

Govt. Post Graduate Nehru College, Jhajjar Lesson Plan (2026-27)

Teacher Name: Dr. Pooja

Class: B.Sc. Physical Sciences 2nd (MIC-2 Botany) (3rd Semester)

Paper: Basics of Plant Genetics (24BOT402MI01)

Month/ Week	Topics
August	Mendelian genetics and its extension: Mendelism: History; Principles of inheritance. Chromosome theory of inheritance; Autosomes and sex chromosomes; pedigree analysis. Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Epistasis, Pleiotropy. Recessive and Dominant traits, Penetrance and Expressivity, Numericals; Polygenic inheritance.
September	Extrachromosomal Inheritance: Chloroplast mutation: Variegation in Four-o'-clock plant; Mitochondrial mutations in yeast. Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium. Linkage, crossing over and chromosome mapping: Linkage and crossing over-Cytological basis of crossing over; Recombination frequency, Numerical based on gene mapping; Sex Linkage.
October	Chromosomal aberrations: Structural and Numerical - deletions, duplications, translocations. Position effect, inversions, aneuploidy, polyploidy. Sex chromosomes and Sex determination in Plants. Gene mutations: Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents). Detection of mutations: ClB method. Role of Transposons in mutation.
November	Fine structure of gene: Classical vs molecular concepts of gene; Cis-Trans complementation test for functional allelism. Population and Evolutionary Genetics: Allele frequencies, Genotype frequencies, Hardy- Weinberg Law, role of natural selection, mutation, genetic drift. Genetic variation and Speciation.


Teacher Incharge


Head of Department

Govt. Post Graduate Nehru College, Jhajjar Lesson Plan (2026-27)

Teacher Name: Dr. Pooja

Class: B.Sc. Life Sciences Ist DSC (1st Semester)

Paper: Diversity of Microbes (24BOTM401DS01)

Month/ Week	Topics
August	Viruses: Discovery, physiochemical and biological characteristics; classification (Baltimore), general structure with special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Bacteria: Discovery, general characteristics; Types-archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts); Cell structure; Nutritional types; Reproduction-vegetative, asexual and ecombination (conjugation, transformation and transduction). Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).
September	Cyanobacteria: General characters; thallus organization; cell structure; heterocyst and akinete development; reproduction; Life-cycle of Nostoc. Economic Importance of Cyanobacteria Algae: General characteristics; Algae in diversified habitats (terrestrial, freshwater, marine); thallus organization; cell ultrastructure; reproduction (vegetative, asexual and sexual); Algal classification criteria- pigments, reserve food and flagella; Classification upto classes (Smith, 1955); algal blooms and red tides; algal biofertilizers. Algal blooms and red tides; Algal biofertilizers.
October	Morphology and life-cycle of Volvox, Oedogonium (Chlorophyceae), Morphology and life-cycle of Vaucheria (Xanthophyceae), Ectocarpus (Phaeophyceae) and Polysiphonia (Rhodophyceae) Economic importance of algae Fungi: General characteristics; organization of thallus; nutrition and reproduction; Classification upto classes (Ainsworth, 1966);
November	Morphology and life-cycles of Phytophthora (Mastigomycotina), Mucor (Zygomycotina), Penicillium (Ascomycotina), Puccinia, Agaricus (Basidiomycotina), Colletotrichum (Deuteromycotina); Economic importance of fungi Lichens: Classification, morphology, internal structure, reproduction and Economic importance Mycorrhiza: Ectomycorrhiza and endomycorrhiza and their significance

27/08/26
Teacher Incharge

Arind
Head of Department

Govt. Post Graduate Nehru College, Jhajjar Lesson Plan (2026-27)

Teacher Name: Dr. Pooja

Class: B. Com Ist MDC (1st Semester)

Paper: Organic Farming

Month/ Week	Topics
August	Basics of organic farming: Concept and components of organic farming, aims and objectives; Need of organic farming; Historical development of organic farming in India. Status of organic farming in India; Advantages and disadvantages of organic farming. Organic farming process- Concept of farming system, Developing organic farms. Important steps & methods; Pure organic farming and integrated farming system (combination of organic and inorganic). Plant nutrients: Essential plant nutrients, their role in plant growth and development, Nutrient uptake and utilization by plant.
September	Nutrient management in organic farming: Balanced nutrients supply for organic farming system using nutrients from organic sources. Preparation, nutrient content and methods of use of following- FYM/Rural compost, mulching, city compost, oil cakes, animal wastes, vermicomposts, vermiwash, jeevamrit, beejamrit, green manures, biofertilizers. Biofertilizers and their method of use: Nitrogenous, Phosphatic, Potassic, availability of nutrients from above sources. Recycling of organic matter in organic Agriculture-Transformation of organic substances in soil.
October	Disease and pest management in organic farming-Integrated pest & disease managements; Organic pesticides, bio-pesticides; Inorganic pesticides, disadvantages of their use; Seed, seedling and soil treatment measures; Feasibility of complete dependence on organic sources. Weed management in organic farming. Use of Neem and other plant products in organic farming; Organic agri- horticulture in urban & semi urban areas.
November	Certification, Standardization, Marketing - Quality control and certification procedures of organic products. Organic standards In India. Govt. schemes related to organic farming in India. Potential demand and Marketing of organic products. Organic farming and food security in India.

Pooja
27/08/26
Teacher Incharge

Arvind
Head of Department