

Govt. PG Nehru College Jhajjar

Lesson Plan (2026-27)

Name of Lecturer: Sh. Soumya Ranjan Biswal

Designation: Assistant Professor (Botany)

Subject: Botany

Paper Name: Plant propagation and nursery techniques (24BOT403SE1)

Class: BSc 2nd Year (3rd Semester) (SEC)

Month/ Week	Syllabus Cover
August	Unit 1- objectives and scope of nursery, infrastructure for development, propagation structures- mist chambers, humidifiers, greenhouses, glasshouses, cold frames-Hotbeds, poly houses, tools and implements- planning and seasonal activity.
September	Unit 2- seed- structure and types, seed dormancy: causes and methods of breaking dormancy. Seed storage- seed banks, factors affecting seed viability. Soil preparation- land preparation, manuring, watering, sowing. of seeds and seedlings, transplantation of seedlings.
October	Unit 3- potting media- media for propagation and growing nursery plants, soil, sand, peat, sphagnum moss, vermiculite, perlite. Vermicompost production- preparation, use of vermicompost in nursery. Common diseases and their management- Anthracnose, blights, die back, leaf spot, powdery mildew, insect/pest/disease control in nursery. Unit 4- need and potential for multiplication, vegetative propagation, cutting,
November	layering, grafting, budding, Maintenance of mother trees, collection of scion wood sticks, scion stock relationship. Rhizome, corm, runners, and suckers, use of growth regulators., Factors influencing the rooting of cutting and layering
December	Graft incompatibility


Head of Department


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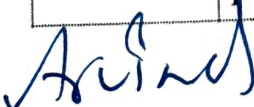
Designation: Assistant Professor

Subject: Botany

Paper Name: Biofertilizers and Biopesticides (24BOT401SE01)

Class: BSc 1st Year (1st Semester) (SEC)

Month	Syllabus Cover
August	Unit 1-Biofertilizers: Definition, scope, status, and importance; Advantages and limitations of biofertilizers compared to chemical fertilizers Types of biofertilizers (e.g. nitrogen-fixing, phosphate-solubilizing, plant growth promoting), Structure and characteristic features of bacterial (<i>Azospirillum</i> , <i>Azotobacter</i> , <i>Rhizobium</i>), actinomycetes (<i>Frankia</i>),
September	Cyanobacterial (<i>Anabaena</i> , <i>Nostoc</i> , <i>Hapalosiphon</i>) and fungal (AM and ectomycorrhiza) biofertilizers. Unit 2- Production of biofertilizers: Strain selection, sterilization, growth, equipment, fermentation (solid state and liquid). Mass production of carrier based and liquid bio fertilizers, Factors affecting the production of biofertilizers (i.e., temperature, pH, aeration, carbon source), Quality control of biofertilizers,
October	Application methods and dosage of biofertilizers, Effect of biofertilizers on soil fertility, plant growth, and yield. Unit 3-Biofertilizers -storage, shelf life, quality control and marketing; regulatory framework and certification for biofertilizers, Application technology for seeds, seedlings, tubers, sets etc.; factors influencing the efficacy of bio fertilizers, Economic feasibility and cost-benefit analysis Future prospects and potential of biofertilizers in sustainable agriculture and environmental protection.
November	Unit 4-Biopesticides: Definition and classification; advantages and limitations of biopesticides compared to chemical pesticides. Modes of action and mechanisms of biopesticides, Characteristics and applications of microbial pesticides -bacteria, fungi and viruses, Characteristics and applications of botanical pesticides (plant extracts and essential oils) Biochemical pesticides (pheromones and repellents), Biocontrol agents <i>Trichoderma</i> spp.,
December	<i>Pseudomonas</i> spp. and <i>Bacillus</i> spp and their efficacy on seed borne pathogens


Head of Department


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

Teacher Name: Sh Soumya Ranjan Biswal

Class: 1st Semester

Paper: Environmental Science

Month	Topics
August	Introduction to Environmental Studies: Multidisciplinary nature of environmental studies. Scope and importance; Concept of sustainability and sustainable development. Societal issues and environment, human population and environment. Ecosystems: Introduction, types, characteristic features, structure and function of the following ecosystem: -a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
September	Renewable and non-renewable resources: Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies
October	e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

November	Biodiversity and its conservation: Introduction -Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values Biodiversity at global, National and local levels. Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex situ conservation of biodiversity.
December	Environmental Pollution: Definition, Cause, effects and control measures of:- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. nuclear hazards h. Solid waste. Role of an individual in prevention of pollution. Disaster management: floods, earthquake, cyclone and landslides. Water Conservation and its strategies. Climate change-green house gases, acid rain and global warming.

Teacher Incharge

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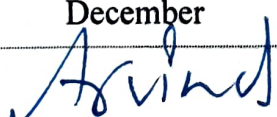
Designation: Assistant Professor (Botany)

Subject: Botany

Paper Name: Fundamentals of Plant Ecology (24BOT401MI01)

Class: BSc 1st Year (1st Semester) (SEC)

Month/Week	Syllabus Cover
August	Unit 1- Introduction to Ecology: Definition; scope and importance; levels of organization. Environment: Introduction; environmental factors- climatic (water, humidity, wind, light, temperature). edaphic (soil profile, physico-chemical properties), topographic and biotic factors (species interaction).
September	Unit 2- Adaptation: Adaptations of plants to water stress and salinity. morphological and anatomical features of hydrophytes, xerophytes and halophytes. Population ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads. Unit 3- community ecology: Concepts; characteristics (qualitative and quantitative-analytical and synthetic
October	Methods of analysis; ecological succession. Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow Biogeochemical cycles: Carbon, nitrogen, phosphorus and hydrological cycle.
November	Unit 4- Phyto-geography: Phyto-geographical regions of India; vegetation types of India (forests). Environmental pollution: Sources, types and control of air and water pollution. Global change: Greenhouse effect and greenhouse gases; impacts of global warming carbon trading; Ozone layer depletion;
December	Biomagnification


Head of Department


Signature