



# Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' ♦ Approved by AICTE ♦ ISO 9001-2015 Certified

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## DEPARTMENT OF BIOTECHNOLOGY

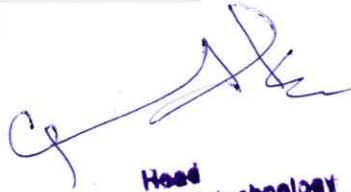
### M.TECH-BIOTECHNOLOGY

ACADEMIC YEAR: 2022-2023


S.NO.	Couse code	Course Title	CO NO.	Description of the Course Outcome
1	22BT5101	Mathematics and Biostatistics	CO1	Estimate the degree of linear and non-linear relationship between the variables and drawing conclusions
			CO2	Interpret and communicate the outcomes in the context of a problem by Designs of Experiment in the context of parametric and non parametric approach
			CO3	Finding roots for transcendental and algebraic equation in terms of Biology by root finding techniques
			CO4	Solving first order differential equations in real time data
2	22BT5102	Biochemical Engineering	CO1	To understand the basic concept of biochemical engineering and understand various reactions
			CO2	Understand and specify reactors used in industrial bioprocesses, develop mathematical models for bioreactors and analyze their behavior (dynamic and steady state).
			CO3	Understand basic principles of mass transfer phenomenon in bioprocessing, and its importance and application in aerobic systems
			CO4	Understand various reactor systems and its used in biochemical engineering
			CO5	To learn the application of biochemical engineering while solving the real- time problems

  
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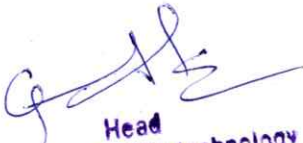
3	22BT5103	Molecular Biology and r-DNA Technology	C01	Understand DNA Structure & Replication and Transcription And Translation
			C02	Understand the Regulation of Gene Expression
			C03	Acquire knowledge of Enzymes and Vectors In Cloning
			C04	Acquire knowledge of PCR, Sequencing & RNA Technologies, biological models and transgenic
			C05	Apply the knowledge of Molecular Biology & rDNA Technology methods
4	22BT5104	Applied Bioinformatics	C01	Acquire the theoretical basis of applied bioinformatics and understand the access and retrieval of biological information from databases.
			C02	Explain the proteomic and metabolomic approaches at current trends
			C03	Develop gene expression profiling to understand expression in both prokaryotes and eukaryotes databases.
			C04	Demonstrate the systems biology tools using retrieved complex data from
			C05	Choose the gene sequences, structures of molecules and metabolomic data from the databases.
5	22BT5105	Plant and Animal Biotechnology	C01	Understand the basics of plant tissue culture, protoplast culture and somatic hybrids
			C02	Apply the Plant Tissue culture to Genetic engineering and development of transgenic plants
			C03	Understand the basics and importance of animal tissue culture
			C04	Apply the Transgenic technology to Animals and applications of transgenic animal technology
			C05	Compare in vitro cultured plants, cells and metabolites

  
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6	22BT5106	Immunotechnology	CO1	Acquire the knowledge about immune systems
			CO2	Understand the concepts of immunological responses
			CO3	Understand immunity with respect to disorders and infection
			CO4	Understand the technological advances in immunology
			CO5	Conduct various immunological assays and apply them to diagnostics
7	22BT5107	Bioreactor Modelling and Simulation	CO1	Understand the Fundamentals of Modeling and apply their principles in bioprocess.
			CO2	Understand the Enzymes and growth kinetic models and Ability to apply their principles in bioprocess.
			CO3	Understand batch and product formation kinetic models and ability to apply their principles in bioprocess.
			CO4	Understand principles of biological systems and apply simulation principles for better biomass and product formation.
8	22BT5108	Downstream Processing	CO1	Acquire the knowledge of primary separation and recovery processes
			CO2	Apply the principles of solid removal unit operations and product enrichment operations
			CO3	Apply the principles of aqueous two-phase extraction process and product purification methods
			CO4	Analyze the methods of alternative separation, product polishing and formulations
			CO5	Evaluate the bioseparation methods for recovery, isolation and purification of various bioproducts

  
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9	22BT51A1	Protein Engineering	C01	students will develop a comprehensive understanding of protein structure and function, including the principles of protein folding, stability, and dynamics
			C02	Students will explore the diverse applications of protein engineering in biotechnology and medicine
			C03	Students will gain proficiency in protein design and engineering techniques used to modify protein structure and function for various applications
			C04	students will develop critical analysis and research skills through hands-on laboratory experiments, literature reviews, and independent research projects.
10	22BT51B1	Food Technology	C01	students will acquire advanced knowledge of the principles and concepts of food science and technology.
			C02	Students will master techniques for ensuring food quality and safety throughout the food supply chain.
			C03	students will develop innovation and product development skills to create novel food products that meet consumer demands and industry trends
			C04	Students will examine the environmental, social, and economic aspects of food production and consumption, with a focus on sustainability and environmental impact
11	22BT51B2	Transport phenomenon in bioprocess	C01	Acquire the knowledge of primary separation and recovery processes
			C02	Apply the principles of solid removal unit operations and product enrichment operations
			C03	Apply the principles of aqueous two-phase extraction process and product purification methods
			C04	Analyze the methods of alternative separation, product polishing and formulations

  
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12	22BT51C1	Perl programming and Bioperl	C01	Students will develop proficiency in the Perl programming language, including syntax, data structures, control flow, and regular expressions
			C02	Students will gain a solid understanding of bioinformatics concepts and algorithms relevant to molecular biology and genomics
			C03	Students will become proficient in using Bioperl, a comprehensive toolkit for bioinformatics programming in Perl
			C04	Students will apply their Perl programming and Bioperl skills to real-world research projects in molecular biology and bioinformatics
13	22BT51C2	Bioprocess Technology	C01	Remembering the basics of bioreactor operational modes and microbial growth kinetics.
			C02	Understand the reactor consideration and kinetics of immobilized enzyme systems.
			C03	Understand the concept of mass transfer coefficient and bioreactor scaleup process
			C04	Apply the principles of bioprocess for the design consideration of different recombinant based cultivation systems.
14	22BT52C7	IPR&PATENT LAWS	C01	Interpret basic knowledge on intellectual property rights and their implications in biological research and product development.
			C02	Interpret the knowledge of documentation and protocols; case studies on patents and patent drafting.
			C03	Develop the knowledge about the biosafety and risk assessment of products derived from biotechnology and regulation of such products.
			C04	Develop the knowledge about the ethical issues in biological research.

ACADEMICS PROFESSOR INCHARGE

HOD-BT

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