



Department of Biotechnology

Courses Offered :

Department of biotechnology offers following courses

S.No.	Name Of Course	Subject	Level
1.	M.Sc.	Biotechnology	PG
2.	B.Sc.	Biotechnology, Microbiology, Chemistry	UG
3.	Certificate Course In Laboratory Techniques Of Isolation Of Bacteria	Specialization	Certificate
4.	Certificate Course In Staining Techniques In Microbiology	Specialization	Certificate



Programme Outcomes (PO):

Program Specific Outcomes

Name of Program : **M. Sc. Biotechnology**

Graduate Attributes : Disciplinary Knowledge, Critical Thinking , Problem Solving, Analytical Reasoning , Communication Skills, Teamwork, Moral and Ethical Awareness.

PSO1 : Disciplinary Knowledge : Capable of demonstrating basic and comprehensive knowledge by critically & clearly understanding major concepts, principles, theories, techniques, related to biotechnology also creatively applying the related skills for industrial application.

PSO2 : Critical Thinking : Inculcate the ability to engage in reflective and independent thinking for analyzing, formulating & tackling problems related to the field of biotechnology .

PSO3: Problem Solving : Develop the capacity to extrapolate from what one has learned and apply their proficiencies toward problem solving approach as well as formulating search strategies for searching information of biotechnology.

PSO4: Analytical Reasoning : Able to think logically, trace out drawbacks in the arguments of others, analyze the data, and able to draw significant conclusions of the biotechnological aspect.

PSO5: Research Related Skill : Identify problems, formulate hypothesis, give justifications for solutions by intensive research, critical analysis & laboratory investigations, using appropriate research related biotechnological skill to develop sustainable product & report accurately the findings in the form of a patent or publication.

PSO6: Communication Skills: Ability to interact & execute complex biotechnological ideas along with thoughts in writing & orally to express their acquaintance in clear & concise manner.

PSO7 Cooperation / Team Work : Perform effective coordination either individually or in group to perform given task in timely manner, sharing workload, meet deadlines with high level



of interdependence to establish trust, taking challenges & improvising performance through team work to produce constructive biotechnological outcome.

PS08: Scientific Reasoning : Achieve logical relation between ideas & fetch the inference from qualitative / quantitative data to prove the biotechnological hypothesis scientifically.

PS09 : Reflective Thinking : Able to construct, evaluate assumptions to give justifications for implications and develop critical sensibility to enhance experiences for self & societal awareness related to biotechnology.

PS010 : Information/Digital Literacy : Capable of using digital resources for collecting literature, analyzing & evaluating relevant information efficiently on biotechnology course/ research findings with effective communication to give applicable outcome.

PS011 : Self-Directed Learning : Develop initiative to learn independently to generate effective ideas, screen for eritical literature, identify appropriate resources by effective time management for problem based learning, dissertation & laboratory work provides a foundation for future leadership roles in biotechnology.

PS012 : Multicultural Competence : Acquire the valueshishesfoung& engaging effectively in a socio-cultural group of biotechnology, globally.

PS013 : Moral & Ethical Awareness/ Reasoning : Demonstrating moral & ethical issues, dilemmas related to [PR, copyright, plagiarism, legal compliance. quality control, transparency & accountability to farm unbiased multiprospective appreciating culture for biotechnology related aspects.

PS014 : Leadership Readiness/ Qualities : Ability to influence, motivate, accept challenges, coordinate & lead the team for achieving success goal in the field of biotechnology.

PS015 : Lifelong Learning : Develop self sustainability, positive attitude, competitiveness, employability for improving creativeness, knowledge, skills & to meet socio-economic objective for creating better opportunities to improve personal as well as professional quality of life in the biotechnological field.

Course Outcomes (COs) :



Course Specific Outcomes : Sem I

Paper I : Cell Biology , Enzymology & Genetics

C01: Comprehend and correlate the structure and function relationship of cells, sub-cellular organelles, Cellular communication and Cell cycle.

C02: Realize the basic concepts of Enzymology and Enzyme Kinetics.

C03: Gain familiarity with the concept of Enzyme Engineering and immobilization.

C04: Develop proficiency in the fundamental molecular principles of genetics and basics of genetic mapping

Paper II : Biomolecules

C01: Gain insights into the biochemistry and diversity of Carbohydrates and their involvement in biological functions.

C02: Comprehend the biochemistry and diversity of Lipids and lipoproteins

C03: Recognize the importance of Protein structure function relationship and interactions

C04: Demonstrate the understanding of nucleic acid structure and its dynamics.

Paper III : Clinical Research

C01: Analyze and evaluate the reporting and reviewing processes of clinical trials, including the role of legislation and good clinical practice.

C02: Apply the principles of informed consent and ethical considerations in the context of clinical trial design and management.

C03: Evaluate and address the ethical issues and challenges in clinical trials, including the use of humans in scientific experiments and the role of ethical committees.

C04: Demonstrate an understanding of pharmacovigilance, research governance, and the process of trial closure.

Paper III: Nanobiotechnology

CO 1. Gain insights into the multidimensional attributes of nanotechnology.

CO 2. Appreciate the importance of microelectronics in the field of life sciences.



CO 3. Develop new and exciting cross-disciplinary technologies.

CO 4. Demonstrate the knowledge application of nanotechnology for improving our everyday life

Paper IV: Research Methodology

CO 1. Appreciate and recognise the methods to arrive at research objectives

CO 2. Demonstrate the understanding about research and experimental designing

CO 3. Apply the principles of Biostatistics in Biotechnology research for validated depiction of research data.

CO 4. Acquire the knowledge of practices used for scientific reading, writing and presentations

Course Specific Outcomes : Sem II

Paper I : Microbiology

CO 1. Gain insight into the structure and classification concepts for bacteria and archaea

CO 2. Appreciate and recognise major categories of microorganisms and viruses.

CO 3. Develop proficiency in principles of bacterial physiology and growth requirements.

CO 4. Identify and demonstrate how to control microbial growth

Paper II : Molecular Biology

CO 1. Acquire knowledge of the fundamental concepts of DNA Replication, Mutations and Repair

CO 2. Evaluate the principle differences eukaryotic systems. in the transcription mechanisms of prokaryotic and eukaryotic systems.

CO 3. Demonstrate the proficiency in regulatory aspects of transcription through classical experiments involved in it.

CO 4. Relate the concepts of RNA modifications relayed into protein expression.

Paper III : Industrial Biotechnology



CO 1. Acquire understanding about the design and functioning of different types of bioreactors

CO 2. Develop knowledge of bio-processing methods and immobilization techniques

CO 3. Acquisition of the knowledge in process optimization strategies.

CO 4. Appreciate the importance of Downstream processing and Evaluate the production of Primary and Secondary Metabolite

Paper IV : Environmental Biotechnology

CO 1. Comprehend the basic principles of Environmental Science

CO 2. Recognise the importance of bioremediation

CO 3. Evaluate the functioning of technology involved in Waste water treatment

CO 4. Analyze the effects of recalcitrant compounds and study their biodegradation in environment

