

**DEPARTMENT  
OF  
BOTANY  
(LESSON PLAN)**

**SESSION: 2020-21**

**Weekly Lesson Plan**  
**B.Sc. (Medical) - I Semester**  
**Session- 2020-21**

**Subject:** Botany

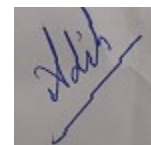
**Paper I:** Diversity of Microbes

**Paper II:** Cell Biology

**ODD SEMESTER**

Week	Dates	Paper	Topic(s)
1.	Nov 2-7,2020	I II	Bacteria general account , structure of Cyanobacteria St. and function of cell wall
2.	Nov 9-14,2020	I II	Nutrition and reproduction in virus general account St. and function of Plasma membrane
3.	Nov. 16-21,2020	I II	Structure of T.M.V. and Bacteria, Economic importance St. and func. of Nucleus and Golgi body
4.	Nov. 23-28,2020	I II	General account o Cyanobacteria St.and func of ER and Chloroplast
5.	Nov 30- Dec. 5,2020	I II	Algae general characters, Classification and economic importance of Algae St.and functions of Mitochondria, Lysosome
6.	Dec 7-12,2020	I II	<i>Volvox</i> important features and life history St and function of Peroxisome , vacuole
7.	Dec. 14-19,2020	I II	<i>Oedogonium</i> important features and life history Mitosis- cell division
8.	Dec 21-26, 2020	I II	<i>Vaucheria</i> important features and life history Meiosis- cell division
9.	Dec. 28 2020-Jan 2,2021	I II	<i>Ectocarpus</i> important eatures and life history Ultrastructure of centromere and telomere, Int. to chromosomes
10.	Jan 4-9,2021	I II	<i>Polysiphonia</i> important features and life history Chromosome morphology

11.	Jan. 11-16,2021	I	General account of Fungi
		II	Chromosomal alterations
12.	Jan 18-23, 2021	I	<i>Phytophthora</i> features and life history
		II	Translocation and Inversion
13.	Jan 25-30, 2021	I	<i>Mucor</i> features and life history
		II	Nuclear Chromosomal alterations
14.	Feb 1-6, 2021	I	<i>Penicillium</i> features and life history
		II	Sex determination , Polyploidy
15.	Feb 8-13,2021	I	<i>Agaricus</i> features and life history,
		II	chromosome organization
16.	Feb 15-20, 2021	I	<i>Colletotrichum</i> features and life history, lichens
		II	Chr. alterations



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**Department of Botany  
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**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - II Semester**  
**Session- 2020-21**

**Subject:** Botany

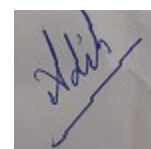
**Paper I:** Diversity of Archegoniates

**Paper II:** Genetics

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	April 15-17, 2021	I	Bryophyta: general characters, Bryophytes classification( upto classes)
2.	April 19-24,2021	I II	Alternation of generation in bryophytes, Structure of <i>Marchantia</i> Basics of genetic material, satellite & repetitive DNA
3.	April 26- May 1,2021	I II	Reproduction ( excluding development ) in <i>Marchantia</i> Experimental evidences of DNA, Structure and Properties of DNA
4.	May 3-8 ,2021	I II	Structure of Anthoceros(Anthocerotopsida) Introduction of Genetic inheritance, basics of Mendelism
5.	May 10-15,2021	I II	Reproduction (excluding development) in <i>Anthoceros</i> DNA replication
6.	May 17-22,2021	I II	Structure of <i>Funaria</i> Concept of genetic crosses, Linkage and significance
7.	May 24-29,2021	I II	Reproduction ( excluding development ) in <i>Funaria</i> Genetic interactions
8.	May 31- June 5,2021	I II	Pteridophta: general characters, Pteridophyta classification( upto classes) and alternation of generation DNA-protein interactions, Genetic code, types of genetic material , central dogma
9.	June 7-12,2021	I II	Structure and reproduction (excluding development) of <i>Rhynia</i> (Psilopsida) Transcription
10.	June 14-19, 2021	I II	Structure and reproduction (excluding development) of <i>Selaginella</i> (Lycopsida) Translation

11.	June 21-26,2021	I	Structure and Reproduction ( excluding development ) in <i>Equisetum</i> (Sphenopsida)
		II	Mutation basics, types of mutations
12.	June 28- July 3,2021	I	Structure and Reproduction ( excluding development ) in <i>Pteris</i> (Pteropsida)
		II	DNA damage and repair, transposable elements
13.	July 5-10,2021	I	Revision
		II	Gene regulation – Operon model, Protein, plastid, Extra- nuclear inheritance



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**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - III Semester**  
**Session- 2020-21**

