

## Annal College of Arts & Science

Quality Education for Today & Tomorrow Kovilacheri, Kumbakonam. 612 503. Ph: 0435 2453007 Accredited by NAAC with 'B' Grade & Recognized by UGC under Section 2(f) & 12(B) Affiliated to Bharathidasan University. Tiruchirappalli. E-Mail:acasdmn@gmail.com

# DEPARTMENT OF BIOCHEMISTRY

Attainment of Programme outcome,
Programme Specific outcome with
Course outcome

IOAC

Coordinator

IQAC Co-ordinator, Annai College of Arts & Science Kovilacheri, Kumbakonam-612 503

Annai College of Arts and Science, .....acheri, Kumbakonam - 612 502

HEAD, Department of Biotechnology,

PRINCIPAL

Principal
Annai College of Arts & Science
Kovilachery, Kumbakonam-612 503



# Mapping of Programme outcome, Programme Specific outcome with Course outcome

#### Programme outcome:

PO1: Students are able to understand the synthesis of proteins, lipids, nucleic acids and carbohydrates and their role in metabolic pathways.

of biochemistry PO2: Ability to apply the fundamental knowledge of Biomolecules, protein, biochemical techniques in the area

PO3: ability to identify, formulate and solve the problems in the area of biochemistry.

and experimental methods of Biochemistry PO4:In-depth and detailed functional knowledge of fundamental theoretical concepts

technology, health, and environment science and, on PO5: Apply/implement interface between, on the one hand, the history of the other hand, issues pertaining areas

Biochemistry and natural modern

advanced chemical experiments and applying

PO7: Skill in examining specific phenomena theoretically and/or experimentally.

structural-chemical characterization techniques

PO6:Skills in planning and conducting

Biochemistry research. PO8:Generation of new scientific insights or to the innovation of new

applications of

PO9: knowledge of contemporary issues in the area of biochemistry.



#### Programme Specific outcome:

PSO1: Application of the principles of thermodynamics and chemical kinetics in chemical reactions

molecular machinery. PSO2: Ability to analyze the various biological components through analytical tools in living cells and

PSO3: Acquire practical skills that will prepare for a future career in the interdisciplinary subjects.

Genetic Engineering, Molecular biology & Biotechnology. PSO4: Understanding of the applications of Biochemistry in various fields such as Clinical Biochemistry,

PSO5: Understanding of the scientific basis of life process and orientation towards the application of knowledge acquired in solving clinical problem

area of hormone biochemistry PSO6: Students shall be able to identify, formulate and solve the problems of endocrine disorders in the

well as to analyze and interpret the results PSO7: Students shall be able to conduct the clinical biochemistry, Diagnostic biochemistry experiments as



#### BIOMOLECULES, 16SCCBC1

Course outcome	Pro	Programme outcome	come			Programme Specific outcome	amm	e Spe	cific c	utco	ne	
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CO1: To list out the structure and functions of biological macromolecules												
CO2: To learn the metabolism and integration of biomolecules that takes place in human system	<											
CO3: Integrate the various aspects of metabolism and their regulatory pathways.	<										,	
CO4: Students can understand the fundamental energetic of biochemical processes.												
CO5: To elaborate the relation between biochemical defects and metabolic disorders	\											
CO6: To enumerate the organization of signaling pathways									`			
CO7: To explain the role of membrane processes in metabolism										Ì		T.
CO8: Overall, To grasp the processes of metabolic transformation at the molecular level and how these processes are studied		2		. A.			<:				***************************************	



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#### DEPARTMENT OF BIOCHEMISTRY

#### CHEMISTRY I,16SACCH1:

CO4			CO <sub>3</sub>			CO2				CO1			
CO4: Evaluate data generated by experimental methods for chemical characterization	group multiplication tables – conjugate classes, conjugate and normal subgroups	theory - Concepts, Elements of group theory - definition -	CO3: Understand the Group	to study chemistry	instruments that can be used	CO2: Identify methods and	matter	properties, and reactions of	of the composition, structure,	CO1: Define chemistry as the study			Course outcome
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						арпсацоня
					115	applications
						rates-collision theory -
					ion	concepts - Theories of reaction
						energy surfaces.Basic kinetic
		34.74				coordinate and potential
and the state of t					n	LFER.Significance of reaction
	· 10 · 10 · 10 · 10 · 10 · 10 · 10 · 10					Introduction to
			17.0		or	Michaelis–Menton kinetics for
	<			<		Kinetics, Enzyme catalysis:
						CO6: Understand the Reaction
	Cordina provincia Alemana Cordina de compresso de constitución de Cordina de compresso de constitución de compresso de com	s paggi di manisari Lapinovikika pake tapa minigeliki di tapolikiki		<	0.5	systems – symmetry factoring of Huckel determinants.
		sag sanna och essänhölde Sanna yttinni sählindarii				orbital theory - planar -
	and the second				lar	Symmetry aspects of molecular
	ender regional relations addressed in gradient place of decimal and definition					711



