

**DEPARTMENT
OF
BOTANY
(LESSON PLAN)**

SESSION: 2021-22

Weekly Lesson Plan
B.Sc. (Medical) - I Semester
Session- 2021-22

Subject: Botany

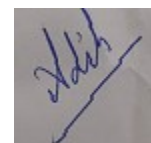
Paper I: Diversity of Microbes

Paper II: Cell Biology

ODD SEMESTER

Week	Dates	Paper	Topic(s)
1.	Oct 25-30, 2021	I II	Bacteria general account , structure of Cyanobacteria St. and function of cell wall
2.	Nov. 8-13 , 2021	I II	Nutrition and reproduction in virus general account St. and function of Plasma membrane
3.	Nov.15-20 , 2021	I II	Structure of T.M.V. and Bacteria, Economic importance St. and func. of Nucleus and Golgi body
4.	Nov. 22-27, 2021	I II	General account o Cyanobacteria St.and func of ER and Chloroplast
5.	Nov. 29-Dec. 4,2021	I II	Algae general characters, Classification and economic importance of Algae St.and functions of Mitochondria, Lysosome
6.	Dec.6-11, 2021	I II	<i>Volvox</i> important features and life history St and function of Peroxisome , vacuole
7.	Dec.13-18 , 2021	I II	<i>Oedogonium</i> important features and life history Mitosis- cell division
8.	Dec.20- 24, 2021	I II	<i>Vaucheria</i> important features and life history Meiosis- cell division
9.	Dec 27, 2021 - Jan 1,2022	I II	<i>Ectocarpus</i> important eatures and life history Ultrastructure of centromere and telomere, Int. to chromosomes
10.	Jan 3-8, 2022	I II	<i>Polysiphonia</i> important features and life history Chromosome morphology

11.	Jan.10-15, 2022	I II	General account of Fungi Chromosomal alterations
12.	Jan. 17-22, 2022	I II	<i>Phytophthora</i> features and life history Translocation and Inversion
13.	Jan. 24-29, 2022	I II	<i>Mucor</i> features and life history Nuclear Chromosomal alterations
14.	Jan 31, Feb1-5, 2022	I II	<i>Penicillium</i> features and life history Sex determination , Polyploidy
15.	Feb. 7-12,2022	I II	<i>Agaricus</i> features and life history, chromosome organization
16.	Feb. 14-19, 2022	I II	<i>Colletotrichum</i> features and life history, lichens Chr. alterations
17.	Feb. 21-22, 2022		Revision



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Dyal Singh College, Karnal

Weekly Lesson Plan
B.Sc. (Biotechnology) - II Semester
Session- 2021-22

Subject: Botany

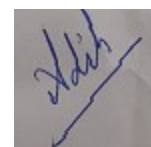
Paper I: Diversity of Archegoniates

Paper II: Genetics

EVEN SEMESTER

Week	Dates	Paper	Topic(s)
1.	April 1-2, 2022	I	Bryophyta: general characters
2.	April 4-9, 2022	I II	Bryophytes classification(upto classes) Basics of genetic material, satellite & repetitive DNA
3.	April 11-16,2022	I II	Alternation of generation in bryophytes Experimental evidences of DNA
4.	April 18-23, 2022	I II	Structure of <i>Marchantia</i> Structure and Properties of DNA
5.	April 25-30, 2022	I II	Reproduction (excluding development) in <i>Marchantia</i> DNA replication
6.	May 2-7,2022	I II	Structure of Anthoceros(Anthocerotopsida) Introduction of Genetic inheritance, basics of Mendelism
7.	May 9-14, 2022	I II	Reproduction (excluding development) Concept of genetic crosses
8.	May 16-21,2022	I II	Structure of <i>Funaria</i> Linkage and significance
9.	May23-28, 2022	I II	Reproduction (excluding development) in <i>Funaria</i> Genetic interactions
10.	May 30-31- June 1-4,2022	I II	Pteridophta: general characters DNA-protein interactions
11.	June 6-11, 2022	I	Pteridophyta classification(upto classes) and

