DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.Sc. (Med.) 1st sem Subject: Botany

Week 1 (July 24-29)	----------
Week 2 (August 1-5)	Bacteria: structure, nutrition and reproduction
Week 3 (August 7-12)	Economic importance of bacteria, TMV and Bacteriophage
Week 4 (August 14-18)	Algae: general characters, classification and economic importance, Nostoc and Volvox
Week 5 (August 21-26)	Vaucheria, Ectocarpus, Polysiphonia and general characters of fungus, classification and economic importance
Week 6 (August 28- September 2)	Phytophthora, Penicillium, Puccinia and Colletotrichum
Week 7 (September 4 -9)	Lichens and economic importance Class test on unit 1
Week 8 (September 11 -16)	Bryophytes: general characters, classification, economic importance and Marchantia
Week 9 (September 18 -22)	Structure and reproduction in Anthoceros and Funaria
Week 10 (September 25 -30)	Pteridophytes: general characters, classification and economic importance and Rhynia
Week 11 (October 3-7)	Structure and reproduction in Selaginella and Equisetum and Pteris Group discussion on different topics of Bryophytes
Week 12 (October 9-14)	Pteris, Heterospory and seed habit, Stelar evolution
Week 13 (October 16 - 21)	General characters of Gymnosperms, classification, economic importance and Cycas
Week 14 (October 23-31)	Structure, anatomy and reproduction in Pinus and Ephedra Conduction of class quiz
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC

November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Paleobotany and geological time scale

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Lesson Plan (2023-24) ODD Semester

Class: B.A., B.com 1st sem Subject: MDC Botany

Week 1 (July 24-29)	----------
Week 2 (August 1-5)	Introduction of Botany
Week 3 (August 7-12)	General characteristics, morphology and economic importance of Algae
Week 4 (August 14-18)	General characteristics, morphology and economic importance of Bryophytes
Week 5 (August 21-26)	General characteristics, morphology and economic importance of Pteridophytes
Week 6 (August 28- September 2)	General characteristics, morphology and economic importance Gymnosperms
Week 7 (September 4 -9)	General characteristics, morphology and economic importance of Angiosperms
Week 8 (September 11 -16)	General characteristics, morphology and economic importance of viruses
Week 9 (September 18 -22)	General characteristics, morphology and economic importance of Bacteria
Week 10 (September 25 -30)	General characteristics, morphology and economic importance of Fungi
Week 11 (October 3-7)	General characteristics, morphology and economic importance of Lichens
Week 12 (October 9-14)	Revision and Test
Week 13 (October 16 - 21)	Revision and Test
Week 14 (October 23-31)	Revision and Test
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets

Week 17 (November 20-24)	Revision

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Lesson Plan (2023-24) EVEN Semester

Class: B.Sc. (Med.) 2nd sem Subject: Botany

Week 1 (January 1-6)	Botanical nomenclature, ICBN and ICN
Week 2 (January 8-13)	Herbaria, Botanical garden, Floristic Diversity, Monographs and journals
Week 3 (January15-20)	Taxonomic evidences and Types of Inflorescence and flowers
Week 4 (January 22-27)	Classification, and Angiosperm phylogeny
Week 5 (January 29- February 3)	Features and economic importance of Ranunculaceae, Brassicaceae, Malvaceae and Euphorbiaceae
Week 6 (February 5-10)	Family Rutaceae, Leguminosae, Apocynaceae and Lamiaceae
Week 7 (February 12-17)	Family Solanaceae, Asteraceae, Poaceae and Orchidaceae
Week 8 (February 19-23)	Ecology and Environmental factors Class test on unit 1
Week 9 (February 26 March 2)	Population ecology
Week 10 (March 4-9)	Community ecology
Week 11 (March 11-16)	Ecosystem : Structure and Function
Week 12 (March 18-22)	Phytogeography Group discussion on different aspects of ecology and environment
Week 13 (March 23-31)	Holi Break
Week 14 (April 1-6)	Environmental pollution
Week 15 (April 8-13)	Global change: greenhouse gases and global warming Conduction of class quiz
Week 16 (April 15-20)	Biodiversity
Week 17 (April 22- 30)	Revision and class test

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Lesson Plan (2023-24) EVEN Semester

