

Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Biotechnology (Optional)

Academic Year: 2023 - 24

Annual Teaching Plan

Name of the teacher: Miss Salama Bashirun Mulla

Programme: B.Sc. I, B.Sc. II

Semester: I, III

Subject: Biotechnology Course Title: DSE-1009A Basics of Biotechnology I

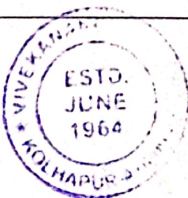
: DSE-1009A Basics of Biotechnology II

: DSE1009 C- Enzyme Technology and Molecular Biology

Month July 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Paper I- Basics of Biotechnology I Scope of Biotechnology Carbohydrates	Scope and Importance of Biotechnology Branches of Biotechnology Introduction carbohydrates
14	2	16		
06	4	10	Paper III- Enzyme technology Credit I- Introduction	Introduction and concept of enzymes
Month Aug-Sept 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Paper II- Basics of Biotechnology II Credit -II Biophysical technique	Spectroscopy, Lambert Beers law Colorimetry
12	3	15		
06	06	10	Paper III- Enzyme technology Credit I- Active site Enzyme inhibition Enzyme kinetics	Enzyme activity, Active site Factors affecting enzyme activity Inhibition
Month October 2023			Module/Unit:	Sub-units planned
10	2	12	Paper I- Basics of Biotechnology I Lipids, Enzymes	Classification function properties
10	3	13	Paper III- Enzyme technology Credit II- Immobilization	Immobilization type and application
Month November 2023			Module/Unit:	Sub-units planned
5	2	07	Paper II- Basics of Biotechnology II Credit -II Centrifugation biochemical technique	Centrifugation Biochemical technique
5	2	07	Paper III- Enzyme technology Credit II Allosteric enzyme, Ribozyme	Structure and function of allosteric enzyme Ribozyme structure function

Name and Signature of Teacher

(Ms. S. B. Mulla)



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Annual Teaching Plan

Name of the teacher: Miss. Salama Harun Nadaf

Programme: B.Sc. II, B.Sc. I Semester: II, IV

Subject: Biotechnology

Course Title: DSE-1009B Cell biology

DSC-1009F1- Advances in Biotechnology

DSC- 1009F2 Cell metabolism and Virology and ATC

Month December 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	B.Sc,I Cell Biology Unit I- Concepts in cell biology	Cell, type , cell cycle, Cell division
10	2	12	B.Sc, III Credit I- Cell Metabolism Credit I- Biochemical techniques	Introduction to carbohydrate metabolism and concept in metabolism Electrophoresis type and all
Month January 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
5	2	12	B.Sc,I Cell Biology Unit I- Cell organelles in cell	Cell organelles structure and function
15	2	17	B.Sc, III Credit I- Lipid Metabolism Credit I- Biochemical techniques	1. Fatty acid synthesis 2. Beta oxidation 3. Tracer Techniques
Month Feb-March 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	0	10	B.Sc,I Cell Biology Unit II- Genetics	Laws of Mendelian inheritance Crosslinking
17	2	19	B.Sc, III Credit I- Nucleic acid Metabolism Credit I- Biochemical techniques	Purine and pyrimidine metabolism Chromatography- Ion exchange.Gel filtration
Month -April 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	B.Sc,I Cell Biology Unit II- Genetics	Epistasis, Multiple alleles, Extrachromosomal material
10	3	13	B.Sc, III Credit I- Protein Metabolism Credit I- Biochemical techniques	Urea Cycle Affinity Chromatography Spectroscopy- I, atomic, Spectrofluometry, Infra red

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Annual Teaching Plan

Name of the teacher: Ms. Supriya Dinanath Potdar

Programme: B.Sc. III, B.Sc. II, B.Sc. I Semester: V, III, I

Subject: Biotechnology Course Title: DSE-1009-E1 Plant & Animal Tissue culture

DSE-1009-C Molecular Biology

Month August 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Plant Biotechnology Credit I Animal Tissue Culture	Historical and conceptual background, Lab org, Sterilization
10	02	12	Molecular Biology Credit II Basics of Biotechnology Unit I	Historical and conceptual background, Structure of DNA, RNA, protein Protein History and intro, Amino acids intro
10	02	12		
05	00	05		
Month September 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Plant Biotechnology Credit I- Introduction Animal Tissue Culture	Culture media (Types, properties, components) Requirements of Animal Cell Culture Sterilization of Glassware Culture media
10	3	13	Molecular Biology Credit II	Prokaryotic Replication and Eukaryotic Replication
10	00	10		
05	00	05		
Month October 2023			Module/Unit:	Sub-units planned
10	02	12	Plant Biotechnology Credit II- Introduction Animal Tissue Culture	Callus Culture, Suspension Culture, Organ Culture
10	03	13	Molecular Biology Credit II	Conceptual background Basic techniques of mammalian cell culture Pro and Eukaryotic Transcription, Prokaryotic Translation
05	00	05		
Month November 2023			Module/Unit:	Sub-units planned
10	00	10	Plant Biotechnology Credit II- Introduction Animal Tissue Culture	Clonal Propagation, Anther and pollen culture, Organ and Histotypic culture Types and maintenance
10	03	13	Molecular Biology Credit II- Basics of Mol Bio	concepts, applications Eukaryotic Translation, Gene regulation, DNA damage and repair
05	00	05		

