

GOVERNMENT DEGREE COLLEGE FOR WOMEN, KARIMNAGAR

DEPARTMENT OF BIOTECHNOLOGY

COURSE OUTCOMES OF BIOTECHNOLOGY

SEMESTER-I

Title of Paper	:	BS 104: Cell Biology and Genetics
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Understand the basic unit of the organism.
- Differentiate the organisms by its cell structure.
- Know Components of the Cell and their division and apoptosis
- Discuss and differentiate the basic structure and function of cell components in prokaryotes and eukaryotes cells.
- Analyse the functioning of life at cellular level.
- Explain the mechanism of inheritance, incomplete & Codominance.
- Understand extra nuclear inheritance, linkage, recombination & crossing over.

SEMESTER-II

Title of Paper	:	BS 204: Biological Chemistry and Microbiology
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Explain the definition, importance, classification, biological functions, structure and properties of Biomolecules.
- Enzymes nomenclature, classification, importance, mechanism of action and inhibition.
- Explain bioenergetics, oxidative phosphorylation, reactions of amino acids.
- Explain the principle and application of various types of Microscopy.
- Describe the classification, structure, characteristics of microorganisms.
- Disease causing pathogens and symptoms
- Culture and identification, nutrition, growth of microorganisms.
- Prepare various bacteriological, algal, fungal media and buffers.
- Understand qualitative and quantitative techniques of Biomolecules.
- Isolate and stain bacteria and other microorganisms.

SEMESTER-III

Title of Paper	:	BS 305: Molecular Biology and Recombinant DNA Technology
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Explain genome organization in prokaryotes, eukaryotes, mitochondria and chloroplast.
- Explain the concepts of DNA replication in eukaryotic and prokaryotic organisms.
- Explain mutations and gene expression in prokaryotes and eukaryotes.
- Explain gene regulation in prokaryotes and eukaryotes
- Explain post transcriptional and post translational modifications.
- Discuss about enzymes of rDNA technology, cloning vectors, gene transfer techniques and applications of rDNA technology.
- Isolate DNA of bacteria and plasmid, quantification of DNA, separate proteins.
- Explain Polymerase chain reaction.

SEMESTER-IV

Title of Paper	:	BS 405: Bioinformatics and Biostatistics
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Know about the Interaction of Computer and Biology.
- Understand the Knowledge about Protein and Genome sequence databases.
- Explain sequence alignment basics and types, concepts of phylogeny.
- Understand Bio statistical Analysis of the Biological Experiments.
- Understand central tendency, probability, dispersion, probability distributions.
- Use various methods in experiments and applications of Z-test, t-test, chi-square test, hypothesis testing, ANOVA.
- Explore web portals, sequence retrieval.

SEMESTER-V

Title of Paper	:	BS 504: Plant Biotechnology
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Establish different types of plant cultures.
- Prepare media, explain sterilization, organogenesis and somatic embryogenesis.
- Explain and explore applications of plant tissue culture, cryopreservation.
- Explain micro propagation, encapsulation, cell suspension cultures
- Explain production of transgenic plants and methods of direct gene transfer techniques.
- Gain knowledge about genome editing, herbicide resistant, insect resistant, virus resistant, bacterial and fungal resistant transgenic plants and their applications
- Explain about transgenic plants as bioreactors.
- Gain practical knowledge of callus cultures, sterilization of explants, cell suspension cultures, synthetic seeds preparation, media preparation for plant tissue cultures.

SEMESTER-VI

Title of Paper	:	BS 604: Environmental Biotechnology
Credits	:	4+1=5
Hours Per Week	:	4+3=7

At the end of the course the students will be able to

- Apply the concepts of Biotechnology in Environmental Management.
- Describe the concept of pollution management.
- Explain various methods of environmental pollution and pollutants.
- Explain about biofuels and biomass types and applications and production.
- Describe concepts of biopesticides, biofertilization, its types & uses.
- Explains bioremediation of environmental pollutants.
- Explain various waste water treatment methods, composting of organic wastes.
- Describes phytoremediation concepts and applications.
- Gain practical knowledge about BOD, COD, Dissolved solids in water, production of microbial biofertilizer and isolation of microorganisms from polluted soil & industrial effluents.