

**DEPARTMENT  
OF  
BOTANY  
(LESSON PLAN)**

**SESSION: 2022-23**

**Weekly Lesson Plan**  
**B.Sc. (Medical) - I Semester**  
**Session- 2022-23**

**Subject:** Botany

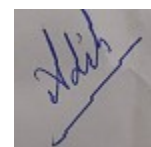
**Paper I:** Diversity of Microbes

**Paper II:** Cell Biology

**ODD SEMESTER**

Week	Dates	Paper	Topic(s)
1.	Sep 1-3, 2022	I II	Bacteria general account , structure of Cyanobacteria St. and function of cell wall
2.	Sep 5-10, 2022	I II	Nutrition and reproduction in virus general account St. and function of Plasma membrane
3.	Sep 12-17, 2022	I II	Structure of T.M.V. and Bacteria, Economic importance St. and func. of Nucleus and Golgi body
4.	Sep 19-24, 2022	I II	General account o Cyanobacteria St.and func of ER and Chloroplast
5.	Sep 26-Oct 1, 2022	I II	Algae general characters, Classification and economic importance of Algae St.and functions of Mitochondria, Lysosome
6.	Oct 3-8, 2022	I II	<i>Volvox</i> important features and life history St and function of Peroxisome , vacuole
7.	Oct 10-15, 2022	I II	<i>Oedogonium</i> important features and life history Mitosis- cell division
8.	Oct 17-22, 2022	I II	<i>Vaucheria</i> important features and life history Meiosis- cell division
9.	Oct 24-29, 2022	I II	<i>Ectocarpus</i> important features and life history Ultrastructure of centromere and telomere, Int. to chromosomes
10.	Oct 31-Nov 5, 2022	I II	<i>Polysiphonia</i> important features and life history Chromosome morphology
11.	Nov 7-12, 2022	I II	General account of Fungi Chromosomal alterations
12.	Nov 14-19, 2022	I II	<i>Phytophthora</i> features and life history Translocation and Inversion
13.	Nov 21-26, 2022	I II	<i>Mucor</i> features and life history Nuclear Chromosomal alterations
14.	Nov 28-Dec3, 2022	I II	<i>Penicillium</i> features and life history Sex determination , Polyploidy
15.	Dec 5-10, 2022	I II	<i>Agaricus</i> features and life history, chromosome organization
16.	Dec 12-17, 2022	I II	<i>Colletotrichum</i> features and life history, lichens Chr. alterations

17.	Dec 19-24, 2022		Revision
18.	Dec 25 onwards		Examination



**HEAD**  
**Department of Botany**  
**Dyal Singh College, Karnal**

**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - II Semester**  
**Session- 2022-23**

**Subject:** Botany

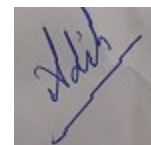
**Paper I:** Diversity of Archegoniates

**Paper II:** Genetics

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Jan 27-28, 2023	I	Bryophyta: general characters
2.	Jan 30- Feb 4, 2023	I II	Bryophytes classification( upto classes) Basics of genetic material, satellite & repetitive DNA
3.	Feb 6-11, 2023	I II	Alternation of generation in bryophytes Experimental evidences of DNA
4.	Feb 13-18, 2023	I II	Structure of <i>Marchantia</i> Structure and Properties of DNA
5.	Feb 20-25, 2023	I II	Reproduction ( excluding development ) in <i>Marchantia</i> DNA replication
6.	Feb 27-March 4, 2023	I II	Structure of Anthoceros(Anthocerotopsida) Introduction of Genetic inheritance, basics of Mendelism
7.	March 6-11, 2023	I II	Reproduction (excluding development) Concept of genetic crosses
8.	March 13-18, 2023	I II	Structure of <i>Funaria</i> Linkage and significance
9.	March 20-25, 2023	I II	Reproduction ( excluding development ) in <i>Funaria</i> Genetic interactions
10.	March 27-April 1, 2023	I II	Pteridophyta: general characters DNA-protein interactions
11.	April 3-8, 2023	I II	Pteridophyta classification( upto classes) and alternation of generation Genetic code, types of genetic material , central dogma
12.	April 10-15, 2023	I II	Structure and reproduction (excluding development) of <i>Rhynia</i> (Psilopsida) Transcription
13.	April 17-22, 2023	I II	Structure and reproduction (excluding development) of <i>Selaginella</i> (Lycopsida) Translation
14.	April 24-29, 2023	I	Structure and Reproduction ( excluding