**Subject:** Botany

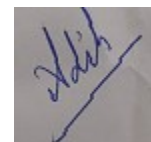
**Paper I:** Biology and Diversity of Seed Plants I

**Paper II:** Plant Anatomy

**ODD SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	Nov 2-7,2020	I	Introduction to the syllabus
		II	General characters of Gymnosperms Diversity of Life forms
2.	Nov 9-14,2020	I	Diversity of Gymnosperms, Evolution of Gymnosperms
		II	Tissues-meristematic
3.	Nov. 16-21,2020	I	Geological Time Scale, Pilger and Melchior's (1954) system of classification
		II	Simple permanent Tissues
4.	Nov. 23-28,2020	I	Morphology and anatomy of root of <i>Cycas</i>
		II	Complex Permanent Tissue
5.	Nov 30- Dec. 5,2020	I	Morphology and anatomy of stem leaf/leaflet and reproductive parts of <i>Cycas</i>
		II	The Shoot system-shoot apical meristem and its histological organizations
6.	Dec 7-12,2020	I	Mode of reproduction, life-cycle and economic importance of <i>Cycas</i>
		II	Monocot and dicot stem,
7.	Dec. 14-19,2020	I	Morphology and anatomy of root, stem leaf/leaflet of <i>Pinus</i>
		II	Cambium-structure and functions.
8.	Dec 21-26, 2020	I	Morphology and anatomy of and reproductive parts of <i>Pinus</i>
		II	Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm
9.	Dec. 28 2020-Jan 2,2021	I	Mode of reproduction, life-cycle and economic importance of <i>Pinus</i>
		II	Anomalous secondary growth ( <i>Dracaena</i> , <i>Boerhaavia</i> and <i>Achyranthes</i> )
10.	Jan 4-9,2021	I	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts mode of <i>Ephedra</i>
		II	Leaf-Types of leaves (simple and compound); phyllotaxy

11.	Jan. 11-16,2021	I II	Reproduction, Life-cycle and economic importance of <i>Ephedra</i> Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.
12.	Jan 18-23, 2021	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 25-30, 2021	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.	Feb 1-6, 2021	I II	General characters of Angiosperms including primitive angiosperms (Amentiferae, Ranales) Secondary growth in dicot root.
15.	Feb 8-13,2021	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 15-20, 2021		Revision



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**Department of Botany  
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**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - IV Semester**  
**Session- 2020-21**

**Subject:** Botany

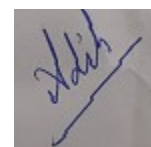
**Paper I:** Biology and Diversity of Seed Plants - II

**Paper II:** Plant Embryology

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	April 15-17, 2021	I	Taxonomy and Systematics - Introduction
2.	April 19-24,2021	I II	Fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny). Flower-a modified shoot; functions of various floral parts.
3.	April 26- May 1,2021	I II	Role of chemotaxonomy, Cytotaxonomy and taximetrics in relation to taxonomy. Microsporangium, its wall and dehiscence mechanism.
4.	May 3-8 ,2021	I II	Botanical Nomenclature, principles and rules, principle of priority. Microsporogenesis, pollen grains and its structure (pollen wall).
5.	May 10-15,2021	I II	Type concept, taxonomic ranks, Keys to identification of plants. Pollen-pistil interaction; self incompatibility
6.	May 17-22,2021	I II	Flower and Types of Inflorescence. Pollination (types and agencies);
7.	May 24-29,2021	I II	Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl. Pollen germination (microgametogenesis) Male gametophyte.
8.	May 31- June 5,2021	I II	Diagnostic features and economic importance of Ranunculaceae, Brassicaceae Structure of Megasporangium (ovule), its curvatures
9.	June 7-12,2021	I II	Diagnostic features and economic importance of Malvaceae, Euphorbiaceae Megasporogenesis and Megagametogenesis.
10.	June 14-19, 2021	I	Diagnostic features and economic importance of

		II	Rutaceae, Leguminosae Female gametophyte (mono-, bi- and Tetrasporic).
11.	June 21-26,2021	I II	Diagnostic features and economic importance of Apiaceae, Asclepiadaceae, Asteraceae, Double fertilization. Endosperm types and its biological importance.
12.	June 28- July 3,2021	I II	Diagnostic features and economic importance of Lamiaceae, Solanaceae Embryogenesis in Dicot and Monocot; polyembryony, Structure of Dicot and Monocot seed.
13.	July 5-10,2021	I II	Diagnostic features and economic importance of Liliaceae, Poaceae Fruit types; dispersal mechanisms in fruits and seeds



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**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - V Semester**  
**Session- 2020-21**