		II	alternation of generation Genetic code, types of genetic material , central dogma
12.	June 13-16, 2022	I II	Structure and reproduction (excluding development) of <i>Rhynia</i> (Psilopsida) Transcription
13.	June 13-18,2022	I II	Structure and reproduction (excluding development) of <i>Selaginella</i> (Lycopsida) Translation
14.	June 20-25, 2022	I II	Structure and Reproduction (excluding development) in <i>Equisetum</i> (Sphenopsida) Mutation basics, types of mutations
15.	June 27-30, July1-2,2022	I II	Structure and Reproduction (excluding development) in <i>Pteris</i> (Pteropsida) DNA damage and repair, transposable elements
16.	July 4- 9,2022	I II	Revision Gene regulation – Operon model, Protein, plastid, Extra- nuclear inheritance



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Weekly Lesson Plan
B.Sc. (Biotechnology) - III Semester
Session- 2021-22

Subject: Botany

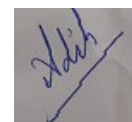
Paper I: Biology and Diversity of Seed Plants I

Paper II: Plant Anatomy

ODD SEMESTER

Week	Dates	Paper	Topic(s)
1.	Oct 25-30, 2021	I II	Introduction to the syllabus General characters of Gymnosperms Diversity of Life forms
2.	Nov. 8-13 , 2021	I II	Diversity of Gymnosperms, Evolution of Gymnosperms Tissues-meristematic
3.	Nov.15-20 , 2021	I II	Geological Time Scale, Pilger and Melchior's (1954) system of classification Simple permanent Tissues
4.	Nov. 22-27, 2021	I II	Morphology and anatomy of root of <i>Cycas</i> Complex Permanent Tissue
5.	Nov. 29-Dec. 4,2021	I II	Morphology and anatomy of stem leaf/leaflet and reproductive parts of <i>Cycas</i> The Shoot system-shoot apical meristem and its histological organizations
6.	Dec.6-11, 2021	I II	Mode of reproduction, life-cycle and economic importance of <i>Cycas</i> Monocot and dicot stem,
7.	Dec.13-18 , 2021	I II	Morphology and anatomy of root, stem leaf/leaflet of <i>Pinus</i> Cambium-structure and functions.
8.	Dec.20- 24, 2021	I II	Morphology and anatomy of and reproductive parts of <i>Pinus</i> Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm
9.	Dec 27, 2021 - Jan 1,2022	I II	Mode of reproduction, life-cycle and economic importance of <i>Pinus</i> Anomalous secondary growth (<i>Dracaena</i> , <i>Boerhaavia</i> and <i>Achyranthes</i>)
10.	Jan 3-8, 2022	I II	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts mode of <i>Ephedra</i> Leaf-Types of leaves (simple and compound); phyllotaxy

11.	Jan.10-15, 2022	I II	Reproduction, Life-cycle and economic importance of <i>Ephedra</i> Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.
12.	Jan. 17-22, 2022	I II	Palaeobotany-Fossils and Fossilization (Processes involved, types of Fossils and Importance of Fossils Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves; leaf abscission. Stomatal apparatus and their morphological types.
13.	Jan. 24-29, 2022	I II	Reconstruction of the following fossil plants: <i>Lyginopteris</i> , <i>Williamsonia</i> , <i>Cycadeoidea</i> (= <i>Bennettites</i>). Root system- the root apical meristem; the histological organization monocot and dicot root.
14.	Jan 31, Feb1-5, 2022	I II	General characters of Angiosperms including primitive angiosperms (Amentiferae, Ranales) Secondary growth in dicot root.
15.	Feb. 7-12,2022	I II	General characters of Angiosperms including primitive angiosperms- Magnoliales Structural modifications in roots- storage (<i>Beta</i>), Respiratory (<i>Rhizophora</i>), Epiphytic (<i>Vanda</i>).
16.	Feb. 14-19, 2022		Revision
17.	Feb. 21-22, 2022		Revision



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Dyal Singh College, Karnal**

Weekly Lesson Plan
B.Sc. (Biotechnology) - IV Semester
Session- 2021-22

Subject: Botany

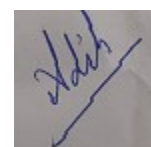
Paper I: Biology and Diversity of Seed Plants - II

