

PROGRAM OUTCOMES FOR MSc. BIOTECHNOLOGY AND MSc. MICROBIOLOGY PROGRAMMES

AFTER SUCCESSFULLY COMPLETING THE PROGRAM, THE MSc. STUDENTS WILL BE ABLE TO:

- PO 1.** Demonstrate a degree of mastery in the various fields of Biotechnology and acquire interdisciplinary/multidisciplinary/transdisciplinary knowledge base and develop a collaborative approach to formulate constructive arguments and rational analysis for achieving common goals and objectives.
- PO 2.** Communicate effectively by gaining the ability to reflect and express thoughts and ideas effectively in verbal and nonverbal way; Ability to acquire knowledge and skills, including unlearning misconceptions and relearning concepts necessary for participating in learning activities throughout life, through self-paced and self-directed learning.
- PO 3.** Demonstrate leadership qualities that span the ability to work effectively and lead respectfully with diverse teams; setting direction, formulating a goal, building a team that can help achieve the goal, motivating and inspiring team members to engage with the goal.
- PO 4.** Demonstrate analytical thinking and problem-solving abilities enabling them to analyze, evaluate and interpret evidence, arguments, and claims; reflect relevant implications to the reality; formulate logical arguments; critically evaluate practices, policies and theories to develop knowledge and understanding.
- PO 5.** Identify a problem using literature survey, formulate hypothesis, develop a research plan, execute the research plan, write the project report and communicate effectively through written, oral and visual methods and develop the capacity to extrapolate from what one has learned and apply their competencies to solve problems and later contextualize into research and apply one's learning to real life situations.
- PO 6.** Identify and evaluate new business ideas in the field of life science and take it forward by creating a business plan by identifying funding source and executing the plan; collaborate and network with personnel in educational institutions, research organizations and entrepreneurial ventures in India and abroad and using management skills to guide people to the right destination, in a smooth and efficient way..
- PO 7.** Nurture the right ethical and social consciousness that contemplates the research implications and understands societal needs and responsibilities; appreciates and develops environmentally sound and sustainable solutions.
- PO 8.** Develop the correct attitude and mindset that appreciate equity, inclusiveness and sustainability and diversity; acquire ethical and moral reasoning and values of unity, secularism and national integration to enable to act as dignified citizens; able to understand and appreciate diversity, managing diversity and use of an inclusive approach to the extent possible.
- PO 9.** Ability to aim at personal development by meeting economic, social, and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/ re-skilling.

PROGRAMME SPECIFIC OUTCOMES OF MSc. BIOTECHNOLOGY

- PSO1.** Develop rigorous academic standard and in-depth understanding of the fundamentals through deep and meticulous theoretical and practical knowledge as well as gain competence and understanding in the physiological, cellular, and biochemical functions and organization of biological systems at molecular and functional level.
- PSO2.** Show proficiency in performing and analysis of the various basic and advanced laboratory techniques employed, including analytical techniques by obtaining the ability to analyze, discuss, interpret, draw conclusions from quantitative/qualitative data and experimental evidences as well as critically evaluate ideas, evidence and experiences from an unprejudiced and reasoned perspective.
- PSO3.** Acquire good skill of handling and troubleshooting in instrumentation, techniques, analysis of biomolecules and its role and fate for understanding the biological systems/ processes.
- PSO4.** Execute the gathered technical knowhow to carry out cell-based cloning, PCR cloning, production of metabolites from Plant/animal/microbial cells, bioinformatics, designing of green technologies for environmental management for sustainable development, animal and plant cell culture and other biotechnological methods.
- PSO5.** Nurture excellent research aptitude enabling to design, execute, analyze and interpret a research problem with statistical tools and bring a meaningful scientific conclusion maintaining scientific ethics.

PROGRAMME SPECIFIC OUTCOMES OF MSc. MICROBIOLOGY

- PSO1.** Develop rigorous academic standard and in-depth understanding of the fundamentals through deep and meticulous theoretical and practical knowledge as well as gain competence and understanding in the various fields of microbiology: bacteriology, mycology, virology, parasitology and other allied subjects.
- PSO2.** Show proficiency in performing and analysis of the various basic and advanced laboratory techniques employed, including analytical techniques by obtaining the ability to analyze, discuss, interpret, draw conclusions from quantitative/qualitative data and experimental evidences as well as critically evaluate ideas, evidence and experiences from an unprejudiced and reasoned perspective.
- PSO3.** Understand and apply microbiological techniques and their handling; Acquire good skill of handling and troubleshooting in instrumentation, techniques, analysis of biomolecules and its role and fate for understanding the biological systems/ processes.
- PSO4.** Execute the gathered technical knowhow to carry out cell-based cloning, PCR cloning, production of metabolites from Plant/animal/microbial cells, culture and plating-based techniques, sterilization methods, bioinformatics, designing of green technologies for environmental management for sustainable development.
- PSO5.** Understand, apply and follow good laboratory practices; handling pathogens and their subsequent related research following biosafety practices as defined by WHO; keeping personal and ambient safety into concern.
- PSO6.** Nurture excellent research aptitude enabling to design, execute, analyze and interpret a research problem with statistical tools and bring a meaningful scientific conclusion maintaining scientific ethics.