

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

The program educational objectives are set in line with Institutional and Departmental mission statements. The program educational objectives of B.E. Biotechnology are to produce professionals who later take the role of engineering professionals and researchers with following qualities:

- PEO1.** Apply fundamental knowledge of mathematics, principles of physics and chemistry, and biological sciences for the engineering applications.
- PEO2.** Demonstrate the application of biotechnological processes and engineering principles through designing of industrial biochemical processes that are of societal and industrial importance.
- PEO3.** Exhibit skills of handling microbial processes, biochemical analysis by making use of state of the art instruments.
- PEO4.** Exhibit strong, independent learning, analytical and problem solving skills with special emphasis on design, communication, and an ability to work in teams.
- PEO5.** To have successful career as engineering professional or a researcher through life-long learning in the field of biotechnology.

## **PROGRAM OUTCOMES (PO)**

In addition to PEOs, the B.E. Biotechnology program established a set of Program Outcomes (POs), based on National Board of Accreditation Guidelines, and expected to be met by every graduating student from the program at the time of graduation.

The graduates of B.E. Biotechnology will have ability to:

- PO 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2. Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3. Design/Development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to

comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO 11. Project management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

### **PROGRAM SPECIFIC OUTCOMES (PSO)**

Program Specific Outcomes for B.E. programme in Biotechnology set by Faculty in Biotechnology Engineering are as follows:

**PSO 1.** Demonstrate proficiency in basic science and foundation engineering courses.

**PSO 2.** Demonstrate a working knowledge of advanced biological sciences.

**PSO 3.** Demonstrate competence in application of engineering principles to biological systems.