Paper II: Plant Embryology

EVEN SEMESTER

Week	Dates	Paper	Topic(s)
1.	April 1-2, 2022	I	Taxonomy and Systematics - Introduction
2.	April 4-9, 2022	I II	Fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny). Flower-a modified shoot; functions of various floral parts.
3.	April 11-16,2022	I II	Role of chemotaxonomy, Cytotaxonomy and taximetrics in relation to taxonomy. Microsporangium, its wall and dehiscence mechanism.
4.	April 18-23, 2022	I II	Botanical Nomenclature, principles and rules, principle of priority. Microsporogenesis, pollen grains and its structure (pollen wall).
5.	April 25-30, 2022	I II	Type concept, taxonomic ranks, Keys to identification of plants. Pollen-pistil interaction; self incompatibility
6.	May 2-7,2022	I II	Flower and Types of Inflorescence. Pollination (types and agencies);
7.	May 9-14, 2022	I II	Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl. Pollen germination (microgametogenesis).
8.	May 16-21,2022	I II	Diagnostic features and economic importance of Ranunculaceae, Brassicaceae Male gametophyte.
9.	May23-28, 2022	I II	Diagnostic features and economic importance of Malvaceae, Euphorbiaceae Structure of Megasporangium (ovule), its curvatures
10.	May 30-31- June 1-4,2022	I	Diagnostic features and economic importance of Rutaceae, Leguminosae

		II	Megasporogenesis and Megagametogenesis.
11.	June 6-11, 2022	I II	Diagnostic features and economic importance of Apiaceae, Asclepiadaceae Female gametophyte (mono-, bi- and Tetrasporic).
12.	June 13-16, 2022	I II	Diagnostic features and economic importance of Lamiaceae, Solanaceae Double fertilization. Endosperm types and its biological importance.
13.	June 13-18, 2022	I II	Diagnostic features and economic importance of Asteraceae, Embryogenesis in Dicot and Monocot; polyembryony
14.	June 20-25, 2022	I II	Diagnostic features and economic importance of Liliaceae Structure of Dicot and Monocot seed.
15.	June 27-30, July 1-2, 2022	I II	Diagnostic features and economic importance of Poaceae Fruit types; dispersal mechanisms in fruits and seeds.
16.	July 4- 9, 2022		Revision



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Weekly Lesson Plan
B.Sc. (Biotechnology) - V Semester
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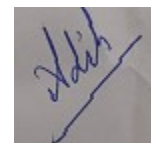
Paper I: Plant Physiology

Paper II: Ecology

ODD SEMESTER

Week	Dates	Paper	Topic(s)
1.	Oct 25-30, 2021	I II	Physical properties of water, Imbibition, Diffusion Ecology introduction, water , humidity - climatic factors
2.	Nov. 8-13 , 2021	I II	Osmosis, plasmolysis, absorption & transport of water Wind, light , temperature – climatic env. factors
3.	Nov.15-20 , 2021	I II	Transpiration types, physiology of stomata, factors affecting and importance Edaphic , topographic – env. Factors , soil profile , physio- chemical nature
4.	Nov. 22-27, 2021	I II	Essential macro and micro nutrients and their role, mineral uptake and deficiency symptoms Biotic environmental factors- special interactions
5.	Nov. 29-Dec. 4,2021	I II	Source- sink relationship, mechanism of phloem transport Eco. Adaptations – morph. And anat. Features of hydrophytes and xerophytes
6.	Dec.6-11, 2021	I II	Significance of photosynthesis, historical aspect Morphology and anatomy of halophytes
7.	Dec.13-18 , 2021	I II	Action spectra, enhancement effect, concept of two photosystems, Z-scheme Pop. Ecology – biotic pot. , growth curves
8.	Dec.20- 24, 2021	I II	Photophosphorylation, calvin cycle, photosynthesis Ecotypes, ecads, qualitative community ecology
9.	Dec 27, 2021 - Jan 1,2022	I II	C4 pathway- photosynthesis, CAM, photorespiration, ATP- the biological energy currency Quantitative community ecology , analytical community ecology
10.	Jan 3-8, 2022	I II	Aerobic and anaerobic respiration, kreb cycle, respiration Synthetic community eco. , Eco. succession
11.	Jan.10-15, 2022	I II	Electron transport mechanism Ecosystem- st. and funct. , food chain, food web , eco. pyramids
12.	Jan. 17-22, 2022	I II	Oxidative phosphorylation, PPP, seed dormancy Energy flow in an ecosystem. Biogeochemical cycles – carbon, nitrogen and water cycle

