talkMethod</li> <li>2. Digital Board</li> <li>3. GroupDiscussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
February	UNIT 6	Diseases and Pests of Mushrooms	4	<ol style="list-style-type: none"> <li>1. Chalk &amp;talkMethod</li> <li>2. Digital Board</li> <li>3. GroupDiscussion</li> <li>4. Surprisetest</li> <li>5. PDFNotes</li> <li>6. You tube lectures</li> </ol>
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**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Course Type: Theory**

**Class: B.Sc. 2nd**

**Course Code/ Title: DSC- :Plant**

**Anatomy and Embryology; BOTA 201**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1, 2,3 Meristematic and permanent tissues; Organs; Adaptive and protective systems	Root and shoot apical meristems; Simple and complex tissues; Structure of dicot and monocot root stem and leaf; Epidermis, cuticle, stomata;	10	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit 4,5 : Secondary Growth; : Anomalous Secondary Growth	Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood); Boerhaavia (Dicot) and Dracaena (Monocot)	8	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures

October	Unit -6,7 Structural organization of flower; Pollination	Flower- a modified shoot, Function of floral parts; Structure of anther and pollen; Microsporogenesis, Male gametophyte, Structure and types of ovules; gasporangium, Types of embryo sacs, organization and ultra structure of mature embryo sac; Pollination mechanisms and adaptations	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-7 Fertilization	Double fertilization; Seed-structure, appendages and dispersal mechanisms.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	UNIT 8 Embryo	Endosperm types, structure and functions; Dicot and monocot embryo;	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	Endosperm	Embryo-endosperm relationship, polyembryony	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
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**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Course Type: Theory**


**Class: B.Sc. 2nd**


**CourseCode/ Title: DSC- :Plant**

**Physiology and Metabolism; BOTA 202**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1, 2, Introduction; Plant-water relations; Mineral nutrition	Applications of plant physiology in agriculture & horticulture; Importance of water, Diffusion. Osmosis, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation, Mechanism of Stomatal movements. Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.	10	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit 3,4 Translocation in phloem; Photosynthesis	Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading; Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C <sub>3</sub> , C <sub>4</sub> and CAM pathways of carbon fixation; Photorespiration.	8	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures

October	Unit -5 Respiration	Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> <li>7. Problem solving</li> </ol>
November	Unit-6,7 Enzymes; Nitrogen metabolism	Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition; Biological nitrogen fixation; Nitrate and ammonia assimilation	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	UNIT 8: Plant growth regulator; Plant response to light and temperature	Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene;	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	Unit 9: Plant response to light and temperature	Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization. Practical applications of vernalization and photoperiodism	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
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**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Class: B.Sc. 2nd**

**Course Type: Theory**

**Course Code/ Title: SEC- :**

Biofertilizers; BOTA 203

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of Lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1, 2, Fertilizers; Rhizobium	Introduction, Types of fertilizers and their advantages and disadvantages, Brief account of microbes used as biofertilizer, Marketable forms of biofertilizers; General account, Isolation, Identification, Mass multiplication, Carrier based inoculants, Application, Crop response	5	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit: 3, 4 Actinorrhizal Symbiosis; Azospirillum	Frankia, Host-microsymbiont relationship, Isolation, Culture, Application and Advantages; Isolation and mass multiplication, Carrier based inoculant, Crop response	4	1. Online Chalk & talk Method 2. Problem Solving 3. Group Discussion 4. Surprise test 5. Flip the class 6. PDF Notes 7. Online Lectures

October	Unit -5,6 Azotobacter, Phosphate Solubilizing Organisms	Characteristics, Isolation and mass multiplication, Application and Crop response; Introduction, Isolation, Culture and Applications.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-7 Cyanobacteria (Blue Green Algae)	Azolla and Anabaena azollae association, Nitrogen fixation, Factors affecting growth, Blue green algae and Azolla in rice cultivation	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	UNIT 8: 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.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	Unit 9: Organic Farming	Green manuring and organic fertilizers, Recycling of biodegradable municipal, agricultural and Industrial wastes; Bio compost making methods, Types and method of vermicomposting, field Application.	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
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**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Class: B.Sc. 2nd**

**Course Type: Theory**

**Course Code/ Title: SEC:-Gardening**

**And Floriculture; BOTA 204**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1 Landscape Gardening and Floriculture	Definitions of Landscape Gardening and Floriculture, history of gardening, importance, status and scope of Floriculture and Landscaping; landscaping of homes, educational institutions, highways and public park	5	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures
September	Unit: 2 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.	4	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprise test 5. PDF Notes 6. You tube lectures