		II	development ) in <i>Equisetum</i> (Sphenopsida) Mutation basics, types of mutations
15.	May 1-6, 2023	I	Structure and Reproduction ( excluding development ) in <i>Pteris</i> (Pteropsida)
		II	DNA damage and repair, transposable elements
16.	May 8-13, 2023	I	Revision
		II	Gene regulation – Operon model
17.	May 15-20, 2023	II	Protein, plastid, Extra- nuclear inheritance
18.	May 22-26, 2023	II	Revision



**HEAD**

**Department of Botany**

**Dyal Singh College, Karnal**

**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - III Semester**  
**Session- 2022-23**

**Subject:** Botany

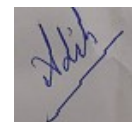
**Paper I:** Biology and Diversity of Seed Plants I

**Paper II:** Plant Anatomy

**ODD SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	I	Introduction to the syllabus General characters of Gymnosperms
2.	Sep 5-10, 2022	I	Diversity of Gymnosperms Evolution of Gymnosperms Geological Time Scale
3.	Sep 12-17, 2022	II	Diversity of Life forms; Pilger and Melchior's (1954) system of classification; Tissue System Introduction
4.	Sep 19-24, 2022	I	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts of <i>Cycas</i>
5.	Sep 26-Oct 1, 2022	I II	Mode of reproduction, life-cycle and economic importance of <i>Cycas</i> Tissues-meristematic and permanent (simple and complex). The Shoot system-shoot apical meristem and its histological organizations (monocot and dicot stem)
6.	Oct 3-8, 2022	I	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of <i>Pinus</i>
7.	Oct 10-15, 2022	II	Cambium-structure and functions. Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm; Anomalous secondary growth ( <i>Dracaena</i> , <i>Boerhaavia</i> and <i>Achyranthes</i> )
8.	Oct 17-22, 2022	I	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts including mode of reproduction of <i>Ephedra</i>
9.	Oct 24-29, 2022	I	Life-cycle and economic importance of <i>Ephedra</i>
10.	Oct 31-Nov 5, 2022	I	Palaeobotany-Fossils and Fossilization (Processes involved, types of Fossils and Importance of

			Fossils; Reconstruction of the following fossil plants: <i>Lyginopteris</i> , <i>Williamsonia</i> , <i>Cycadeoidea</i> (= <i>Bennettites</i> ).
11.	Nov 7-12, 2022	II	Leaf-Types of leaves (simple and compound); phyllotaxy. Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.
12.	Nov 14-19, 2022	II	Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves; leaf abscission. Stomatal apparatus and their morphological types.
13.	Nov 21-26, 2022	II	Root system- the root apical meristem; the histological organization (monocot and dicot root). Secondary growth in dicot root. Structural modifications in roots- storage ( <i>Beta</i> ), Respiratory ( <i>Rhizophora</i> ), Epiphytic ( <i>Vanda</i> ).
14.	Nov 28-Dec3, 2022	I	General characters of Angiosperms including primitive angiosperms ( <i>Amentiferae</i> , <i>Ranales</i> )
15.	Dec 5-10, 2022	I	General characters of Angiosperms including primitive angiosperms- <i>Magnoliales</i>
16.	Dec 12-17, 2022	I	Revision
17.	Dec 19-24, 2022	II	Revision
18.	Dec 25 onwards		Examinations



