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Annal Collegeof Arts & Science Ouglity Education for Today & Tomorrow Koylischeri, Kumbakonam 612 503 Ph. 0435 2453007

DEPARTMENT OF MICROBIOLOGY

Attainment of Programme outcome,
Programme Specific outcome with
Course outcome

HOD

Department of Biotechnology,
Annai College of Arts and Science,
Kovilacheri, Kumbakonam - 612 503.

IQAC

Coordinator

IQAC Co-ordinator Anno Corole of Arts & Science Kowlachen, Kumbakenam-612 503

PRINCIPAL

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Annai College of Arts & Science Kovilachery, Kumbakanam-612 503



Mapping of Programme outcome, Programme Specific outcome with Course outcome

UG Programme outcome:

PO1: Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures.

PO2: Formulate, articulate, retain and apply specialized language and knowledge relevant to the

core concepts in

microbiology.

PO3: Apply the Microbiology discipline through involvement in research or internship activities

PO4: Understand the basic microbial structure, functions and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea.

PO5: Evaluate examples of the vital role of microorganisms in biotechnology, fermentation, medicine, and other industries

important to human wellbeing.

PO6: Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae.

PO7: Comprehend the various methods for identification of unknown microorganisms.

PO8: Understand the microbial transport systems, the modes and mechanisms of energy conservation in microbial metabolism

Autotrophy and heterotrophy.

PO9: Know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement

PO10: Know how viruses are classified, understand the architecture of viruses and know the methods used in studying viruses.



UG Programme Specific outcome:

PSO1: A general course emphasizing distribution, morphology and physiology of microorganisms in addition to skills in aseptic

procedures, isolation and identification.

PSO2: This course also includes sophomore level material covering immunology, virology, and epidemiology and DNA technology.

PSO3: Understand fundamental principles involved in Microbiology.

PSO4: Acquire detail knowledge of microorganisms, their types and significance.

PSO5: Understand metabolic and structural significance of bio-molecules.

PSO6: Acquaint with concepts of Immunity, Antigen, Antibody and Immune system.

PSO7: Understand importance and applications of various enzymes in replication transcription and translations.

PSO8: Acquire detail knowledge of industrial production of enzymes, antibiotics and vitamins.



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DEPARTMENT OF MICROBIOLOGY

FUNDAMENTALS OF MICROBIOLOGY/ 16SACCMBI:

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COI: Describe how interoorganisms are used as model systems to study basic biology, genetics, metabolism and ecology.					(>	
CO2 Identify ways microorganism's play an integral role in disease, and microbial and immunological methodologies are used in disease treatment and prevention.											(
CO3: Explain the classification of Microorganisms, prokaryotes, and eukaryotes.														1				
CO4: Describe the morphology and general properties of bacteria, actinobacteria, cyanobacteria.			1															
CO5 Narrates the morphology, cultivation, life cycle of protozoa.										(
CO6: Describe the structure and nutrition, life cycle of yeast and mold									1									



BIOCHEMISTRY I/ 16SACBC1:

Course outcome			Pn	Programme outcome	nme	outc	ome				קי	Programme Specific outcome	mm	Spe				3
	PO 1	PO 2	PO 3	PO 1	PO 1	PO	PO 7	PO S	PO	Po	- PSO	PSO PSO PSO PSO PSO PSO	0.59	PSO	O.	8		7
CO1: Describe various types of Biomolecules.					,								-		60		-4	100
CO2: Pinpoint biochemical characteristics of amino acids.																		- Anna Anna Anna Anna Anna Anna Anna Ann
CO3: Write down biochemical characteristics of proteins and enzymes.				1														
CO4: List out biochemical characteristics of Carbohydrates.																	West Control of the C	Alteriar management (1965) (1966)
CO5: Narrate biochemical characteristics of Lipids.			1											And the state of				Color St. Commission (St.) and require
CO6: Write down biochemical characteristics of Nucleic acids.												<					-	Stormer briston (spinorthinis and since
CO7: Explain the concept of energy and thermodynamics.							1										Secretarion of the second	and the second second second second
CO8: Apply thermodynamics in biology - photosynthesis and respiration																		



