

COURSE OUTCOMES OF BIOTECHNOLOGY

SEMESTER-I CREDITS-4 TEACHING HOUR/WEEK-4

PAPER- I TITLE: BS104 CELL BIOLOGY AND GENETICS

On completion of the courses students will be able

- To understand the cell structure of different organisms.
- To differentiate the cell divisions, Senescence, necrosis and Apoptosis.
- To explain Mendelian inheritance and their deviations.
- To discuss multiple alleles, penetrance and X-linked inheritance.
- To describe linkage, Non Mendelian inheritance, mitochondrial inheritance.
- To understand Hardy Weinberg Equilibrium.

SEMESTER-II CREDITS-4 TEACHING HOUR/WEEK-4

PAPER - II TITLE: BS204 BIOLOGICAL CHEMISTRY AND MICROBIOLOGY

On completion of the courses students will be able

- To identify Biomolecules, their importance and Classification.
- To explain the conversion of Biomolecules into Energy.
- To compare principle and applications of various types of Microscopy.
- To Classify and explain the structure and general characteristics of Microorganisms.
- To distinguish sterilization methods.
- To prepare various Bacteriological, Algal, and Fungal Media.

SEMESTER – III BS-305 CREDITS-4 TEACHING HOURS/WEEK: 4 **PAPER III TITLE: MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY**

On Completion of this Course students will be able

- To explain genome organization and DNA replication.
- To understand gene expression & regulation in prokaryotes
- To have knowledge of gene expression, modification & regulation in eukaryotes.
- To understand the steps involved in recombinant DNA technology.
- To explain gene transfer techniques and their applications.

SEMESTER – III BS-302 CREDITS-2 TEACHING

**HOURS/WEEK: 2 PAPER TITLE: SEC-2 : IMMUNOLOGICAL
TECHNIQUES**

On Completion of this Course students will be able

- To explain antigen- antibody reactions, Immunoelectrophoresis.
- To distinguish Radioimmunity assay& immunoflourescent assay.
- To experiment separation of mononuclear cells from human peripheral blood.
- To enumerate T and B cells from human peripheral blood.
- To perform micro cytotoxicity assay.

SEMESTER – IV BS-405 CREDITS-4 TEACHING

**HOURS/WEEK: 4 PAPER – IV TITLE: BIO INFORMATICS AND
BIOSTATISTICS**

On Completion of this Course students will be able

- To understand bioinformatics tools and resources.
- To distinguish biological databases.
- To compare the Data Retrieval tools and its Utilization.
- To interpret concepts of phylogeny tree.
- To execute measures of dispersion and probability distributions.
- To implement hypothesis testing, analysis of variance and correlations.

SEMESTER – IV BS-401 CREDITS-2 TEACHING

**HOURS/WEEK: 2 PAPER - TITLE: SEC-3 : MOLECULAR
MARKERS IN PLANT BREEDING**

On Completion of this Course students will be able

- To understand types of molecular markers and their development.
- To distinguish PCR based and sequence based molecular markers.
- To interpret linkage mapping and QTL mapping.
- To explain molecular assisted selection.
- To assess genetic similarity among genotypes.

SEMESTER – V CREDITS- 3 TEACHINGHOUR/WEEK-3 PAPER – V
TITLE: CORE– V [MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY]

On completion of the courses students will be able

- To explain genome organization in higher organisms.
- To understand gene expression & regulation in prokaryotes
- To have knowledge of gene expression & regulation in eukaryotes.
- To understand the steps involved in recombinant DNA technology.
- To explain gene transfer techniques and their applications.

SEMESTER – V CREDITS- 3 TEACHINGHOUR/WEEK3
PAPER –VI
TITLE : ELECTIVE -A[PLANT BIOTECHNOLOGY]

On completion of the courses students will be able

- To understand basic concepts & totipotency of plant cells .
- To explain the preparation of media for invitro culture of plant cells.
- To have knowledge of production of secondary metabolites using cell suspension cultures.
- To know the methods of conservation of plant germplasm.
- To understand the applications of transgenic plants

SEMESTER – VI CREDITS- 3 TEACHING HOUR/WEEK-3
PAPER – VII TITLE : CORE –VI [MICROBIAL TECHNOLOGY]

On completion of the courses students will be able

- To understand methods of isolating micro organisms for industrial products.
- To know good manufacturing practices.
- To have knowledge of fermentation concept and design.
- To know the microbial production of products & their applications.
- To explain the basic concept of food quality & Control.

SEMESTER – VI

CREDITS- 3

TEACHINGHOUR/WEEK-3 PAPER -VIII

TITLE :ELECTIVE –B

**[ENVIRONMENTALBIOTECHNOLOGY AND
BIODIVERSITY]**

On completion of the courses students will be able

- To get insight about types of environmental pollution.
- To know the types of biomass used for bioenergy and biofuels.
- To understand the production of biomethane, biohydrogen and biofuels.
- To explain the methods of composting of organic waste.
- To understand the concepts and application of phytoremediation.