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Miss. S.D. Potdar



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Annual Teaching Plan

Name of the teacher: Ms. Supriya Dinanath Potdar

Programme: B.Sc. II, B.Sc. I Semester: II, VI

Subject: Biotechnology Course Title: DSE-1009F1 Animal Tissue Culture

DSE- 1009 F2- Environmental Biotechnology

DSC-1009D Immunology and r DNA technology

Month December 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	EBT and Gene technology Credit I	Unit I- Conventional and Non-conventional Gene technology -DNA fingerprinting
10	2	12		
10	2	12	r -DNA technology Section II Credit I	Introduction to r DNA technology, Nucleases Restriction enzymes
Month January -Feb 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	EBT and Gene technology Credit I	Pollution and Biofuels Biodiesel Gene-targeting Gene therapy
10	2	12		
10	2	12	r- DNA technology Section II Credit I	Enzymes to modify ends of DNA Cloning vectors Construction of C DNA and genomic library
Month March-April 2024			Module/Unit:	Sub-units planned
16	02	18	EBT and Bioinformatics Credit II	Bioremediation Introduction bioinformatics
06	02	08	Section II-r DNA technology Credit II	Probes Blotting techniques PCR
Month May 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	EBT and Bioinformatics Credit II	Bioinformatics databases Biofertilizers
15	02	12		
05	02	07	Section II -r DNA technology Credit II	DNA sequencing techniques Selection of transformed cells Applications of gene cloning Safety measures and biological risk for r-DNA work

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Annual Teaching Plan

Name of the teacher: Ms Dhanshree Ashok Wajantri

Programme: B.Sc. I. B.Sc. III

Semester: I, V

Subject: Biotechnology Course Title: DSE-1009-E2 Large-Scale Manufacturing Process

DSE-1009A Basics of Biotechnology II

Month August 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Concept of bioprocess engineering and fermentation technology Credit I- Introduction	The basic design of a fermentor Types of fermentors Fermentation medium and optimization
10	2	12		
10	2	12	Basics of Biotechnology Unit II – Concept of sterilization	Introduction Physical agents: Temperature, radiation, filters
Month September 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Basics of Biotechnology Unit II – Concept of sterilization	Chemical Agents: phenols and phenolic compounds, heavy metals Gaseous agents: Ethylene oxide, formaldehyde
10	3	13		
10	2	12	Concept of bioprocess engineering and fermentation technology Credit I	Sterilization Strain Improvement Inoculum development
Month October 2023			Module/Unit:	Sub-units planned
10	02	12	Concept of bioprocess engineering and fermentation technology Credit I Basics of Biotechnology Unit II – Microscopy	Pure culture techniques Culture collection canners General principles of microscopy SEM, TEM
10	03	13		
Month November 2023			Module/Unit:	Sub-units planned
10	02	12	Specific Fermentation Credit I - Bioremediation Unit II -Sterilization	Antibiotics. Amino acid Wine. Patent and patenting Concept and type of sterilization
05	02	07		

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Ms. Dhanshree A. Wajantri

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Name of the teacher: **Ms. Dhanshree Ashok Wajantri**

Programme: **B.Sc. II, B.Sc. I** Semester: **II, IV**

Subject: **Biotechnology**

Course Title: **DSE-1009B Microbiology**

DSC-1009D Immunology and r DNA technology

Month January 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Microbiology Unit I- History of Microbiology	Contributions Types of Microorganisms
10	2	12		
10	2	12	Immunology Credit I- Types of immunity	Innate and acquired immunity
Month - February 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Microbiology Unit I- Morphology & cytology of bacteria	Size, shape, arrangement Structure and function of cell organelles like cell wall, cell membrane, capsule, Pili, flagella, nuclear material, etc.
10	2	12		
10	2	12	Immunology Credit I- Types of Defence Mechanisms Organs of the immune system	The first line of defense, second line, third line Structure and function of primary and secondary lymphoid organs
Month March-April 2023			Module/Unit:	Sub-units planned
10	0	10	Microbiology Unit II- Culture media and pure culture techniques	Common components Peptone, yeast extract, NaCl, agar agar, etc.
10	2	12	Immunology Credit II- Antigen and antibodies types Immune response	Definition, types Immunoglobulin types Primary and secondary immune response
Month -May 2024			Module/Unit:	Sub-units planned
10	2	12	Microbiology Unit II-Culture media types	Living, non-living, methods of isolation of pure cultures, stain and staining procedures
10	3	13	Immunology Credit II- Ag-Ab reactions Hypersensitivity	Principles, mechanisms, and applications Definition and types

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C. Dhanshree A. Wajantri

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