LESSON PLAN (ODD SEMESTER)

DEPARTMENT OF BOTANY

B.Sc. Life Science (Semester 1) Session 2025-26

Subject: Diversity of Microbes & Lower Cryptogams; Cytology (DSC)

Dr. Neelam Kumari (Associate Professor)

21thJuly to Aug.2025	**Paper- Unit 1:** Bacteria: Structure, types (gram positive & gram negative), Reproduction and Economic Importance. Viruses: General account of Virus including structure of TMV and Bacteriophage.
September2025	**Unit 2: Algae** Algae: General characters, Classification up to classes (G.M. Smith, 1955), Economic Importance, and Life Cycle (excluding development) of Nostoc (Cyanophyceae), Volvox, (Chlorophyceae), Ectocarpus (Phaeophyceae). **UNIT: 3 Fungi** Fungi: General characters, Classification up to classes (Alexopoulos and Mims, 1979), Economic Importance, and Life Cycle (excluding development) of *Phytophthora* (Mastigomycotina), *Penicillium* (Ascomycotina), *Puccinia* (Basidiomycotina). General account of Lichens. **Assignment –I Test-I**
October2024(19th oct. to 26th oct.25 Diwali Break)	**UNIT: 4** Cell as a Unit of Life, Prokaryotic and Eukaryotic cells. Basic Structure and Function of Eukaryotic Cell Organelles : Cell Wall, Plasma Membrane, Nucleus, Ribosome, Endoplasmic Reticulum, Chloroplast, Mitochondria. **Assignment –II Test-II**
November2025	Cell Division: Mitosis and Meiosis. **Revision**
22th Nov.to22Dec.2025	**Examination**

H.O.D. BOTANY 13/9/25

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LESSON PLAN (ODD SEMESTER)

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B.Sc. II (Semester 3rd) Session 2025-26

Dr. Neelam Kumari (Associate Professor)

Diversity of seed Plants: Gymnosperms & Angiosperms (DSC) Course Code: C2BOT301T

14th July to August2025	**Unit 1:** Gymnosperms: General characters and Economic importance, Classification up to classes (Smith), Morphology, Anatomy and Reproduction of ***cycas*** and ***Pinus***(excluding development details)
September 2025	**Unit II:** Taxonomy and Systematics, Types of classification: Artificial, Natural and Phylogenetic, Bentham and Hooker classification, Its merits and demerits. Botanical Nomenclature, International Code for Botanical Nomenclature (ICBN), Taxonomic Keys. **Unit III:** Herbarium: Preparation steps and types, Type, Concept, Botanical Garden, And Introduction to Botanical Survey of India **Assignment-1 Test-1**
October 2025(18thOct.to 26th Oct.25 Diwali Break)	**Unit III**: Flower and its Parts (Semi technical description), Types of Inflorescence, Simple and Compound Leaves, Phyllotaxy. **Unit IV:** Diagnostic features and economic importance of the following families: Malvaceae, Solanaceae, Lamiaceae, Asteraceae,
November2025	**Unit IV:** Diagnostic features and economic importance of the following families: Fabaceae and Poaceae **Revision**
December2025	**Examination**

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LESSON PLAN (ODD SEMESTER)

DEPARTMENT OF BOTANY

B.Sc. III (Semester 5th) Session 2025-26

Dr. Neelam Kumari (Associate Professor)

Paper Name: Cell Biology (BOT501L) and Molecular Biology (BOT502L)

14th July to August2025	**Paper I: Unit 1: Cell as a unit of Life** The Cell Theory; Prokaryotic and eukaryotic cells; Cell size and shape; Eukaryotic Cell components. Cell Cycle: Overview of Cell cycle, Mitosis and Meiosis; Molecular controls. **Paper- II Unit 1: Genetic material and DNA Replication** 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. DNA replication (Prokaryotes and eukaryotes): bidirectional replication, semi–conservative, semi discontinuous RNA priming, replication of linear dsDNA, replicating the 5′ end of linear chromosome including replication enzymes
September2025	**Paper I: Unit 2: Cell Organelles-I** 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. **Paper II: Unit 2: Transcription** RNA structure and types of RNA, Transcription in prokaryotes: Prokaryotic RNA polymerase, role of sigma factor, promoter, initiation, elongation and termination of RNA chains. Transcription in eukaryotes: Eukaryotic RNA polymerases **Paper II: Unit 3: Translation and gene expression** Genetic code and its characteristics, prokaryotic and eukaryotic translation: ribosome structure and assembly, charging of tRNA, amino acyl tRNA synthetase, mechanism of initiation, elongation and termination of polypeptides, Regulation of gene expression in prokaryotes: Operon concept (inducible and repressible system). **Assignment -1, Test-1**
October2025(19th to 26th Oct.25Diwali Break)	**Paper I: Unit 3: Cell Organelles-II** 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). **Paper I: Unit 4: Cell Membrane and Cell Wall** 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. **Paper II: Unit 4: Techniques in Molecular Biology** Introduction to electrophoresis, Agarose gel electrophoresis, acrylamide gel electrophoresis, Immuno-electrophoresis, PCR and its variants, application of PCR, **Assignment -2, Test-2**
1st to21th November2025	**Paper II: Unit 4: Techniques in Molecular Biology (contd.)** Principles of microscopy; Light and Phase contrast microscopy; Electron microscopy (EM)- Scanning EM and Scanning Transmission EM (STEM). **Revision**
22nd Nov.2025	**Examination**

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LESSION PLAN (ODD SEMESTER)

DEPARTMENT OF BOTANY

Botany: MDC-Plants in Every Day Life (Semester- 3rd) Session 2025-26

Dr. Neelam Kumari (Associate Professor)

14thJuly to Aug.2025	**Unit 1:** Plant services to human in everyday life: Introduction to science of Botany. Plant resources in everyday life, Role of plants: Air purifier (photosynthesis); plants used in rituals/festivals; Pollution control: Plants used in pollution control and Phytoremediation;
September2025	**Unit-1** Pollution indicator (lichens), Nutrient source (litter manure, organic manure), aesthetic value of plants. **Unit 2:** Plant resources and utilization (brief description of plants and/or plant parts used), Cereals; Rice, Wheat, Legumes; Bengal gram, (Chana), Green gram (Mung), Soybean, Spices; Turmeric, **Assignment –I Test-I**
October2024(19th oct. to 26th oct.25 Diwali Break)	**Unit -2** Beverages; Tea; Sugar yielding plant; Sugarcane, Medicinal plants; Tulsi, Neem, Giloy, Edible oils; Groundnut, Mustard, Fibres; Cotton, Jute.
November2025	**Revision**
22th Nov.to 22Dec.2025	**Examination**

H.O.D. BOTANY 13/9/25

Dr. Neelam Kumari

PRINCIPAL 13/09/25