

## **COURSE OUTCOMES OF BIOTECHNOLOGY**

### **SEMESTER-I CELL BIOLOGY AND GENETICS**

On completion of this course students will be able

- To understand the basic unit of the organism.
- To differentiate the organisms by its cell structure.
- To know Components of the Cell and their division.
- To explain the arrangement of Genes and their interaction.
- To describe the mechanism of inheritance, sex determination and role of allosomes.
- To understand extra nuclear inheritance, linkage & crossing over.

### **SEMESTER-II BIOLOGICAL CHEMISTRY AND MICROBIOLOGY**

On completion of this course students will be able

- To Understand about the Nucleic acids
- To know the structure of nucleic acid, types of Nucleic acid and its Forms.
- To explain genome organization in Prokaryotes and Eukaryotes.
- To describe Nucleic acids Replication, Recombination and its Repair Mechanisms.
- To have knowledge on Biomolecules, their importance and Classification.
- To explain the properties of Biomolecules
- To describe the conversion of Biomolecules into Energy.
- To describe the biophysical techniques for the Isolation, Identification and Quantification of Biomolecules.
- To gain knowledge about principle and application of various types of Microscopy.
- To Classify and explain the structure and general characteristics of Microorganisms.
- To prepare various Bacteriological, Algal, and Fungal Media.

### **SEMESTER-III MOLECULAR BIOLOGY, rDNA TECHNOLOGY**

On completion of this course students will be able

- To get insight genome organization in higher organisms.
- To describe mechanism of transcription and translation in prokaryotes and eukaryotes, their regulation at gene level.
- To understand the steps involved in recombinant DNA technology.
- To explain the construction of DNA & c DNA library and their applications.
- To learn about different molecular techniques used in the recombinant technology.
- To gain significance knowledge about the genome sequencing- sangers model of sequencing.

- To know about various applications of recombinant DNA technology in various fields of science.

#### **SEMESTER-IV BIOINFORMATICS AND BIOSTATISTICS**

- To understand Biostatistical Analysis of the Biological Experiments.
- To learn the Methodologies of Biostatistics and its application in selection of the biological samples.
- To know how about the Interaction of Computer and Biology.
- To understand the Knowledge about Protein and Genome Databases.
- To understand about the Data Retrieval tools and its Utilization.
- Applications of Bioinformatics in drug designing and Drug Discovery.

#### **SEMESTER-V PLANT BIOTECHNOLOGY**

On completion of this course students will be able

- To understand principles of plant cell and tissue culture, media preparation, sterilization.
- To explain about the effect of different plant growth regulators on Invitro plant growth and differentiation.
- To describe meristem culture and clonal propagation of plants on a commercial scale.
- To get insight in applications or recombinant DNA technology in agriculture, production of therapeutic proteins.
- To know about how artificial seeds and androgenic haploids are produced and their applications.
- To gain significance knowledge about generation of somaclonal variants and cryopreservation of plant tissues along with their applications.
- To establish methods of direct and indirect gene transfer in plants.
- To isolate, culture and regenerate protoplasts, and somatic hybridization through protoplast fusion.

#### **SEMESTER-VI ENVIRONMENTAL BIOTECHNOLOGY**

On completion of this course students will be able

- To know about what is environment, different types, sources of pollution.
- To gain knowledge about biomonitoring of environmental pollutants and emission control biotechnology.
- To learn about different sources of energy, biomass.
- To memorize about methods of biodelignification of paper and biodesulphurisation of coal.

- To describe commercial production of fuels, microbial enzymes.
- To explain the microbial degradation of pesticides, Bioremediation& Biofertilizers.
- The course will introduce major groups of microorganisms as tools in biotechnology and their most important environmental applications.
- To understand the use of basic microbiological, molecular and analytical methods, which are extensively used in environmental biotechnology.