**HEAD**

**Department of Botany  
Dyal Singh College, Karnal**



**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - IV Semester**  
**Session- 2022-23**

**Subject:** Botany

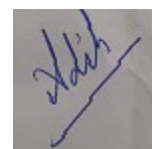
**Paper I:** Biology and Diversity of Seed Plants - II

**Paper II:** Plant Embryology

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Jan 27-28, 2023	I	Taxonomy and Systematics - Introduction
2.	Jan 30- Feb 4, 2023	I II	Fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny). Flower-a modified shoot; functions of various floral parts.
3.	Feb 6-11, 2023	I II	Role of chemotaxonomy, Cytotaxonomy and taximetrics in relation to taxonomy. Microsporangium, its wall and dehiscence mechanism.
4.	Feb 13-18, 2023	I II	Botanical Nomenclature, principles and rules, principle of priority. Microsporogenesis, pollen grains and its structure (pollen wall).
5.	Feb 20-25, 2023	I II	Type concept, taxonomic ranks, Keys to identification of plants. Pollen-pistil interaction; self incompatibility
6.	Feb 27-March 4, 2023	I II	Flower and Types of Inflorescence. Pollination (types and agencies);
7.	March 6-11, 2023	I II	Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl. Pollen germination (microgametogenesis).
8.	March 13-18, 2023	I II	Diagnostic features and economic importance of Ranunculaceae Male gametophyte.
9.	March 20-25, 2023	I II	Diagnostic features and economic importance of Brassicaceae Structure of Megasporangium (ovule), its curvatures
10.	March 27-April 1, 2023	I	Diagnostic features and economic importance of Malvaceae

		II	Megasporogenesis and Megagametogenesis.
11.	April 3-8, 2023	I II	Diagnostic features and economic importance of Euphorbiaceae Female gametophyte (mono-, bi- and Tetrasporic).
12.	April 10-15, 2023	I II	Diagnostic features and economic importance of Rutaceae Double fertilization. Endosperm types and its biological importance.
13.	April 17-22, 2023	I II	Diagnostic features and economic importance of Leguminosae Embryogenesis in Dicot and Monocot; polyembryony
14.	April 24-29, 2023	I II	Diagnostic features and economic importance of Apiaceae Structure of Dicot and Monocot seed.
15.	May 1-6, 2023	I II	Diagnostic features and economic importance of Asclepiadaceae Fruit types; dispersal mechanisms in fruits and seeds.
16.	May 8-13, 2023	I	Diagnostic features and economic importance of Lamiaceae, Solanaceae
17.	May 15-20, 2023	I	Diagnostic features and economic importance of Asteraceae, Liliaceae, Poaceae.
18.	May 22-26, 2023		Revision



**HEAD**  
**Department of Botany**  
**Dyal Singh College, Karnal**

**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - V Semester**  
**Session- 2022-23**

**Subject:** Botany

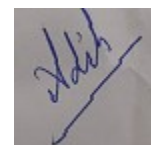
**Paper I:** Plant Physiology

**Paper II:** Ecology

**ODD SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	I II	Physical properties of water, Imbibition, Diffusion Ecology introduction, water , humidity - climatic factors
2.	Sep 5-10, 2022	I II	Osmosis, plasmolysis, absorption & transport of water Wind, light , temperature – climatic env. factors
3.	Sep 12-17, 2022	I II	Transpiration types, physiology of stomata, factors affecting and importance Edaphic , topographic – env. Factors , soil profile , physio- chemical nature
4.	Sep 19-24, 2022	I II	Essential macro and micro nutrients and their role, mineral uptake and deficiency symptoms Biotic environmental factors- special interactions
5.	Sep 26-Oct 1, 2022	I II	Source- sink relationship, mechanism of phloem transport Eco. Adaptations – morph. And anat. Features of hydrophytes and xerophytes
6.	Oct 3-8, 2022	I II	Significance of photosynthesis, historical aspect Morphology and anatomy of halophytes
7.	Oct 10-15, 2022	I II	Action spectra, enhancement effect, concept of two photosystems, Z-scheme Pop. Ecology – biotic pot. , growth curves
8.	Oct 17-22, 2022	I II	Photophosphorylation, calvin cycle, photosynthesis Ecotypes, ecads, qualitative community ecology
9.	Oct 24-29, 2022	I II	C4 pathway- photosynthesis, CAM, photorespiration, ATP- the biological energy currency Quantitative community ecology , analytical community ecology
10.	Oct 31-Nov 5, 2022	I II	Aerobic and anaerobic respiration, kreb cycle, respiration Synthetic community eco. , Eco. succession
11.	Nov 7-12, 2022	I II	Electron transport mechanism Ecosystem- st. and funct. , food chain, food web , eco. pyramids
12.	Nov 14-19, 2022	I II	Oxidative phosphorylation, PPP, seed dormancy Energy flow in an ecosystem. Biogeochemical cycles – carbon, nitrogen and water cycle