MICROBIAL METABOLISM/ 16SCCMB2:

MICROBIAL METABOLISM/ 10300M25	- TATALA								The state of the s					-				
Course outcome			Ŧ	rogr	Programme outcome	e ou	tcom	ē				Prog	grami	ne S _I	pecifi	c out	Programme Specific outcome	
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CO1: Understand regulation of blood glucose level.				1														
CO2: Describe major pathways like Glycolysis, TCA cycle, Urea cycle etc.										1			1					
CO3: Discuss amino acid catabolism like transamination,				-														
transmethylation, decarboxylation etc.			1	-									+	-			-	
CO4: Understanding the concept of classification and contributions of microbiologist.													-		-			
CO5: Exploring the various types of microscopes and its applications.																		
CO6: List out the applications of microbial metabolism in industrial applications.									50							1		
CO7: Basics of nitrogen fixation and its application in agricultural improvement.									1									



BIOCHEMISTRY II / 16SACBC2:

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Course outcome			,	rgor				, Ca	5	D Ca	Coa	Coa	Cod	Cog	OSd	Osa	OSd	PSC
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	_	2	3	4	ن.	6	7	∞	9	10	-		v	1		-	_	0
CO1: Describe classification and			,															
CO2: Understand industrial applications of enzymes.															(
CO3: List out biochemical characteristics of Carbohydrates.																		
CO4: Narrate biochemical characteristics of Lipids.			7							_								
CO5: To enumerate the organization of signaling pathways.																4		
CO6: The structures of amino acids, their chemical properties and their organization into Polypeptides and proteins. Methods for isolating and characterizing proteins the basic elements of protein structure key.				***														



IMMUNOLOGY/ 16SCCMB3:

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Course outcome			P,	Programme outcome	mme	out	come	G			_	rogi	amn	ne Sp	ecifi	cout		
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CO1: Demonstrate an understanding					1													
of key concepts in				/	and the same													
immunology.			-			-		+					1	+		1		
CO2:Understand the concept of														-			, *	
Immune system, Immunity, Immune response											_							
CO3: Describe the structure and,							a.											
antibody.						(-	-		-	-			-	-		
CO4: Explain the humoral and cell medicated immune response.													_	1				
CO5: Narrates the antigen, antibody		<i>f</i>	San															-
		-				-	-	-					_					
CO6: Explain the transplantation immunology.			-								<	1						
CO7: Describe the autoimmune diseases.					1	- Park												
CO8: Explain the hypersensitivity reactions.															No. of the last of			
CO9: list out the immunodeficiency disorders.									<									
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BIOSTATISTIC AND INFORMATISTIC/ 16SACBS1:

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CO1: Understand basic terms and										A STATE OF THE PARTY OF THE PAR					***************************************	******		40.0
applications of biostatistics.					-					The state of the s								
CO2: Represent the DATA																	1	
diagrammatically.																	(
CO3: Understand limitations of graphic representation.			Contraction of the second														punkah danggangan pakangsayan punkan	
CO4: Measure central tendencies like mean, mode and median and their relationship.																		



INTRODUCTORY VIROLOGY/ 16SCCMB4:

Course outcome			ъ	Programme outcome	mme	out	come	**		A. C.	70	rogn	amm	e Spe	cific	out	Programme Specific outcome	
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CO1: Explain the historical background of virus, taxonomy, nomenclature, evaluation and classification.					1			R		;		,		•	·	•	7	Ox
CO2: Learning the life cycle, replication strategies and application of bacterial and plant viruses.													1					
CO3: Understanding the strategies of anti-viral agents and viral vaccination.							1											
CO4: Analyzing the pre-cautions and issues of vaccination.														1				
CO5: Explain the basics of cyano, myco and phycophages.	<	3	,															
CO6: Understand the plant viral diseases and its control measures.																		
CO7: List out the application of cyano, myco and phycophages.						5												
CO8: Analyze the Pre-cautions and issues of vaccination.																<		



