

## LESSON PLAN

Session 2024-25

Class: B.Sc. 1st (Biotechnology)Major

Subject: Introduction to Biotechnology

Paper code: B23-BTY-101

Name of the faculty: Ms. Reetu Kamboj

Month	Week	Topics to be covered
July	22.07.24 -27.07.24	Introduction of biotechnology paper Interdisciplinary pursuit.
	29.07.24- 30.07.24	Main areas of application of biotechnology, Introduction of genetic engineering.
August	01.08.24 -03.08.24	Biotechnology research in India & Developing world.
	05.08.24 -10.08.24	Genes and genomes, public perception of biotechnological products.
	12.08.24 -17.08.24	Proteins and proteome. Safety Guidelines & risk assessment in biotechnology, Revision of basic steps of genetic engineering. Assignment
	19.08.24 - 24.08.24	Intellectual property rights, History of genetic manipulation.
	26.08.24 -31.08.24	Substrates & future of biotechnology. Class test
September	02.09.24 -07.09.24	Scope & techniques of preservation, Fermentation technology. Genetic manipulation topic completed.
	09.09.24 -14.09.24	Animal tissue culture (history, culture media, surfacis, culture procedures), Dna fingerprinting.
	16.09.24 -21.09.24	Cell lines, Organ culture and tissue engineering, Forensic analysis.
	23.09.24 - 29.09.24	Plant tissue culture, (history, culture media, explant)
	30.09.24	Scope & Application of Animal & plant biotechnology
	01.10.24 - 05.10.24	Brief account of Immunotechnology, Industrial Genetics.

<b>October</b>	07.10.24 -12.10.24	Hybridoma Technology and Monoclonal antibodies, Biohazards of genetic engineering. S
	14.10.24 - 19.10.24	Sessional exam.In vitro fertilization and Embryo transfer technology, Molecular markers, Genetic mapping.
	21.10.24 - 26.10.24	Biological control of Environment, bioremediation and waste treatment.
<b>Vacations</b>	27.10.24 -03.11.24	Diwali Vacations
<b>November</b>	04.11.24 -09.11.24	Introduction of enzyme technology.Microbial insecticides, Biofertilizers , oil recovery & bioleaching . Class Test
	11.11.24 - 16.11.24	Applications of Biotechnology.
	18.11.24 -22.11.24	Revision

## LESSON PLAN

Session 2024-25

Class: B.Sc. 1st (Biotechnology) Minor

Subject: Laboratory Techniques & Practices

Paper code: B23-BTY -103

Name of the faculty: Ms. Reetu Kamboj

Month	Week	Topics to be covered
<b>July</b>	22.07.24 -27.07.24	Laboratory rules and Safety Measures
	29.07.24- 30.07.24	Common use equipment - Laminar air flow, Centifuge, Sterlization techniques.
<b>August</b>	01.08.24 -03.08.24	PH meter, Incubator, Fermenter, Dry and Wet sterilization.
	05.08.24 -10.08.24	Colony counter, autoclave, inoculating loop, needle, preferred method of steirlization for different materials.
	12.08.24 -17.08.24	Microscope, colorimeter & spectrophotometer, biological indicators.
	19.08.24 - 24.08.24	Qualitative estimation of sugars.
	26.08.24 -31.08.24	Qulitative estimation of Sugars, checking the efficiency of sterlization process.
<b>September</b>	02.09.24 -07.09.24	Qualitative and Quantitative estimation of Proteins.
	09.09.24 -14.09.24	Determination of various metabolites. Class Test
	16.09.24 -21.09.24	Preparation of Standard curve buffers, Evaluation of different disinfectants .
	23.09.24 - 29.09.24	Preparation of normal, molar, Percent solution
	30.09.24	Thin layer& paper Chromatography
<b>October</b>	01.10.24 - 05.10.24	Evaluation of Different Antiseptics.
	07.10.24 -12.10.24	Two-dimensional chromatography, Sessional exam.
	14.10.24 - 19.10.24	Paper electrophoresis, preparation of cotton plugs under microbiology.
	21.10.24 - 26.10.24	Types of culture Media, Animal and Plant cell culture Media.

