Rajarshi Shahu Mahavidyalaya, (Autonomous) Latur

Department of Microbiology

Annual Teaching Plan 2022-23

Name of the Faculty: Miss Sonali Shrikant Patil
Subject: Microbiology
Class: B.Sc. III (Sem-V)
Course Title: Molecular Microbiology
Paper No.: IX
Course Code: U-MIB-565

Unit	Unit and the chapter to be covered	No. of Lectures	Date	Academic activities to be organized	Test/Assignments
I	**DNA: Structure, replication and properties:** 1.1 Structure 1.2 Replication 1.3 DNA methylation in prokaryotes 1.4 Properties: physical, chemical, spectral and thermal 1.5 Stability of DNA and its information content	10	20/06/2022 to 18/07/2022		Assignment
II	**Genes and genetic code:** 2.1 genome, plasmon 2.2 Genes, Recon, muton, cistron 2.3 Genes within a Genome, Genome size and complexity, 2.4 Genome organization: E. coli, Saccharomyces and T4 genes and genome	10	19/07/2022 to 10/08/2022		Assignment
III	**Gene Expression:** 3.1 Transcription 3.2 Characteristics of Genetic code 3.3 Translation 3.4 Regulation of gene Expression	10	16/08/2022 to 07/09/2022		Assignment
IV	**Gene cloning:** 4.1 Introduction, Definition and Purpose of Cloning 4.2 Outline of gene cloning procedure (shot gun method) 4.3 Insertion of target	15	12/09/2022 to 12/10/2022		Class Test

	DNA into vector 4.4 Gel Electrophoresis 4.5 Methods of gene transfer 4.6 Screening Strategies 4.8 Applications of gene cloning				

Note: Five extra lectures are required for the completion of syllabus

Rajarshi Shahu Mahavidyalaya, (Autonomous) Latur

Department of Microbiology

Annual Teaching Plan 2022-23

Name of the Faculty: Miss Sonali Shrikant Patil
Subject: Microbiology
Class: M.Sc. I (Sem-I)
Course Title: Microbial Physiology
Paper No.: I
Course Code: P-MIP-180

Unit	Unit and the chapter to be covered	No. of Lectures	Date	Academic activities to be organized	Test/Assignments
I	**Bacterial Chemolithotrophs and Phototrophs:** 1.1 Physiological groups of Chemolithotrophs 1.2 Photosynthesis	15		Seminars	Assignment
II	**Bacterial Respiration:** 2.1 Bacterial aerobic respiration 2.2 Electron transport chain in some heterotrophic bacteria 2.3 Mechanism of oxygen toxicity, Catalase, Super oxide dismutase. 2.4 Bacterial anaerobic respiration	15		Seminars	Assignment
III	**Bacterial Permeation:** 3.1 Structure and organization of membrane 3.2 Methods to study diffusion of solutes in bacteria 3.3 Role of permeases in transport, Different permeases in *E. Coli* 3.4 Transport of amino acids and Inorganic ions in microorganisms and their mechanisms.	15		Seminars	Assignment
IV	**Microbial Stress Responses:** 4.1 Osmotic Stress and Osmoregulation. 4.2 Bacterial Sporulation	15		Seminars	Class Test

Note: Five extra lectures are required for the completion of syllabus

Rajarshi Shahu Mahavidyalaya, (Autonomous) Latur
Department of Microbiology
Annual Teaching Plan 2022-23

Name of the Faculty: Miss Sonali Shrikant Patil
Subject: Microbiology
Class: M.Sc. II (Sem III)
Course Title: Advanced Molecular Biology
Paper No.: X
Course Code: P-AMB-385

Unit	Unit and the chapter to be covered	No. of Lectures	Date	Academic activities to be organized	Test/Assignments
I	**Basic tools of r DNA Technology:** 1.1 Enzymes used with their types, mode of activity and examples 1.2 Restriction endonucleases 1.3 DNA polymerase and enzymes 1.4 DNA ligation, DNA Manipulating enzymes 1.5 Cloning Vectors 1.6 Artificial chromosome vectors, Animal virus derived vectors. 1.6 Gene probes:	15	20/06/2022 to 14/07/2022	Seminars	Assignment
II	**Nucleic acid amplification, Sequencing and Hybridization Techniques:** 2.1 Polymerase Chain Reaction (PCR) 2.2 PCR in gene recombination 2.3 Methods of nucleic acid detection, sequencing methods 3.3 Methods of nucleic acid hybridization, DNA fingerprinting, chromosome walking and jumping.	15	18/07/2022 to 13/08/2022	Seminars	Assignment
III	**Cloning and Screening methodologies:** 3.1. Insertion of foreign DNA into the host cells. 3.2 Cloning and expression in yeast,	15	17/08/2022 to 14/09/2022	Seminars	Assignment

	animal and plant cells. 3.3. Plant transformation technology 3.4. Factors affecting expression in plants and animal cells, strategies to create knockout (KO) cells and transgenic animals. 3.5 cDNA and genomic cloning.				
IV	**Applications of rDNA technology and Legal issues:** 4.1. Molecular Markers-types and applications. 4.2 Applications of recombinant DNA technology in medicine, agriculture, Forensic and veterinary sciences. 4.3 Engineering microbes for the production of antibiotics, enzymes, Insulin, growth hormones, monoclonal antibodies etc. Human genetic engineering and Gene therapy 4.4 Science and the constitution	15	15/09/2022 to 15/10/2022	Seminars	Class Test

Note: Five extra lectures are required for the completion of syllabus