Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A' Grade University ❖ Approved by AICTE ❖ ISO 9001-2015 Certified

Campus: Green Fields, Vaddeswaram - 522 502, Guntur District, Andhra Pradesh, INDIA.

Phone No. 0863 - 2399999; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

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DEPARTMENT OF BIOTECHNOLOG

M.TECH-BIOTECHNOLOGY

ACADEMIC YEAR: 2018-2019

S.NO.	Couse code	Course Title	CO NO.	Description of the Course Outcome
1	18BT5101	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	18BT5102	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

Head
Department of Biotechnology
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3	18BT5103	Molecular Biology and r-DNA Technology	CO1	Understand DNA Structure & Replication and Transcription And Translation
			CO2	Understand the Regulation of Gene Expression
			CO3	Acquire knowledge of Enzymes and Vectors In Cloning
			CO4	Acquire knowledge of PCR, Sequencing & RNA Technologies, biological models and transgenic
			CO5	Apply the knowledge of Molecular Biology & rDNA Technology methods
4	18BT5104	Applied Bioinformatics	CO1	Acquire the theoretical basis of applied bioinformatics and understand the access and retrieval of biological information from databases.
			CO2	Explain the proteomic and metabolomic approaches at current trends
			CO3	Develop gene expression profiling to understand expression in both prokaryotes and eukaryotes databases.
			CO4	Demonstrate the systems biology tools using retrieved complex data from
			CO5	Choose the gene sequences, structures of molecules and metabolomic data from the databases.
5	18BT5105	Plant and Animal Biotechnology	CO1	Understand the basics of plant tissue culture, protoplast culture and somatic hybrids
			CO2	Apply the Plant Tissue culture to Genetic engineering and development of transgenic plants
			CO3	Understand the basics and importance of animal tissue culture
			CO4	Apply the Transgenic technology to Animals and applications of transgenic animal technology
			CO5	Compare in vitro cultured plants, cells and metabolites

Head
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6	18BT5106	Immunotechnolo gy	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	18BT5107	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	18BT5108	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 productpurification 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	18BT51A1	Protein Engineering	CO1	students will develop a comprehensive understanding of protein structure and function, including the principles of protein folding, stability, and dynamics
			CO2	Students will explore the diverse applications of protein engineering in biotechnology and medicine
			CO3	Students will gain proficiency in protein design and engineering techniques used to modify protein structure and function for various applications
			CO4	students will develop critical analysis and research skills through hands-on laboratory experiments, literature reviews, and independent research projects.
10	18BT51B1	Food Technology	CO1	students will acquire advanced knowledge of the principles and concepts of food science and technology.
			CO2	Students will master techniques for ensuring food quality and safety throughout the food supply chain.
			CO3	students will develop innovation and product development skills to create novel food products that meet consumer demands and industry trends
			CO4	Students will examine the environmental, social, and economic aspects of food production and consumption, with a focus on sustainability and environmental impact
11	18BT51B2	Transport phenomenon in bioprocess	CO1	Acquire the knowledge of primary separation and recovery processes
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12	18BT51C1	Perl programming and Bioperl	CO1	Students will develop proficiency in the Perl programming language, including syntax, data structures, control flow, and regular expressions
			CO2	Students will gain a solid understanding of bioinformatics concepts and algorithms relevant to molecular biology and genomics
			CO3	Students will become proficient in using Bioperl, a comprehensive toolkit for bioinformatics programming in Perl
			CO4	Students will apply their Perl programming and Bioperl skills to real-world research projects in molecular biology and bioinformatics
13	18BT51C2	Bioprocess Technology	CO1	Remembering the basics of bioreactor operational modes and microbial growth kinetics.
			CO2	Understand the reactor consideration and kinetics of immobilized enzyme systems.
			CO3	Understand the concept of mass transfer coefficient and bioreactor scaleup process
			CO4	Apply the principles of bioprocess for the design consideration of different recombinant based cultivation systems.
14	18BT52C7	IPR&PATENT LAWS	CO1	Interpret basic knowledge on intellectual property rights and their implications in biological research and product development.
			CO2	Interpret the knowledge of documentation and protocols; case studies on patents and patent drafting.
			CO3	Develop the knowledge about the biosafety and risk assessment of products derived from biotechnology and regulation of such products.
			CO4	Develop the knowledge about the ethical issues in biological research.

Head
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ACADEMICS PROFESSOR INCHARGE

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DEPARTMENT OF BIOTECHNOLOGY

M.TECH-BIOTECHNOLOGY

ACADEMIC YEAR: 2019-2020

S.NO.	Couse code	Course Title	CO NO.	Description of the Course Outcome
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			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	19BT5102	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
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3	19BT5103	Molecular Biology and r-DNA Technology	CO1	Understand DNA Structure & Replication and Transcription And Translation
			CO2	Understand the Regulation of Gene Expression
			CO3	Acquire knowledge of Enzymes and Vectors In Cloning
			CO4	Acquire knowledge of PCR, Sequencing & RNA Technologies, biological models and transgenic
			CO5	Apply the knowledge of Molecular Biology & rDNA Technology methods
4	19BT5104	Applied Bioinformatics	CO1	Acquire the theoretical basis of applied bioinformatics and understand the access and retrieval of biological information from databases.
			CO2	Explain the proteomic and metabolomic approaches at current trends
			CO3	Develop gene expression profiling to understand expression in both prokaryotes and eukaryotes databases.
			CO4	Demonstrate the systems biology tools using retrieved complex data from
			CO5	Choose the gene sequences, structures of molecules and metabolomic data from the databases.
5	19BT5105	Plant and Animal Biotechnology	CO1	Understand the basics of plant tissue culture, protoplast culture and somatic hybrids
			CO2	Apply the Plant Tissue culture to Genetic engineering and development of transgenic plants
			CO3	Understand the basics and importance of animal tissue culture
			CO4	Apply the Transgenic technology to Animals and applications of transgenic animal technology
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6	19BT5106	Immunotechnolo gy	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
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7	19BT5107	Bioreactor Modelling and Simulation	CO1	Understand the Fundamentals of Modeling and apply their principles in bioprocess.
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8	19BT5108	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 productpurification 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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11	19BT51B2	Transport phenomenon in bioprocess	CO1	Acquire the knowledge of primary separation and recovery processes
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			CO3	Develop the knowledge about the biosafety and risk assessment of products derived from biotechnology and regulation of such products.
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DEPARTMENT OF BIOTECHNOLOGY

M.TECH-BIOTECHNOLOGY

ACADEMIC YEAR: 2020-2021

S.NO.	Couse code	Course Title	CO NO.	Description of the Course Outcome
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6	20BT5106	Immunotechnolo gy	CO1	Acquire the knowledge about immune systems
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14	20BT52C7	IPR&PATENT LAWS	CO1	Interpret basic knowledge on intellectual property rights and their implications in biological research and product development.
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ACADEMIC YEAR: 2021-2022

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1	21BT5101	Mathematics and Biostatistics	CO1	Estimate the degree of linear and non-linear relationship between the variables and drawing conclusions
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VADDESWARAM, Guntur Dt.

ACADEMICS PROFESSOR INCHARGE

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