**Subject:** Botany

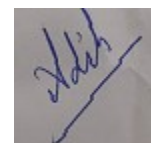
**Paper I:** Plant Physiology

**Paper II:** Ecology

**ODD SEMESTER**

Week	Dates	Paper	Topic(s)
1.	Nov 2-7,2020	I II	Physical properties of water, Imbibition, Diffusion Ecology introduction, water , humidity - climatic factors
2.	Nov 9-14,2020	I II	Osmosis, plasmolysis, absorption & transport of water Wind, light , temperature – climatic env. factors
3.	Nov. 16-21,2020	I II	Transpiration types, physiology of stomata, factors affecting and importance Edaphic , topographic – env. Factors , soil profile , physio- chemical nature
4.	Nov. 23-28,2020	I II	Essential macro and micro nutrients and their role, mineral uptake and deficiency symptoms Biotic environmental factors- special interactions
5.	Nov 30- Dec. 5,2020	I II	Source- sink relationship, mechanism of phloem transport Eco. Adaptations – morph. And anat. Features of hydrophytes and xerophytes
6.	Dec 7-12,2020	I II	Significance of photosynthesis, historical aspect Morphology and anatomy of halophytes
7.	Dec. 14-19,2020	I II	Action spectra, enhancement effect, concept of two photosystems, Z-scheme Pop. Ecology – biotic pot. , growth curves
8.	Dec 21-26, 2020	I II	Photophosphorylation, calvin cycle, photosynthesis Ecotypes, ecads, qualitative community ecology
9.	Dec. 28 2020-Jan 2,2021	I II	C4 pathway- photosynthesis, CAM, photorespiration, ATP- the biological energy currency Quantitative community ecology , analytical community ecology
10.	Jan 4-9,2021	I II	Aerobic and anaerobic respiration, kreb cycle, respiration Synthetic community eco. , Eco. succession
11.	Jan. 11-16,2021	I II	Electron transport mechanism Ecosystem- st. and funct. , food chain, food web , eco. pyramids
12.	Jan 18-23, 2021	I II	Oxidative phosphorylation, PPP, seed dormancy Energy flow in an ecosystem. Biogeochemical cycles – carbon, nitrogen and water cycle
13.	Jan 25-30, 2021	I	Plant movements, photoperiodism, physiology of

		II	flowering Phytogeography, various regions and vegetation types of india
14.	Feb 1-6, 2021	I II	Florigen concept, senescence physiology Env. Pollution- sources types and control of air & water pollution
15.	Feb 8-13,2021	I II	ATP detail, fruit ripening Green house effect, green house gases, impact of global warming
16.	Feb 15-20, 2021	I II	Revision Carbon trading, ozone layer depletion, biomagnification



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**Weekly Lesson Plan**  
**B.Sc. (Biotechnology) - VI Semester**  
**Session- 2020-21**

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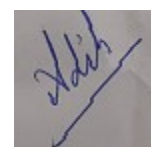
**Paper I:** Biochemistry and Plant Biotechnology

**Paper II:** Economic Botany

**EVEN SEMESTER**

<b>Week</b>	<b>Dates</b>	<b>Paper</b>	<b>Topic(s)</b>
1.	April 15-17, 2021	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 19-24,2021	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, Maize
3.	April 26- May 1,2021	I II	Definitions; phases of growth and development; Plant hormones- auxins, 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, Pea
4.	May 3-8 ,2021	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 Potato, Tomato, Onion
5.	May 10-15,2021	I II	Structure and functions of lipids; fatty acid biosynthesis; B-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids. Origin, distribution, botanical description, brief idea of cultivation and uses of Cotton, Jute, flax
6.	May 17-22,2021	I II	Biology of nitrogen fixation; importance of nitrate reductase and its regulation; Origin, distribution, botanical description, brief idea of cultivation and uses of Groundnut, Mustard, Coconut
7.	May 24-29,2021	I	Ammonium assimilation.

		II	Morphology of plant part used, brief idea of cultivation and uses of Coriander, Ferula, Ginger, Turmeric, Cloves
8.	May 31- June 5,2021	I II	Tools and techniques of recombinant DNA technology; 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.
9.	June 7-12,2021	I II	Cloning vectors; genomic and cDNA library; Botanical description and processing of <b>Beverages-</b> Tea and Coffee.
10.	June 14-19, 2021	I II	transposable elements; aspects of plant tissue culture; Botanical description and processing of: <b>Rubber-</b> <i>Hevea</i> . <b>Sugar-</b> Sugarcane.
11.	June 21-26,2021	I II	Cellular totipotency, differentiation and morphogenesis General account and sources of timber; energy plantations and bio-fuels.
12.	June 28- July 3,2021	I II	Biology of Agro-bacterium; vectors for gene delivery and marker genes Revision
13.	July 5-10,2021	I II	.Revision Revision



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