

B.Sc. Biotechnology

Programme Specific Outcomes

At the time of graduation, the students will be able to-

PSO1: Understand fundamental principles involved in Biotechnology

PSO2: Acquire detail knowledge of structures of nucleic acids

PSO3: Understand metabolic and structural significance of bio-molecules

PSO4: Gain knowledge of various aspects of fermentation technology

PSO5: Understand handling and applications of DNA and RNA modifying enzymes
PSO6: Acquaint with proteomics, protein structures and structure visualization

Course Outcomes

F.Y. B. Sc. Semester I

Paper I - MBO Microbiology

At the end of the course, the students will be able to-

CO1: Identify distribution of microorganism in nature

CO2: Determine evolution of microbiology and its role in various biological processes

CO3: Classify Microorganisms into different categories according to taxonomic ranks

CO4: Determine Biochemical properties of microorganisms

CO5: Describe design of Microscope and its Handling

CO6: Calculate magnification, resolving power, depth of focus, numerical aperture of Microscope

Paper II- BCB Biomolecules and cell biology

At the end of the course, the students will be able to-

CO1: Describe structures, functions and classification of bio-molecules

CO2: Rationalize membrane models and the mechanism about transport in membranes

CO3: Describe cell organelles, their structure and associated functions

CO4: Explain mechanism of cell cycle and cell division

CO5: Perform bio-molecules isolation and estimation

Semester II

Paper IV- GTS Genetics

At the end of the course, the students will be able to-

CO1: Describe structures of nucleic acids

CO2: State Mendel's law of inheritance

CO3: Describe structural arrangement of chromosome

CO4: Explain crossing over mechanism in drosophila

CO5: Explain tetrad analysis in neurospora

CO6: Rationalize the construction of genetic maps in drosophila & maize

Paper V- BMT Biomathematics & Biostatistics

At the end of the course, the students will be able to-

CO1: Solve problem based on limits, derivatives and integration

CO2: Solve problems based on derivatives of standard trigonometric and logarithmic functions

CO3: Explain probability and types of data sampling

CO4: Solve statistical data by measures of central tendency viz. Mean, median and mode.

CO5: Explain standard deviation for grouped and ungrouped data

S.Y. B. Sc. Semester III

Paper VII-MTB Metabolism

At the end of the course, the students will be able to-

CO1: Describe structure, functions and classification of bio-molecules

CO2: Rationalize energy gain and loss during metabolic process

CO3: Describe metabolic pathways and their regulations

CO4: Differentiate between photo-phosphorylation, oxidative and substrate level phosphorylation

CO5: Prepare solutions of different molarity/ normality as well as stocks solutions and working solutions

Paper VIII-MOG Molecular Genetics

At the end of the course, the students will be able to-

CO1: Describe process of packing of DNA into chromosomes

CO2: Explain Operon system in prokaryotes

CO3: Describe regulation of replication, transcription & translation

CO4: Isolate and bacterial genomic DNA

CO5: Isolate plant and plasmid DNA

Semester IV

Paper XI-EBT Environmental Biotechnology

At the end of the course, the students will be able to-

CO1: Explain ecology and ecosystem

CO2: Elaborate the issues related to pollution (air, water, soil)

CO3: Explain mechanism regarding solid waste management

CO4: Describe biodegradation of xenobiotic compounds

CO5: Describe the process of microbial leaching and mining

CO6: Isolate microorganism from soil and water

Paper XII-EZY Enzymology

At the end of the course, the students will be able to-

CO1: Explain enzyme as biocatalyst, its classification and mechanism of action

CO2: Describe metabolic role of coenzyme

CO3: Give industrial applications of free and immobilized enzymes

CO4: Design experiments for screening, production and purification enzyme

CO5: Determine factor affecting enzyme activity and factors related to enzyme kinetics

CO6: Prepare immobilized enzyme

T.Y. B. Sc. Semester V

Paper XV-BPE Bioprocess Engineering

At the end of the course, the students will be able to-

CO1: Describe fermentation technology

CO2: Elaborate working of fermentation industry

CO3: Give various types of fermenter and its design

CO4: Give methods of screening of desired microorganism

CO5: Give methods of preservation of microorganism

CO6: Describe the ways of downstream processing

CO7: Describe methods of sterilization of media and fermenter

Paper XVI-RDT Recombinant DNA Technology

At the end of the course, the students will be able to-

CO1: Describe handling and applications of different DNA and RNA modifying enzymes

CO2: Discuss techniques for DNA transformation in host cells

CO3: Describe design of various vectors used for plants, animals and microorganisms and their modification strategies

CO4: Design cloning strategies for various applications

CO5: Differentiate transformed and non-transformed colonies

CO6: Screen desired clone for presence of desired gene/ m-RNA/ protein

CO7: Describe technique of DNA sequencing and latest up gradations

Semester VI

Paper XIX-MBT Microbial Biotechnology

At the end of the course, the students will be able to-

CO1: Describe role of microorganisms in fermentation and discuss Biochemical pathway associated with it

CO2: Describe biosynthesis of polysaccharides

CO3: Describe α -amylase production and its applications

CO4: Describe production and role of Bio-fertilizers

CO5: Discuss penicillin fermentation

CO6: Explain Organic acid fermentation and its characterization

Paper XX-BIN Bioinformatics

At the end of the course, the students will be able to-

CO1: Describe concept of data bases and their structure

CO2: Access various biological databases for retrieval of information related to DNA, RNA and Proteins

CO3: Perform sequence alignment and its analysis using various softwares like BLAST, FASTA, Clustal W

CO4: Describe concept of proteomics, protein structures and structure visualization

CO5: Describe concept of microarray tools and their application in diagnosis of genetic disorders