HUMAN PHYSIOLOGY, 16SCCBC2:

Course outcome			-	Programme outcome	amm	e ou	tcon	ıe				Pro	Programme Specific outcome	me S	Speci	ific o	utco	me	
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	-		s.	4	51	6	7	∞	9	10	-	2	3	4	51	6	7	00	9
. CO1: The students will be exposed to																			
anatomy of different organs															<u></u>				
Paper helps the students to														_	5				
understand the physiological	<																		
functions of the biological systems																			
CO2: Describe the structure of																			
major human organs and																			
explain their role in the	<																		
maintenance of healthy																			
individuals																			
CO3: Explain the interplay																			
between different organ																			
systems and how organs and		1																	
cells interact to maintain		_																	
biological equilibrium in the																			
face of a variable and																			
changing environment																			
CO4: Use complex electronic						5													

of principles				o para series				n igorial most			5-A			
					CO6: Explain physiological					CO5: Interpret and draw				
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#### CHEMISTRY II, 16SACCH2:

Course outcome			Р	Programme outcome	mm	e out	com	е				Pro	gran	Programme Specific outcome	Spec	ific c	utco	me	
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CO1: Use quantitative measures of																			
solution concentration in																		*****************************	
describing colligative, acid-	\													\			-		
base, solubility, and	(													<					
electrochemical principles of																		u de la constantina	, mare 180 an
aqueous solutions													- June 1980						******
CO2: Interpret nuclear processes																			
such as radioactivity, fission,			,											-					Terrett von diederke
and fusion in terms of kinetic				,								nc ~e.anu-					t-up-radio	Name of Street	art annuachas att
and thermodynamic																	- M. A.		
principles																		NAME OF THE OWNER,	
CO3: Understand the Electrophilic					ngarani, Agangatha														
Substitution Reactions				\													Action of the last		epe i singl
Aromatic electrophilic				<														w	
substitution: Orientation,																Company of the Compan			
reactivity and mechanisms –									ar-1 ar-1					Annual Market			*****		to de to de
Synthetic applications																	and the second	a transition	the lateral parties of the state of the stat

type).	(dimethyllithiumcuprate	additions	Mechanism – Grignard reagents – 1,2 and 1,4-	carbonyl systems –	carbonyl and conjugated	ozonolysis. Addition to	asymmetric epoxidation and	CO5: Oxidation – Sharpless	electrophilic substitution: S E 1, S E 2, S E i mechanisms.	<ul> <li>Taft Equation.Aliphatic</li> </ul>	forms of Hammett equation	echanismsHammett	structure on reaction	correlation – Effect of	Principles of Hammett	of Hammett equation –	ubstituents effect - Origins	effects on reactivity –	treatment of thestructural	and pyridine –Quantitative	<b>)4</b> : Substitutions in thiophene
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#### BIOCHEMICAL TECHNIQUES, 16SCCBC3:

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CO1: The units of this paper are																			
crucial for implementation c		_																	
research ideas at molecular		<												•					
level		-		_															
CO2: This significantly enhances																			
the employability of the														<					
candidates in														(					
Biotechnological,	<																		
Pharmaceutical Industries																			
and Analytical Laboratories																			
and research institutes																			



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### DEPARTMENT OF BIOCHEMISTRY

#### ENZYMES, 16SCCBC4:

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CO1: Students will obtain basic																		-	***************************************
knowledge about the													\						-
relationship between properties		-											_						
and structure of the enzymes,	<																		
their mechanism of action and																			
kinetics of enzymatic reactions				-	+	-		-	+					-	-				
CO2: The student could able to									\					\					
analyse the structure/function								_						_					
relationships in biocatalysed																			
reactions					_	-	-	-									-		
CO3: The student would able to														_					
describe the priciples and																			gant a dispersation
methods of metabolic							1	_											
engineering of																			
(micro)organisms to produce																			
industrial chemicals				-	-		-	-	-							-			
CO4: Students able to research a																			
contemporary application of					7														and the state of
enzyme technology or					_														
metabolic engineering and																			
present the results in a well-																			
structured oral presentation																	_	-	