Class: B.A.,B.Com (2nd sem) Subject: MDC Botany

Week 1 (January 1-6)	Introduction of economic Botany,Origin of Cultivated Plants Morphology and economic importance of : Food plants - Cereals Rice
Week 2 (January 8-13)	Botany of Wheat and Maize
Week 3 (January 15-20)	Pulses - Gram, Arhar
Week 4 (January 22-27)	Pea ,Vegetables: Potato
Week 5 (January 29- February 3)	Tomato and Onion.
Week 6 (February 5-10)	Fibers: Cotton , Mustard
Week 7 (February 12-17)	Coconut, Morphology and economic importance of Spice Black pepper
Week 8 (February 19-23)	Coriander, Ginger
Week 9 (February 26 March 2)	Cloves, saffron
Week 10 (March 4-9)	Botany of Medicinal Plants: Cinchona, Atropa
Week 11 (March 11-16)	Opium, Cannabis
Week 12 (March 18-22)	Neem, Botanical description and processing of Beverage Tea
Week 13 (March 23-31)	Holi Break
Week 14 (April 1-6)	Coffee , Types of wood.
Week 15 (April 8-13)	Revision & Test
Week 16 (April 15-20)	Revision & Test
Week 17 (April 22- 30)	Revision & Test

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Lesson Plan (2023-24) ODD Semester

Class: B.Sc.Life Science 3rd sem Subject: Botany

Week 1 (July 24-29)	----------
Week 2 (August 1-5)	Diversity in plant forms-annuals, biennials and perennials. Tissues-meristematic and permanent (simple and complex). The Shoot system-shoot apical meristem and its histological organizations (monocot and dicot stem)
Week 3 (August 7-12)	Cambium-structure and functions. Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood
Week 4 (August 14-18)	Periderm ,Anomalous secondary growth (Dracaena, Boerhaavia and Achyranthes)
Week 5 (August 21-26)	Leaf-Types of leaves (simple and compound); phyllotaxy.Root system- the root apical meristem; the histological organization (monocot and dicot root
Week 6 (August 28- September 2)	Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.
Week 7 (September 4 -9)	Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves; leaf abscission. Stomatal apparatus and their morphological type
Week 8 (September 11 -16)	Secondary growth in dicot root. Structural modifications in roots- storage (Beta), Respiratory (Rhizophora), Epihytic (Vanda)
Week 9 (September 18 -22)	General characters and diversity of Gymnosperms (seed plants without fruits).Morphology and anatomy of root, stem leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of Cycas
Week 10 (September 25 -30)	General characters of Angiosperms including primitive angiosperms (Amentiferae, Ranales, Magnoliales), Ephedra
Week 11 (October 3-7)	Geological Time Table; Evolution of Seed Habit
Week 12 (October 9-14)	Pilger and Melchior's (1954) system of classification.Palaeobotany-Fossils and Fossilization
Week 13 (October 16 - 21)	Study of Fossil plants: Lyginopteris,WilliamsoniaCycadeoidea (=Bennettites).

Week 14 (October 23-31)	Morphology and anatomy of root, stem leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of Pinus.
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Revision

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Lesson Plan (2023-24) EVEN Semester

Class: B.Sc. Life Science 4th sem **Subject: Botany**

Week 1 (January 1-6)	Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny.
Week 2 (January 8-13)	Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler&Prantl
Week 3 (January 15-20)	Flower-a modified shoot; functions of various floral parts. Microsporangium, its wall and dehiscence mechanism.
Week 4 (January 22-27)	Botanical Nomenclature, principles and rules, principle of priority. Type concept, taxonomic ranks
Week 5 (January 29- February 3)	Microsporogenesis, pollen grains and its structure (pollen wall). Pollen-pistil interaction; self incompatibility.
Week 6 (February 5-10)	Pollination (types and agencies); pollen germination (microgametogenesis). Male garnetophyte.
Week 7 (February 12-17)	Keys to identification of plants. Flower and Types of Inflorescence.
Week 8 (February 19-23)	Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis. Female gametophyte (mono-, bi- and Tetrasporic).
Week 9 (February 26 March 2)	Double fertilization. Endosperm types and its biological importance.
Week 10 (March 4-9)	Embryogenesis in Dicot and Monocot; polyembryony. Structure of Dicot and Monocot seed
Week 11 (March 11-16)	Fruit types; dispersal mechanisms in fruits and seeds
Week 12 (March 18-22)	Ranunculaceae, Brassicaceae, Malvaceae,
Week 13 (March 23-31)	Holi Break
Week 14 (April 1-6)	Euphorbiaceae, Rutaceae, Leguminosae
Week 15 (April 8-13)	Apiaceae, Asclepiadaceae, Lamiaceae
Week 16 (April 15-20)	Solanaceae, Asteraceae, Liliaceae