October	Unit -3 Garden Designs, Principles, Types and Features	Principles and Elements of Garden Designs, Formal and Informal gardens, English, Mughal and Japanese gardens; Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flower beds, Shrubbery, Borders, Rock garden, Water garden. Some Famous gardens of India	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-4, 5 Propagation of Garden Plants; Ornamental Plants	Sexual and vegetative methods of propagation; Role of plant growth regulators; Flowering annuals; Herbaceous perennials; Shrubs, Climbers; Ornamental trees; Ornamental bulbous plants; Palms and Cycads; Potted plants and indoor gardening; Bonsai	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	Unit 6: Commercial Floriculture	Factors affecting growth and flower production of ornamentals; Cultivation of Important flower crops (Carnation, Chrysanthemum, Gerbera, Gladiolus, Marigold, Rose, Liliun)	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	Post Harvest Management	Post- harvest handling of important flower crops, methods to prolong vase life, packaging, storage and transport of flower crops, Flower arrangements and other floral crafts	4	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
March		Revision		

Principal  
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Distt. Una (H.P.)

Signature of Principal

M. P. Govt. College Amb

Distt. Una (H.P.)-177203

Signature of Teacher

Deptt. of Botany

M. P. Govt. College Amb



**M. P. GOVT. COLLEGE, AMB**

**DEPARTMENT OF BOTANY**

**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Class: B.Sc. 1st**

**Course Type: Theory**

**CourseCode/ Title: DSC- :Biodiversity**

**(BOTA 201)**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit 1: Microbes	Viruses – Discovery, general structure, replication (general account), DNA virus (Tphage); 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.	10	1. Chalk & talk Method 2. Digital Board 3. Group Discussion 4. Surprisetest 5. PDFNotes 6. You tube lectures
September	Unit: 2 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, Vaucheria, Ectocarpus, Polysiphonia. Economic importance of algae	8	2. Chalk & talk Method 3. Digital Board 4. Group Discussion 5. Surprisetest 6. PDFNotes 7. You tube lectures

October	Unit -3 Fungi	Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition, nutrition, reproduction and classification; Morphology and life cycles of Phytophthora, Rhizopus (Zygomycota) Penicillium, Venturia (Ascomycota), Puccinia, Agaricus (Basidiomycota); Symbiotic Associations Lichens: General account, reproduction and significance.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-4 Bryophytes	General characteristics, adaptations to land habit, Range of thallus organization. Classification (up to family), morphology, anatomy and reproduction of Marchantia and Funaria. (Developmental details not to be included). Ecology and economic importance of bryophytes with special mention of Sphagnum.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	Unit 5: Pteridophyte	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.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
February	Unit 6: Gymnosperms	General characteristics, Classification (up to family), Morphology, anatomy and reproduction of Cycas and Pinus (Developmental details not to be included). Economic importance.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
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**M. P. GOVT. COLLEGE, AMB**  
**DEPARTMENT OF BOTANY**  
**Lesson Plan**

**Name of Department: Botany**

**Name of Teacher: Dr. Nitin Kumar Sharma**

**Class: B.Sc. 1st**

**Course Type: Theory**

**Course Code/ Title: DSC- :Plant Ecology  
and Taxonomy(BOTA 202)**

<b>Month / Week</b>	<b>Unit/Title</b>	<b>Topic of Lecture</b>	<b>No. of lectures</b>	<b>Methods/Mode of Delivery</b>
July/August	Unit: 1,2 Introduction; Ecological Factor, Soil	Origin,formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature, Shelford law of tolerance. General account of adaptations in xerophytes and hydrophytes.	10	1. Chalk &talkMethod 2. Digital Board 3. GroupDiscussion 4. Surprisetest 5. PDFNotes 6. You tube lectures
September	Unit: 3,4 Plant communities; Ecosystem	Characters; Ecotone and edge effect; Succession; Processes and types (Hydrosere and Xerosere); Structure; energy flow trophic organisation; Food chains and food webs, Ecologicalpyramids production and productivity; Biogeochemical cycling- Cycling of Nitrogen and Phosphorus.	8	1. Chalk &talkMethod 2. Digital Board 3. GroupDiscussion 4. Surprisetest 5. PDFNotes 6. You tube lectures

October	Unit -5,6 Introduction to plant taxonomy; Identification	Identification, Classification, Nomenclature. Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access.	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
November	Unit-7,8 Taxonomic evidences; Taxonomic hierarchy	from cytology, phytochemistry and molecular data; Ranks, categories and taxonomic groups	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
December	Unit 9,10 Botanical nomenclature; Classification	Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations; Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (up to series), Engler and Prantl (up to series), Angiosperm Phylogeny Group (APG) - general introduction	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Problem Solving</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. Flip the class</li> <li>6. PDF Notes</li> </ol>
February	Unit 11: Biometrics, numerical taxonomy and cladistic	Characters; variations; OTUs, character weighting and coding; cluster analysis; phenograms, cladograms (definitions and differences)	8	<ol style="list-style-type: none"> <li>1. Chalk &amp; talk Method</li> <li>2. Digital Board</li> <li>3. Group Discussion</li> <li>4. Surprise test</li> <li>5. PDF Notes</li> <li>6. You tube lectures</li> </ol>
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