GOPAL KRISHNA
COLLEGE OF ENGINEERING AND TECHNOLOGY

GOURAHARI VIHAR, RANIPUT, JEYPORE

BIOTECHNOLOGY

COURSE OUTCOMES – 3rd Semester

Biomolecules and Biochemistry

COURSE OUTCOMES	
On successful completion of the course, the student will be able to:	
CO1	Differentiate the structure and Function of carbohydrates and understand the various carbohydrate metabolisms
CO2	Classify amino acids and peptides
CO3	Execute enzyme kinetics by analyzing the Michaelis-Menten equation, Briggs-Halden Modification, and determination of Vmax and Km value
CO4	Discuss the structure and function of lipids
CO5	Assess detailed models and functions of nucleotides and nucleic acids

Cell Biology & Genetics

COURSE OUTCOMES	
On successful completion of the course, the student will be able to:	
CO1	Explain the structure and function of cell organelles and their roles in cellular processes
CO2	Understand the properties and functions of biological membranes, including transport mechanisms
CO3	Describe the phases of the cell cycle and the mechanisms of cell division (mitosis and meiosis)
CO4	Understand the fundamental principles of classical genetics, including segregation, independent assortment, dominance, and epistasis

Microbiology

COURSE OUTCOMES	
On successful completion of the course, the student will be able to:	
CO1	Understand the history, scope, and methods in microbiology along with the microbial growth mechanisms and factors associated with it.
CO2	Describe the elementary idea about different microorganisms, structures, and modes of nutrition
CO3	Define the discovery, classification, structure, and replication of viruses.
CO4	Interpret the pathogenesis and host-pathogen relationship conducted by various microbial diseases and their connected factors
CO5	Appraise about chemotherapeutic agents, multi-drug resistance mechanisms, and their mode of action

COURSE OUTCOMES – 4th Semester

MOLECULAR BIOLOGY

Course Outcomes (COs):

1. Explain the molecular mechanisms of DNA replication, transcription, and translation in prokaryotic and eukaryotic cells.
2. Identify key molecular biology techniques, such as PCR, gel electrophoresis, and DNA sequencing, and their applications in research.
3. Develop analytical skills to evaluate biological data and interpret experimental results effectively.
4. Communicate scientific concepts clearly through written reports and oral presentations using appropriate terminology.
5. Apply critical thinking to design experiments that test hypotheses related to molecular biology.

BIO ANALYTICAL TOOLS AND TECHNIQUES

Course Outcomes (COs):

1. Identify and explain the principles and functions of various bioanalytical techniques and instruments.
2. Determine appropriate applications of bioanalytical methods for analyzing drugs, biopharmaceuticals, and biomolecules.
3. Perform calculations necessary for data interpretation from different bioanalytical techniques.
4. Describe the advantages and disadvantages of each bioanalytical technique covered in the course.
5. Select suitable analytical methods to solve specific problems in biological and biomedical contexts.

BIOINFORMATICS AND BIO-STATISTICS

Course Outcomes (COs):

1. Demonstrate advanced knowledge of bioinformatics concepts, algorithms, tools, and methods for analyzing biological data.
2. Apply statistical methods to analyze and interpret biological data effectively, including measures of central tendency and dispersion.
3. Utilize bioinformatics tools for sequence alignment, database searches, and genome analysis.
4. Understand and evaluate various biological databases and their applications in research.
5. Conduct hypothesis testing using statistical methods, including t-tests and chi-square tests, to analyze experimental data.

DEVELOPMENTAL BIOLOGY

Course Outcomes (COs):

1. Understand the molecular and cellular processes involved in organismal development from a single cell to maturity.
2. Identify and describe the roles of various gene products and signaling pathways in developmental processes.
3. Analyze the advantages and disadvantages of different model systems used in developmental biology research.
4. Explain the events occurring during embryonic development, including germ layer formation and patterning.
5. Explore the principles of stem cell biology, regeneration, and cellular reprogramming techniques.