Week 17 (April 22- 30)	Poaceae ,Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to taxonomy

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Lesson Plan (2023-24) ODD Semester

Class: M.Sc F.Sc + B.sc Medical 5th Sem **Subject: Botany**

Paper-I Plant Physiology & Paper-II Plant Ecology

Week 1 (July 24-29)	Introduction of Syllabus and Papers
Week 2 (August 1-5)	Importance of water to plant life, physical properties of water, Definition; scope and importance; levels of organization
Week 3 (August 7-12)	Imbibition, Diffusion, Introduction; environmental factors- climatic (water, humidity, wind, light, temperature),
Week 4 (August 14-18)	Plasmolysis; absorption and transport of water, edaphic (soil profile, physico-chemical properties), Greenhouse effect and greenhouse gases
Week 5 (August 21-26)	Transpiration-types, topographic and biotic factors (species interaction).
Week 6 (August 28- September 2)	Physiology of stomata, factors affecting transpiration, importance of transpiration. Adaptations of plants to water stress and salinity
Week 7 (September 4 -9)	Essential macro and micro elements and their role, Population Ecology: Basic concept; characteristics; biotic potential,
Week 8 (September 11 -16)	Mineral uptake; deficiency symptoms. growth curves; ecotypes and ecads. impacts of global warming; carbon trading
Week 9 (September 18 -22)	Mechanism of phloem transport; source-sink relationship; factors affecting translocation
Week 10 (September 25 -30)	Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle, Concepts; characteristics (qualitative and quantitative-analytical and synthetic); methods of analysis; ecological succession
Week 11 (October 3-7)	C4 pathway; CAM plants; photorespiration. Respiration: ATP–the biological energy currency; Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow)
Week 12 (October 9-14)	aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemi-osmotic theory); redox -potential; oxidative phosphorylation; carbon and nitrogen; hydrological (water) cycle

Week 13 (October 16 - 21)	Pentose phosphate pathway. Seed dormancy; plant movements; the concept of photoperiodism; Phyto-geographical regions of India; vegetation types of India (forests).
Week 14 (October 23-31)	Physiology of flowering; florigen concept; physiology of senescence; fruit ripening, Sources, types and control of air and water pollution.
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Revision

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Lesson Plan (2023-24) EVEN Semester

Class: M.Sc F.Sc + B.sc Medical 6th Sem **Subject: Botany**

Paper-I Biochemistry and Plant Biotechnology & Paper-II Economic Botany

Week 1 (January 1-6)	Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; Origin, distribution, botanical description, brief idea of cultivation and uses of the following: Food plants- Cereals (Rice, Wheat and Maize).
Week 2 (January 8-13)	Concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action. Pulses- (Gram, Arhar and Pea).
Week 3 (January 15-20)	Growth and development: Definitions; phases of growth and development; Vegetables- (Potato, Tomato and Onion).
Week 4 (January 22-27)	Plant hormones- auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action, Fibers- Cotton, Jute and Flax.
Week 5 (January 29- February 3)	Photo-morphogenesis; phytochromes and their discovery, Oils- Groundnut, Mustard and Coconut.
Week 6 (February 5-10)	Physiological role and mechanism of action of phytochrome. Morphology of plant part used, brief idea of cultivation and uses of the following: Spices- Coriander, Ferula, Ginger
Week 7 (February 12-17)	Structure and functions of lipids; Turmeric, Cloves.
Week 8 (February 19-23)	Fatty acid biosynthesis; B-oxidation; Medicinal Plants- Cinchona, Rauwolfia, Atropa, Opium
Week 9 (February 26 March 2)	Saturated and unsaturated fatty acids; storage and mobilization of fatty acids. Cannabis, Neem.
Week 10 (March 4-9)	Biology of nitrogen fixation; Botanical description and processing of: Beverages- Tea and Coffee.
Week 11 (March 11-16)	Importance of nitrate reductase and its regulation; ammonium assimilation, Rubber- Hevea. Sugar- Sugarcane
Week 12 (March 18-22)	Tools and techniques of recombinant DNA technology; cloning vectors, General account and sources of timber
Week 13 (March 23-31)	Holi Break
Week 14 (April 1-6)	Genomic and cDNA library; transposable elements; aspects of plant tissue culture

Week 15 (April 8-13)	Cellular totipotency, differentiation and morphogenesis; energy plantations and bio-fuels
Week 16 (April 15-20)	Biology of Agro-bacterium; vectors for gene delivery and marker genes.
Week 17 (April 22- 30)	Revision

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