13.	Nov 21-26, 2022	I II	Plant movements, photoperiodism, physiology of flowering Phytogeography, various regions and vegetation types of india
14.	Nov 28-Dec3, 2022	I II	Florigen concept, senescence physiology Env. Pollution- sources types and control of air & water pollution
15.	Dec 5-10, 2022	I II	ATP detail, fruit ripening Green house effect, green house gases, impact of global warming
16.	Dec 12-17, 2022	I II	Revision Carbon trading, ozone layer depletion, biomagnification
17.	Dec 19-24, 2022	I II	Revision Revision
18.	Dec 25 onwards		Examinations



**HEAD**

**Department of Botany  
Dyal Singh College, Karnal**

**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - VI Semester**  
**Session- 2022-23**

**Subject:** Botany

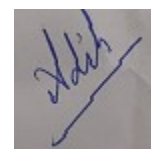
**Paper I:** Biochemistry and Plant Biotechnology

**Paper II:** Economic Botany

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Jan 27-28, 2023	I II	Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, Origin, distribution, botanical description, brief idea of cultivation and uses of Rice
2.	Jan 30- Feb 4, 2023	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.	Feb 6-11, 2023	I II	Definitions; phases of growth and development; Plant hormones- auxins, Origin, distribution, botanical description, brief idea of cultivation and uses of Maize
4.	Feb 13-18, 2023	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.	Feb 20-25, 2023	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.	Feb 27-March 4, 2023	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.	March 6-11, 2023	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.	March 13-18, 2023	I II	Biology of nitrogen fixation; Origin, distribution, botanical description, brief idea of cultivation and uses of Cotton, Jute

9.	March 20-25, 2023	I II	importance of nitrate reductase and its regulation; Origin, distribution, botanical description, brief idea of cultivation and uses of Flax
10.	March 27-April 1, 2023	I II	ammonium assimilation. Origin, distribution, botanical description, brief idea of cultivation and uses of Groundnut, Mustard, Coconut
11.	April 3-8, 2023	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.	April 10-15, 2023	I II	Cloning vectors; genomic and cDNA library; Morphology of plant part used, brief idea of cultivation and uses of Turmeric, Cloves.
13.	April 17-22, 2023	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>
14.	April 24-29, 2023	I II	Cellular totipotency, differentiation and morphogenesis Morphology of plant part used, brief idea of cultivation and uses of <i>Cannabis</i> , Neem.
15.	May 1-6, 2023	I II	Biology of Agro-bacterium; Botanical description and processing of: <b>Beverages-</b> Tea and Coffee.
16.	May 8-13, 2023	I II	Vectors for gene delivery and marker genes. Botanical description and processing of: <b>Rubber-</b> <i>Hevea</i> . <b>Sugar-</b> Sugarcane.
17.	May 15-20, 2023	I II	Revision General account and sources of timber; energy plantations and bio-fuels.
18.	May 22-26, 2023	I II	Revision Revision



**HEAD**

**Department of Botany  
Dyal Singh College, Karnal**