

COURSE OVERVIEW

The Bachelor of Science (Biotechnology) was introduced with the vision of empowering students with the knowledge, skills, and the latest developments in the field of biotechnology by providing tremendous flexibility and learning opportunities through choice-based approach.

The program is tailor-made by experts to suit the current needs of the industry and academia. The curriculum has been designed to give the students an in-depth knowledge of various subjects related to Biotechnology and also cover few basic concepts of Computers, Chemistry, Bioethics, Critical Thinking, First Aid & Health, Food & Nutrition, Environmental Sustainability, Human values etc. The evolution of teaching pedagogy applied at Era University makes the curriculum more dynamic as it incorporates not just learning through lectures but also applying the concepts with the help of Seminars, Training, Educational visits, Quizzes, Practical's, Self-Directed Learning (SDL) and other creative exercises.

PROGRAMME OUTCOMES (POs):

After completion of the B. Sc. Biotechnology program, the candidate should be able to:

- PO1: Demonstrate knowledge for in-depth analytical and critical thinking to identify, formulate and solve the issues related to Biotechnology Research, Biotechnology Industry, Pharma Industry, Medical or Hospital related organizations, and Academia.
- PO2: Demonstrate skills to use modern analytical tools/ software/ equipment and analyse and solve problems in various courses of biotechnology.
- PO3: Execute their professional roles in society as biotechnology professionals, employers and employees in various industries, researchers and educators.
- PO4: Design, perform experiments, analyse and interpret data for investigating complex problems in biotechnology and related fields.
- PO5: Demonstrate learning skills to work as a team in a multidisciplinary environment.
- PO6: Design and develop sustainable solutions to major biological problems by applying appropriate biotechnology tools.

PO7: Develop skills, attitude and values required for self-directed, lifelong learning and professional development.

PO8: Acquire knowledge and understanding of norms and ethics in the field of biotechnology

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Demonstrate and apply their knowledge gained to solve the problems related to the field of biotechnology.

PSO2: Understand and gain knowledge about the application of various instruments and techniques and their application in early diagnosis and prognosis of human diseases.

PSO3: Understand the basic concepts of biotechnology and related areas

PSO4: Understand the interrelationship between Biology and Computer.

PSO5: Acquire knowledge in different domains of biotechnology enabling their application in medicine, industry, research and academia.

PSO6: Develop an ability to properly understand the technical aspects of existing technologies that help in addressing the biological and medical challenges faced by humankind.

PSO7: Exhibit ability to do research independently as well as in collaboration.

PSO8: Recognize the importance of Bioethics, Biosafety, IPR, and Entrepreneurship.

PROGRAM SPECIFIC OUTCOMES (PSOs): FIRST YEAR

CERTIFICATE IN TOOLS AND TECHNIQUES OF CELL AND MOLECULAR BIOLOGY

This course introduces the knowledge of cell biology, genetics, molecular biology and genetic engineering. After completion of this certificate course, students will be able to -

PSO1: Demonstrate and apply their knowledge of cell biology, genetics, molecular biology and genetic engineering to solve the problems related to the field of biotechnology

PSO2: Gain knowledge about the application of various types of microscopes, karyotyping.

- PSO3: Understand the basic concepts of genetics and molecular biology such as inheritance pattern, DNA replication, transcription and translation.
- PSO4: Understand and perform various recent molecular and recombinant DNA technology techniques in early diagnosis and prognosis of human diseases.
- PSO5: Perform experiments of DNA isolation, agarose gel electrophoresis, gene cloning, and transformation. This experience would enable them to begin a career in industry that engages in molecular biology and genetic engineering as well as in research laboratories conducting fundamental research.
- PSO6: This certificate course leads students to apply at technical positions in different research laboratories, diagnostic centres and industries.

PROGRAM SPECIFIC OUTCOMES (PSOs): SECOND YEAR

DIPLOMA IN TOOL AND TECHNIQUES IN BIOTECHNOLOGY

After completion of diploma course, students will be able to-

- PSO1: Familiarize with basic laboratory instruments and understand the principle of measurements using those instruments with experiments in biochemistry.
- PSO2: Understand the significance of Biochemistry and basics of enzymes.
- PSO3: Learn the chemistry, structure and functions of major bio-molecules and metabolism of carbohydrate, protein etc.
- PSO4: Understand different biochemical tools and techniques such as chromatography, electrophoresis, X-ray diffraction, NMR and mass spectrometry
- PSO5: Perform different experiments based on the techniques such as chromatography, electrophoresis, centrifugation etc.
- PSO6: Understand the different methods of sterilization
- PSO7: Understand and also able to perform different immunological techniques like agglutination reaction, ABO typing and ELISA.