<b>Vacations</b>	27.10.24 -03.11.24	Diwali Vacations
<b>November</b>	04.11.24 -09.11.24	Preparation of Dilutions. Class test
	11.11.24 - 16.11.24	Picking of Technique.
	18.11.24 -22.11.24	Revision

## LESSON PLAN

Session 2024-25

Class: B.Sc IIIrd (Biotechnology)

Subject: Plant Biotechnology

Paper code: Paper-XII

Name of the faculty: Ms. Reetu Kamboj

Month	Week	Topics to be covered
<b>July</b>	22.07.24 -27.07.24	History, Scope and Applications of plant biotechnology.
	29.07.24- 30.07.24	Plant Tissue Culture Laboratory
<b>August</b>	01.08.24 -03.08.24	Aseptic Techniques.
	05.08.24 -10.08.24	Washing, drying and sterilization of glassware, sterilization of media, surface sterilization, aseptic work station.
	12.08.24 -17.08.24	Culture Media: Nutritional requirements for plant tissue culture, role of different media components, plant growth regulators Assignment
	19.08.24 - 24.08.24	Different culture media viz. MS, B5 Nitsch and Whites medium, Preparation of culture media.
	26.08.24 -31.08.24	Explants, their cellular characteristics, dedifferentiation and redifferentiation, Class Test
<b>September</b>	02.09.24 -07.09.24	Cellular totipotency, organogenesis and somatic embryogenesis.
	09.09.24 -14.09.24	Micropropagation/clonal propagation of elite species (different routes of multiplication-axillary bud proliferation, somatic embryogenesis, organogenesis), Synthetic seeds.
	16.09.24 -21.09.24	Callus and suspension culture techniques.
	23.09.24 - 29.09.24	Somaclonal variation. Organ culture: Anther & Pollen culture, ovary, ovule, embryo and endosperm culture concept, technique, applications and limitations. Embryo rescue.
	30.09.24	Protoplast culture.

<b>October</b>	01.10.24 - 05.10.24	Somatic hybridization, protoplast fusion techniques (chemical and electro-fusion), selection of hybrids, production of symmetric and asymmetric hybrids and cybrids.
	07.10.24 -12.10.24	Production of secondary metabolites, Biotransformation.
	14.10.24 - 19.10.24	Plant germ plasm conservation and cryopreservation.
	21.10.24 - 26.10.24	Genetic Engineering in plants. Gene transfer in plants - micro projectile bombardment, electroporation, liposome mediated, Calcium phosphate mediated etc.
<b>Vacations</b>	27.10.24 -03.11.24	<b>Diwali Vacations</b>
<b>November</b>	04.11.24 -09.11.24	Transgenic Plants, edible vaccines and Improving food Quality.
	11.11.24 - 16.11.24	Revision
	18.11.24 -22.11.24	Revision

## LESSON PLAN

Session 2024-25

Class: B.Sc Ist (Non - Med, Med, IMB,

Biotech, CND) and B.Com Ist (Gen, Hons.)

Nomenclature of the paper: Environmental Studies Paper Code: B23-VAC-201

Name of the faculty: Ms. Reetu Kamboj

Month	Week	Topics to be covered
July	22.07.24 -27.07.24	Introduction to environmental studies: Multidisciplinary nature of environmental studies; Scope and importance
	29.07.24- 30.07.24	Concept of sustainability and sustainable development.
August	01.08.24 -03.08.24	Ecosystems: Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs
	05.08.24 -10.08.24	Major ecosystems types: Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystem (lakes, rivers, oceans).
	12.08.24 -17.08.24	Natural resources: Renewable and Non- renewable Resources Land resources: Land degradation and soil erosion.
	19.08.24 - 24.08.24	Forest resources: Importance of forests, deforestation: causes and impacts on environment.
	26.08.24 -31.08.24	Water resources: Use and over- exploitation of surface and ground water. Energy resources: Renewable and non- renewable energy sources.
September	02.09.24 -07.09.24	Biodiversity and Conservation: Definition and its types, Endangered and endemic species of India.
	09.09.24 -14.09.24	Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex- situ conservation of biodiversity. Assignment

	16.09.24 -21.09.24	Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational values. Class Test
	23.09.24 - 29.09.24	Environmental pollution Environmental pollution: types, causes, effects and controls; Air
	30.09.24	Environmental pollution: types, causes, effects and controls; water
<b>October</b>	01.10.24-05.10.24	Environmental pollution: types, causes, effects and controls; Soil and Noise
	07.10.24 -12.10.24	Solid waste management: Sources, methods of disposal: Landfill, incineration and composting.
	14.10.24 - 19.10.24	Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Sessional
	21.10.24 - 26.10.24	Environmental Policies & Practices Environmental laws: Environment (Protection) Act, 1986, Air (Prevention & Control of Pollution) Act, 1981, Water (Prevention and control of Pollution) Act, 1974.
<b>Vacations</b>	<b>27.10.24 -03.11.24</b>	<b>Diwali Vacations</b>
<b>November</b>	04.11.24 -09.11.24	Human Communities and the Environment: Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected person.
	11.11.24 - 16.11.24	Disaster management: floods, earthquake, cyclones, landslides and drought. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
	18.11.24 -22.11.24	Revision