CO8: It is important to study enzymes, the rate limiting molecule of all the chemical reactions and understanding enzymes could pave research ideas	cO7: To integrate the practical aspects of enzymology with the kinetic theories to provide a mechanistic overview of enzyme activity and regulation in cells	students will be explored to understand the use of enzymes in medicine, food, organic synthesis, genetics and other areas sectors that favor a wide reach for them	O5: Students can understand to compare and contrast the historical uses of enzyme technology with current applications in a diverse range of industries



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### DEPARTMENT OF BIOCHEMISTRY

#### BIOENERGETICS AND METABOLISM / 16SCCBC5:

Programme outcome  Programme outcome  Programme Specific o	Course outcome	PO PO 1 2	CO1: Understand the	differences between	anabolic and catabolic	processes in metabolisi	CO2: Understand that	reaction coordinate	diagrams are useful for	thermodynamics of	coupling anabolic and	catabolic processes in	Catabone
Programme outcome         Programme Specific outco           PO         PO         PO         PO         PO         PSO         <													
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### CELL AND MOLECULAR BIOLOGY/ 16SCCBC6;

CO1: To have a basic understanding about the morphology of cell 8 cell organelles and its function and molecular mechanism of the generic organisms  CO3: Students could able to describe the general principles of gene organisms  CO3: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	Colonic Ch. S. Suprissessor Colonic Colonic	AND AND AND ADDRESS OF THE AND ADDRESS OF THE ADDRE																			
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about the morphology of cell & cell organelles and its function in detail.  CO2: To learn the structure, function and molecular mechanism of the genetic material  CO3: Students could able to describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms  CO1: To learn how to interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	a basi		-	2	ယ	4								2	3 5	4	5	4 5 6 7 8	7	8 9 8 9	
about the morphology of cell & Cell organelles and its function in detail.  CO2: To learn the structure, function and molecular mechanism of the genetic material  CO3: Students could able to describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms  CO3: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	a basic	understanding	<u>j</u>										1	-	1	1	1	-	+	7	
in detail.  CO2: To learn the structure, function and molecular mechanism of the genetic material  CO3: Students could able to describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms  CO3: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	e morp	hology of cell	<i>S</i>																		
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material  CO3: Students could able to describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms  CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	nism of	the genetic		<																	
CO3: Students could able to  describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms  CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	al																				
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of gene organization and expression in both prokaryotic and eukaryotic organisms  CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	oe the g	eneral principl	S			<u>`</u>										\					
expression in both prokaryotic and eukaryotic organisms  CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	e organ	ization and			<											_<					
cO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	ssion in	both																			
CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	ryotic a	nd eukaryotic																			
CO1: To learn how to Interpret the outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	isms				-												-	_	+	+	
outcome of experiments that involves the use of recombinant DNA technology and other common gene analysis	arn hov	v to Interpret t	1e																		
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#### MICROBIOLOGY, 16SCCBC7:

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CO1: Students will acquire and																			
demonstrate competency in															-			-	-
laboratory safety and in routine																			******
and specialized microbiologica	<																	name of the last o	
laboratory skills applicable to																			
microbiological research or																			
clinical methods, including																			
accurately reporting																was not consider			
observations and analysis.																	_		
CO2: Students will communicate																			
scientific concepts,		`																	
experimental results and		<																	
analytical arguments clearly																			
and concisely, both verbally																			
and in writing.											1								
CO3: To understand how to relate																		<	
properties of cancerous cells						<													
to mutational changes in gene																			
function.						-													

	CO6: Students can make the Knowledge of the relationship between structure and function at organ and/or organism level, of important cell biological communication principles and processes, and how they are regulated.	CO5: Students will know the mechanisms by which different messenger-receptor interactions bring about long or short-term changes in cell state	04: To enumerate receptor subclasses and their possible uses in cell signaling
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### DEPARTMENT OF BIOCHEMISTRY