BIOINFORMATICS AND COMPUTER APPLICATIONS IN BIOLOGY/ 16SACBS2:

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Course outcome			$\mathbf{P_r}$	ogran	nme o	Programme outcome	me				Bold	rami	ne sp	есии	out	Ome	
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CO1: Explain in detail about UNIPROT Database.		<		-										P			
CO2: Define Dynamic programming and explain the Smith waterman algorithm.													1				
CO3: What are the methods of Phylogenetic tree construction?						1								-			
CO4: Explain SCOP and CATH databases.						<									-		
CO5: Write about PRINTS, BLOCKS and PRODOM Databases.											_			1	-		
CO6: Explain the Resources at the EMBL-EBI.												1	-	-	-		S. a. s. Photograph
CO7: Appreciate the basic nature and diversity of microbial, plant and animal life.				6	*						-		-				
CO8: Understanding the classification of organisms, their structure and function.								,	1								
CO9: The students will be able to explain the major steps in pairwise and multiple sequence alignment, explain the principle for, and execute pairwise sequence alignment by dynamic programming.																	



MEDICAL MICROBIOLOGY/ 16SCCMB5:	CMB5	•••										rogr	amm	ie Sp	ecific	c out	Programme Specific outcome	
Course outcome			P	rogra	Programme outcome	Our		D C	РО	РО	PSO	PSO	PSO	PSO	PSO PSO PSO PSO	PSO	PSO	_
	РО 1	PO 2	ро 3	PO 4	5 PO	6 5	7 7	∞ 5	9	10	-	2	ω	4	5	6	7	ox
CO1: Exploring the role of microbiology in medicine.					1													
CO2: Skilled at diagnosis of bacterial, viral, protozoan and other parasitic diseases.													-	1				
CO3: Learning the concept, etiology and epidemiology of infections.			,									7						
CO4: List out the prevention of medically important microbes							1	-										
CO5: Understand the Host-microbe interactions.									-									
CO6: Analyze the molecular biology of animal virus and various antiviral agents.				7	1													
CO7: Describe the various types of parasite and its control measures.									-		1							
CO8: To analyze the micro biome's role in diseases.								-	The state of the s									



GRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY/ 16SCCMB6:

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	PO	7			n	7	7	∞	9	10	-	2	u	+		,		(
	-	2	ယ	4	u	6	-								,			
CO1: Learning and exploration of site			-															
specific microbes and its			No. of Concession, Name of Street, or other Persons, Name of Street, or ot													Total Control Control		
application through met			-															
genomic approach.	-	-		-														
CO2: Basics of aerobiology and															<			
aquatic microbiology ant its																		
applications.		_	-		_													
CO3: Exploring the microbes for waste						The last									-			
water treatment and sustainable						Com												
20.000	_	_	-	1														
CO4: Learn the basic concept of Microbial adaptation in natural												1						
and extreme condition.		-		-	-								1		\dagger	+		
CO5: To explain the difference																		
between bioremediation.		0																n de la constantanta
bioadsorption, bioaccumulation		4														Na Commandor		
and biomagnifications.	-			-									\dagger	+	+	+		-
CO6: To narrate the Outline of														-				
biogeochemical cycles.													1			-		-
CO7: Understanding the plant microbe									1								and the state of the state of	
interaction and strengthening the								<								-		
below ground diversity.	_		_	_								-	-	_	-	-		-



FOOD MICROBIOLOGY/ 16SCCMB8:

