

P.G. Department of Biotechnology

Program:

1. Graduate Course: B.Sc.
2. Post Graduate Course: M.Sc.

Graduate Program Outcome:

PO-1: To provide adequate, basic understanding about Biotechnology subject among the students. This program will enable students to understand and demonstrate the basics and fundamentals of the subject.

PO-2: To apply the knowledge of molecular biology, genetics, instrumentation, Biochemistry and environmental microbiology to derive solutions to various environmental problems.

PO-3: To Demonstrate theoretical learning into practical skills and to work effectively in team.

PO-4: The practicals in the laboratories will impart knowledge about various instruments and chemicals which will enable students undergo training and develop skills to work as a team thereby enhancing their leadership qualities.

Programme Specific Outcomes:

PSO-1: This program would enable students to acquire knowledge on the fundamentals of biotechnology and help them to understand the emerging and advanced concepts in life sciences.

PSO-2: Students after completing their graduation would be able to pursue their career in various industries related to biotechnology.

PSO-3: This program being an applied subject will enable students to equip themselves to pursue higher education and go for research in reputed institutes.

PSO-4: To make students competent in the field of biotechnology and inculcate the capability to work in different industries or go for entrepreneurship.

Course Outcome

I Year

Paper I BIOCHEMISTRY, BIOSTATISTICS AND COMPUTERS

CO-1: The course will help introduce students to several fields of biotechnology like biochemistry, and biostatistics.

CO-2: It will help students acquaint themselves to different biomolecules of living system like proteins, carbohydrates, hormones, lipids etc.

CO-3: The students will have a better understanding of Biostatistics, methods of Collection of data, sampling techniques, Processing and Presentation of data.

CO-5: They will have an understanding of basics of computers and its application in the field of biotechnology.

Paper II CELL BIOLOGY, GENETICS AND MICROBIOLOGY

CO-1: This course will help students understand the concept of Cell theory along with structure and diversity of microbes.

CO-2: They will have knowledge of different cell organelles, their characters and functions, cell division and programmed cell death.

CO-3: They will have an understanding of Mendel's Laws of Inheritance and different types of chromosomal variations.

CO-4: Students will acquaint themselves with features, reproduction and diseases of different microbes like viruses, mycoplasma etc.

II Year

Paper I MOLECULAR BIOLOGY & BIOPHYSICS

CO-1: The course will help students understand the basic concepts of molecular biology including DNA replication, mutation and repair.

CO-2: Students will acquire in-depth knowledge of Genetic code and operon models.

CO-3: It will enable students to acquire knowledge of different techniques like Autoradiography, DNA fingerprinting, biosensors, Electrophoresis, Chromatography, etc.

II Year

Paper II RECOMBINANT DNA TECHNOLOGY & GENOMICS

CO-1: Students will be able to understand the scope and objectives of Recombinant DNA Technology, its general concept and applications.

CO-2: It will help students to acquire knowledge of advanced techniques like gene therapy, stem cell technology and applications of human genome project.

CO-3: The course will help students to be introduced to bioinformatics and to the concept of proteomics and genomics.

III Year

Paper I PLANT, ENVIRONMENTAL & INDUSTRIAL BIOTECHNOLOGY

CO-1: Students will enhance their knowledge with different techniques and applications of plant cell and tissue culture.

CO-2: It will enable students to understand the concept of edible vaccines and genetically modified plants and also the applications of germplasm storage.

CO-3: It will encourage students to understand the effects of environmental pollution and its management methods.

CO-4: The course will enhance students' knowledge in the field of industrial biotechnology and showcase the importance of copyright acts, patents and trademarks relevant to industrially important products.

III Year

Paper II IMMUNOLOGY, ANIMAL & MEDICAL BIOTECHNOLOGY

CO-1: This course will impart knowledge of different types of immunity and various cells and organs associated with immune system. Also, they will get acquainted with different autoimmune and immunodeficient diseases.

CO-2: It will help students to learn the fundamentals of different epidemic diseases and their symptoms. In addition, students can strengthen their knowledge in the field of organ transplantation and cancer biology.

CO-3: The course will enable students to have a clear concept of tissue engineering and also will acquaint themselves with different cell lines used in animal tissue culture.

Post Graduate Program Outcome:

PO-1: Students shall understand the basic concepts of biotechnology and will be proficient in branches like molecular and cell biology, bioinformatics, nanobiotechnology, proteomics and genomics etc.

PO-2: This program will enable students to possess the modern molecular, biological and technical knowledge needed to support research activities.

PO-3: Students will be able to use living organisms and manipulate them for societal benefit by using techniques like genetic engineering, bioprocess engineering which would result in all different types of Bio products.

PO-4: Students will be proficient ethically; will have leadership qualities and skills relevant to the subject.

Programme Specific Outcomes:

PSO-1: After completion of their post graduation, students would be well versed with various modern molecular biological techniques like chromatography, SDS-PAGE, Agarose Gel Electrophoresis, PCR etc.

PSO-2: Students after completing their post graduation would be able to pursue their career in various industries

PSO-3: Students would be able to recognize the importance of copyright acts, patents, ethical issues etc which would help students to nurture their management skills.

PSO-4: Students will be able to demonstrate their ability to apply biotechnological research strategies to solve the global environmental problems.

M.Sc.

I Semester

CO-1: The course will help Students in better understanding the concepts of Cell Theory and Cellular organelles. It would help understand how living cells live with intricate mechanisms.

CO-2: They will be able to understand the concepts of Mendelian genetics and also the mechanisms involved in regulation and expression of gene in Prokaryotes and Eukaryotes.

CO-3: This course shall enhance students' knowledge with the concepts of Microbial Evolution, Growth and their metabolic diversity.

CO-4: Students shall familiarize themselves with the concept of various analytical techniques in biochemistry and biophysics and their applications.

II Semester

CO-1: Students will be able to learn and understand the basic concepts of biostatistics to help them analyze and validate experimental biological data. It shall also orient students to work on computers using different software and programmes.

CO-2: Students will acquire knowledge of myriad molecular biology mechanisms and processes occurring in a living cell.

CO-3: It shall acquaint students to understand the principles of cell and tissue culture, Organogenesis, germplasm conservation to conserve and preserve important molecules.

CO-4: This course will enhance their knowledge in the field of biochemistry wherein students will be introduced to various macromolecules and supra molecules assemblies.

III Semester

CO-1: Students will be able to understand the applications of Genetic Engineering including gene cloning vectors, Cloning interacting genes and Gene therapy.

CO-2: The course shall familiarize the students with human immune system and its working mechanism in addition to understanding of hybridoma Technology and Monoclonal antibodies.

CO-3: Students will be able to understand the concept of Bioprocess Engineering and its application in the field of industrial production of bio products.

CO-4: Students shall understand the effects of environmental Pollution and its management. Also, in-depth knowledge of GMO and integrated pest management would help prevent crop loss in agriculture.

IV Semester

CO-1: The course shall acquaint students with the wide scope of Bioinformatics. Moreover, students will gain knowledge of various Biological databases and bioinformatics software tools.

CO-2: It shall help understand the principles, working and applications of various instruments enabling students to use them in near future as part of research activity.

CO-3: Students shall understand the ethical issues relevant to Biotechnology which they shall apply during research with animals & Humans.

CO-4: A thorough knowledge of Genomics and proteomics will enable students to apply their expertise in medicine for detecting and treating several diseases.