DEPARTMENT OF BIO TECHNOLOGY

COURSE OUTCOMES

SEMESTER – I

BIOMOLECULES & ANALYTICAL TECHNIQUES

CO#	Course Outcome
CO1	To learn about the principle, mechanism, equipment and applications of separation of biomolecules, pigments etc., is learnt. This knowledge is useful in isolating certain molecules in pure form.**(K3)**
CO2	To be able to Design and carry out appropriate PCR based DNA detection assays and to apply gel electrophoresis in DNA detection and quantification, Evaluate appropriate methods for mutation detection, Use Bioinformatics tools for DNA sequence analysis. **(K3,K2)**
CO3	To learn about Isotopic tracer techniques - how to calculate the Measurement of radioactivity, different principle, advantages, disadvantages instrumentation techniques of counters, mass spectroscopy and they can learn how to apply different isotopes in biotechnology. **(K3)**
CO4	To learn the basic principles, concept and types of centrifuges to isolate cell components and determine molecular weight by sedimentation velocity and sedimentation equilibrium methods. To learn the basic concepts of mean, median, mode and standard deviation and standard error, Anova using to calculate problems. **(K1,K3)**

SEMESTER – II

MICROBIOLOGY, CELL AND MOLECULAR BIOLOGY

CO#	Course Outcome
CO1	To learn about contributions of various scientists in the field of Biotechnology and microscopy, various staining methods useful for the study of microorganisms in detail. To be motivated to pursue research through keen observations. **(K1,K3)**
CO2	To study in detail about Microorganisms like bacteria and viruses - their structure, life cycle, history, classification and their importance a. To apply the knowledge about microorganisms in daily life like maintaining hygiene, and taking food rich in probiotics for healthy life. **(K2)**
CO3	To acquire knowledge on Organelle genome organization and various gene families To know the level of expression by transcription and translation. **(K3)**
CO4	To learn the molecular mechanisms responsible for diseases and may take up research in this field. **(K3)**

SEMESTER – III

IMMUNOLOGY AND r-DNA TECHNOLOGY

CO#	Course Outcome
CO1	To learn about the basic mechanisms, distinctions and functional interplay of innate and adaptive immunity and the cellular/molecular pathways of humoral/cell-mediated adaptive responses. **(K1,K3)**
CO2	To learn about the structure, classes, types of Antibody and Antigens and factors affecting antigenicity. To gain knowledge that helps to take up research to find medicines for present incurable diseases. **(K3)**
CO3	The course will provide an insight into basic aspects of immunology and rDNA technology.**(K2)**
CO4	Concepts of immunology and recombinant DNA technology. **(K1)**

SEMESTER – IV

PLANT AND ANIMAL BIOTECHNOLOGY

CO#	Course Outcome
CO1	Students should be able to gain fundamental knowledge in animal and plant biotechnology and their applications. **(K1,K3)**
CO2	Plant biotechnology can be defined as the introduction of desirable traits into plants through genetic modification. **(K3)** The student learns the qualities of plants in general and using this knowledge they will be able to suggest the propagation of useful plants at domestic level as well as commercial agriculture level.**(K2)**
CO3	The student learns the various basic concepts and also about how this knowledge can be used for the welfare of the humankind by improving the quality of animals and animal products. **(K2)**
CO4	Animal biotechnology is a branch of biotechnology in which molecular biology techniques are used to genetically engineer (i.e. modify the genome of) animals in order to improve their suitability for pharmaceutical, agricultural or industrial applications. **(K3)**

ENVIRONMENTAL & INDUSTRIAL BIOTECHNOLOGY

CO#	Course Outcome
CO1	Students should be able to gain fundamental knowledge in Environmental and industrial biotechnology and their applications. **(K1,K3)**
CO2	Environmental biotechnology addresses environmental problems, such as the removal of pollution, renewable and non renewable energy generation or biomass production, by exploiting biological processes. **(K1)**
CO3	Industrial biotechnology is one of the most promising new approaches to pollution prevention, resource conservation, and cost reduction. It is often referred to as the third wave in biotechnology.**(K3)**
CO4	They learn the mechanisms involved in improving the organisms and processes which lead to improvement in yield and quality.

SEMESTER – V

GENETICS AND MOLECULAR BIOLOGY

CO#	Course Outcome
CO1	To study about macromolecules responsible for life on earth. (K1)
CO2	To acquire knowledge on Organelle genome organization and various gene families.(K2)
CO3	To know the level of expression by transcription and translation. (K3)
CO4	To learn the molecular mechanisms responsible for diseases and may take up research in this field. (K2)

GENE EXPRESSION AND r-DNA TECHNOLOGY

CO#	Course Outcome
CO1	Gene expression is the process by which information from a gene is used in the synthesis of a functional gene product. These products are often proteins, but in non-protein coding genes such as transfer RNA (tRNA) or small nuclear RNA genes,the product is a functional RNA. (K3)
CO2	Recombinant DNA technology, joining together of DNA molecules from two different species that are inserted into a host organism to produce new genetic combinations that are of value to science, medicine, agriculture, and industry. (K2)
CO3	By the end of the course the students will be able to understand the biotechnological techniques and the need to produce produce modified organisms. (K3)
CO4	The students will be motivate to take up research for the welfare of the mankind. (K3)

SEMESTER – VI

Elective: ECOLOGY

CO#	Course Outcome
CO1	Ecology is the branch of biology which studies the interactions among organisms and their environment .(K1,K2)
CO2	They learnt by the students include the biodiversity, distribution, biomass, and populations of organisms, as well as cooperation and competition within and between species. (K3)
CO3	The students understand how ecosystems are dynamically interacting systems of organisms, the communities they make up, and the non-living components of their environment. (K3)
CO4	The student learns the ecosystem processes, such as primary production, pedogenesis, nutrient cycling, and niche construction, regulate the flux of energy and matter through an environment. (K2)

Cluster Elective: DIVERSITY IN LIFE

CO#	Course Outcome
CO1	Biological diversity or biodiversity is the variety of living systems. It may refer to extinct organisms, but also to their diversity in the past. **(K2)**
CO2	Through the study of this course the student learns that the processes are sustained by organisms with specific life history traits. **(K1)**
CO3	The student understands that biodiversity means the varieties of species, genes, and ecosystems, enhances certain ecosystem services. **(K3)**
CO4	To classify the Rare, endangered species. Conservation strategies. **(K3)**

Cluster Elective- : EVOLUTION

CO#	Course Outcome
CO1	Evolution is the change in the characteristics of a species over several generations and relies on the process of natural selection. **(K3)**
CO2	the student understands the theory of evolution is based on the idea that all species? are related and gradually change over time. **(K1)**
CO3	Evolution is inevitable and necessary for continuation of life on earth. **(K2)**
CO4	To confer the Speciation; Allopatricity and Sympatricity; Convergent evolution; Sexual selection; Co-evolution. **(K3)**