lesson Plan(ODD SEMESTER)

DEPARTMENT OF BOTANY

B.Sc. Life Science (Semester 1) Session 2024-25

Dr. Neelam Kumari(Associate Professor)

21thJuly to August 2024	**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.
September2024	**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	**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. Cell Division : Mitosis and Meiosis. **Assignment –II Test-II**
November2024	**Revision**
December2024	**Examination**

H.O.D. **PRINCIPAL**

lesson Plan(ODD SEMESTER)

DEPARTMENT OF BOTANY

MDC (Semester 1) Session 2024-25

Dr. Neelam Kumari(Associate Professor)

Name of Paper: Basics of Botany

21thJuly toAugust 2024	**UNIT -1** Botany : Definition, Aim and Scope of Botany, Plant diversity, Plant and Human Life. Different forms of Plants, General account on Habit, Plant parts and their Functions. Morphology of plant parts in reference to Stem, Root, Leaf, Flower and Fruit.
September2024	**UNIT -II** Basics of Plant Physiology, Osmosis, Diffusion, Imbibition, Introduction to Photosynthesis, Its site and Products, Importance of Photosynthesis, Transpiration and Its Significance.
October2024	**UNIT-II** Pollination and Pollinating agents, Xerophytes and Hydrophytes plants with common examples, Abiotic Factors affecting the Plants. Conservation, Botanical Garden, Ecological & Economic Importance of Plants.
November2024	**Revision**
December2024	**Examination**

H.O.D. **PRINCIPAL**

Lesson Plan(ODD SEMESTER)

DEPARTMENT OF BOTANY

B.Sc. II (Semester 3) Session 2024-25
Dr. NeelamKumari (Associate Professor)

Plant Anatomy (BOT301L Plant Embryology(BOT302L)

Skill EnhancementMushroom Culture Technology (BOT 306 L)

21th July to August2024	**Paper I: Unit 1: Meristematic and permanent tissues** Root and shoot apical meristems; Simple and complex tissues. Theories of shoot apex. **Paper II: Unit 1: Structural organization of flower** Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac. Placentation-Types. **Unit 1:** Introduction, history. Nutritional and medicinal value of edible mushrooms; Poisonous mushrooms. Types of edible mushrooms available in India –*Volvariellavolvacea, Pleurotuscitrinopileatus*, *Agaricusbisporus*.
September 2024	**Paper I:Unit 2: Organs** Structure of dicot and monocot root stem and leaf, Stomata and its types, epidermal hairs, Trichomes **Paper II: Unit 2: Pollination and fertilization** Pollination mechanisms and adaptations; Double fertilization; Seed-structure appendages and dispersal mechanisms. **Paper II: Unit 3: Embryo and endosperm** Endosperm types, structure and functions; Dicot and monocot embryo; Embryo-endosperm relationship. **Unit 2:** Cultivation Technology: Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation - Low cost technology, Composting technology in mushroom production. **Assignment-1 Test-1**

	Paper I: Unit 3: Secondary Growth Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood).Anomalous secondary growth in Boehravia and Dracaena. **laptive and protective systems** Epidermis, cuticle, Anatomical aspects of adaptations in xerophytes, hydrophytes, halophytes. **Paper II: Unit 4: Apomixis and polyembryony** Definition, types and practical applications. and nutrition: Short-term storage (Refrigeration - upto 24 hours) Long nning, pickels, papads), drying, storage in salt solutions. Nutrition - acids, mineral elements nutrition - Carbohydrates, Crude fibre content -
October 2024	**Assignment-2 and Test-2**
	Unit 4: Food Preparation: Types of foods prepared from mushroom. Research Centres - National level and Regional level. Cost benefit ratio - Marketing in India and abroad, Export Value.
November2024	**Revision**
December2024	**Examination**

H.O.D. **PRINCIPAL**

Lesson Plan (ODD SEMESTER)

DEPARTMENT OF BOTANY
B.Sc. III (Semester 5) Session 2023-24
Dr. NeelamKumari (Associate Professor)

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

21th July to August2024	**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
September2024	**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 tRNAsynthetase, mechanism of initiation, elongation and termination of polypeptides, Regulation of gene expression in prokaryotes: Operon concept (inducible and repressible system). **Assignment -1, Test-1**

October2024	**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, Principles of microscopy; Light and Phase contrast microscopy; Electron microscopy (EM)- Scanning EM and Scanning Transmission EM (STEM). **Assignment -2, Test-2**
November2024	**Revision**
December2024	**Examination**

H.O.D. **PRINCIPAL**