Course outcome			ק	rogra	Programme outcome	out	come					Prog	ramn	ne Sp	ecifi	cout	Programme Specific outcome	200
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CO1: Learn the fundamental principles and concepts of food microbiology.					/													
CO2: Understand the beneficial role of microorganisms in fermented foods																		
and in food processing and the microbiology of different types of														,				
fermented food products – dairy, pickles, Legume and cereal based food products.											-				(
CO3: Basics of food borne diseases and its economic importance.					(1					-		-	-	-			
CO4: Understanding food control agencies and its regulations.												-	-	1				
CO5: Familiar with the concept of food hygiene/control and their role in retail trade.			6	100								-			-			
CO6: Understand the significance and activities of microorganisms in food and role of intrinsic and extrinsic factors on growth and survival of microorganisms in foods																		
CO7: Know the spoilage mechanisms in foods and thus identify methods to control deterioration and spoilage.								<	-									

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DEPARTMENT OF MICROBIOLOGY

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INDUSTRIAL MICROBIOLOGY/ 16SCCMB9:	6SCCMB9:							-	ממ	oran	Programme Specific outcome	pec	ific	outco	me	
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	PO PO 1 2	PO P	PO PO 4 5	PO 6	PO 7	8 9	9 10	-		3	4	· ·		9	1	OX.
CO1: Get equipped with a theoretical and practical understanding of industrial microbiology.				<												
CO2: Apply the knowledge of molecular biology and microbial genetics to develop industrially important microorganism.											<					And the state of t
CO3: Recognize the fundamentals of fermentor and fermentation			1												the state of the s	
CO4: Use the most common equipment, materials and methods related to fermentation processes, microbial growth and cultivation and sterilization.																
CO5: Appreciate how microbiology is applied in manufacture of industrial products.					<											
CO6: Know how to source for microorganisms of industrial importance from the environment.								1							weet and the stage of the state	a mag jalah salah sa
CO7: Know about design of bioreactors, factors affecting growth and production, heat transfer, oxygen transfer.																



RECOMBINANT DNA TECHNOLOGY/ 16SMBEMB2:

Course outcome			q	Programme outcome	mme	cout	come	- (0		3	D CO	Prog	nme.	ne Sp	PSO	rogramme Specific out	Programme Specific outcome	- 10
	PO	РО 2	PO 3	PO 4	PO 5	РО 6	PO 7	8 8	9	10	1		3	4	5 (6		
CO1: Exploring the basic techniques of rDNA technology.					Land													
CO2: Skilled at hybridization and restriction mapping and its application in pharmaceutical and food industries.															<			
CO3: Concept of protein engineering and its clinical application.						<												
CO4: Understanding the application of rDNA technology in disease diagnostics and gene therapy.														San				1
CO5: Basic knowledge on ethical, legal and social issues of genetically modification.	<	7.																

CO8: Students will able to understand the strategies and steps involved in construction of genomic and cDNA library, essential tools and role of each and every constituents.	CO7: To understand the role, use and types of different DNA modifying enzymes viz. Polymerases, Nucleases, restriction endonuclease, ligases etc.	CO6: Acquire basic knowledge of DNA sequencing methods from conventional (Sanger sequencing) to High throughput Next generation sequencing technology, their principle, chemistry, theory and types.



THICS/16SMBEMB3.

Course outcome Programme outc	מ שאו	TOET	מולק ל	Tool	nme	outco	ome				Prog	ramn	ne Sp	ecifi	c out	come	5
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	-	2	S	4	+			+									
CO1: Define microbial taxonomy				1	1												
with phenotype.			-	+	+	+	-	+									
CO2: How do you classify the													(
nutrients?			-			-						-			-		
CO3: How do you calculate the CFU												1	San Park				
						-											
CO4: Discuss about beneficiary																	
microbes in everyday life.		-				-	+				-	+	+	+	-	-	
CO5: Discuss the possibility to use																	
the microorganism to solve						60											
environmental problems.					1					_	-	-	-	-		-	
CO6: Discuss the survival																	-
mechanism of pathogenic							· ·										
microorganism in							<										
environment.																	
CO7: Culture of different culture				_	_												
nutrient media.														No. of Street, or other Persons.			
													(-
CO8: Equipped with aseptic							~					-			-	-	
techniques.						The same											
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