13.	Jan. 24-29, 2022	I II	Plant movements, photoperiodism, physiology of flowering Phytogeography, various regions and vegetation types of india
14.	Jan 31, Feb1-5, 2022	I II	Florigen concept, senescence physiology Env. Pollution- sources types and control of air & water pollution
15.	Feb. 7-12,2022	I II	ATP detail, fruit ripening Green house effect, green house gases, impact of global warming
16.	Feb. 14-19, 2022	I II	Revision Carbon trading, ozone layer depletion, biomagnification
17.	Feb. 21-22, 2022	I II	Revision Revision



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Weekly Lesson Plan
B.Sc. (Biotechnology) - VI Semester
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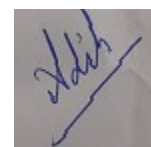
Paper I: Biochemistry and Plant Biotechnology

Paper II: Economic Botany

EVEN SEMESTER

Week	Dates	Paper	Topic(s)
1.	April 1-2, 2022	I II	Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, Origin, distribution, botanical description, brief idea of cultivation and uses of Rice
2.	April 4-9, 2022	I II	Apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action. Origin, distribution, botanical description, brief idea of cultivation and uses of Wheat
3.	April 11-16,2022	I II	Definitions; phases of growth and development; Plant hormones- auxins, Origin, distribution, botanical description, brief idea of cultivation and uses of Maize
4.	April 18-23, 2022	I II	Gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action; Origin, distribution, botanical description, brief idea of cultivation and uses of Gram, Arhar
5.	April 25-30, 2022	I II	photo-morphogenesis; phytochromes and their discovery, physiological role and mechanism of action. Origin, distribution, botanical description, brief idea of cultivation and uses of Pea
6.	May 2-7,2022	I II	Structure and functions of lipids; fatty acid biosynthesis; B-oxidation; Origin, distribution, botanical description, brief idea of cultivation and uses of Potatao, Tomato
7.	May 9-14, 2022	I II	saturated and unsaturated fatty acids; storage and mobilization of fatty acids. Origin, distribution, botanical description, brief idea of cultivation and uses of Onion
8.	May 16-21,2022	I II	Biology of nitrogen fixation; Origin, distribution, botanical description, brief idea of cultivation and uses of Cotton, Jute

9.	May23-28, 2022	I II	importance of nitrate reductase and its regulation; Origin, distribution, botanical description, brief idea of cultivation and uses of Flax
10.	May 30-31- June 1-4,2022	I II	ammonium assimilation. Origin, distribution, botanical description, brief idea of cultivation and uses of Groundnut, Mustard, Coconut
11.	June 6-11, 2022	I II	Tools and techniques of recombinant DNA technology; Morphology of plant part used, brief idea of cultivation and uses of Coriander, Ferula, Ginger
12.	June 13-16, 2022	I II	Cloning vectors; genomic and cDNA library; Morphology of plant part used, brief idea of cultivation and uses of Turmeric, Cloves.
13.	June 13-18,2022	I II	transposable elements; aspects of plant tissue culture; Morphology of plant part used, brief idea of cultivation and uses of <i>Cinchona</i> , <i>Rauwolfia</i> , <i>Atropa</i> , <i>Opium</i> , <i>Cannabis</i> , Neem.
14.	June 20-25, 2022	I II	Cellular totipotency, differentiation and morphogenesis Botanical description and processing of: Beverages- Tea and Coffee.
15.	June 27-30, July1-2,2022	I II	biology of Agro-bacterium; Botanical description and processing of: Rubber- <i>Hevea</i> . Sugar- Sugarcane.
16.	July 4- 9,2022	I II	vectors for gene delivery and marker genes. General account and sources of timber; energy plantations and bio-fuels.



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