#### PHARMACEUTICAL BIOCHEMISTRY, 16SMBEBC1.

Course outcome			Pı	Programme outcome	mme	outo	ome			II. A SERVICE AND A		gor	nung	te SI	eath	COL	Programme Specific outcome	2 7
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CO1: Helps in correlating between							A Trial St	the end can be obtained.	An and a second			e konsponenski k		ry to decimate	ALVED DE PROPERTIES	The section of	THE SERVICE	
pharmacology of a disease and	<	12 Tables	a construction			escaración de		capcomptical			CLUBER OF THE PARTY OF THE PART	towns:	or the transfer	C CONTRACTOR	ne y waren ali	es. etrofé é	tor (Carton)	190 194 Eur
its mingation or cure							atables of the				THE	and the second				this course	s developed	ALC: NO
CO2: To understand the drug metabolic								COURSE AND			merit.	and an Peril			Operation 1 to	RETAIN ON THE	ale (acc	
pathways, adverse effect and		<	o de regional							-pitm		UT PAGE	-	unio i tritt	SSA - 8891	100	2000	ndo el Ol
therapestac value of drugs		action (A			WC36-			at estable			n y county	4.57			stren pitalisi		a stores	
CO3: To know the structural			n de l'anna	are will							LUCYIC AND					para la Company	(	(a, 1) c3
activity relationship of				CONTRACT.	1000			20000	a merry	2717	o constant	/SPR	n. o starnist	E COM	ok. I OWE	de Pic	tan Latin	Mary J. Cov
different class of drugs	pro luci	(LV) 250		ans   11				menta.	Aud Decis			n novemb					parane.	aread
CO4: Well acquainted with the					\		PLANE TO	and of			por service.	Ring Audit			garapt titper	Au hayira. 1	Delty Antonio	er autoria
synthesis of some important			000000000000000000000000000000000000000		<			2000	O. P. P. S.			the deal of	Annual Control	67994	A 1900	cent	1-4-m2-4	1.000
class of drugs																		



IMMUNOLOGY,16SCCBC8:

				and disease.
				subsystem to see usen contribution to the functioning of higher-level systems in health
				CO5: Integrate knowledge of each
		-		inflammation and immunity, in
				basis of complex, centual basis of complex, centual
				CO4: To demonstrate the molecular
		-		and maintain tolerance
				that regulate immune responses
				CO3: Define the basic mechanisms
			-	mediated adaptive responses
			_	pathways of humoral/cell-
			`	CO2: Define the cellular/molecular
			-	immunity
				interplay of innate and adaptive
		\		distinctions and functional
				CO1: Describe the basic mechanisms
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BeO I	Programm			Course outcome
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rechnologies in the design of research plan to test specific hypotheses  COT: Translate understanding of basic mechanisms into identification of biological, clinical and therapeutic implications	and state-of-the-art	and state-of-the-art	and state-or-the-art	and state-of-the-art	יים אלצוף-0ל-יואף-ארן	and state of the net	I state of the same																							10. 11.	70. 11.																			1 A							Tatata at the same	I read to be hand	I about at the and	I atata at the analysis of the	and state of the out	- 1	12.7 C721P-01-1P0-04+	12.7 C721P-01-1P0-04+	12.2 C721P-01-1P0-04+	12.2 C721P-01-1P0-04+	127 C721P-01-1D0-24	And Nizir-Ol-The-Art	200 NZIC-01-117-201	200 2010-01-010-211	311U 312C-01-11C-411	The same of the																		The second secon	armonmontal mathada. 1	and a second and a	are not moth and a second seco	avnerimental methode and	experimental methode and	PXDELIHICHE INCIDATE SAIT	EADCHILCHEAN THE HIGH SALU	CAPCILITE III CUI OUS SIII	Colombian manifold all a	The speciment	The second secon												tophanlamain the 1	reconologes in the decompact	CCHILOTOXICS III (IIC (ICSIST) Of	S. c. m. mr droight Of			10000000	1 CSCALCII DIZII IO TEST specific	The special sp		httpothagag	11 DOLLOCO				COT. Translate and control	CO7: LIAIISIATE understanding of	OI STATISTICS OF		have marketing the same and the	DASIC TRACKS and the control of the	באסזכ וווכנוומוווט וווווט				identifyataa officialiii	1Gentincation of biological	יייייייייייייייייייייייייייייייייייייי	0 7			Clinical and therapellitic	כוווורמו מוזע עוכנאסכעעכ	
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#### DEPARTMENT OF BIOCHEMISTRY

#### CLINICAL BIOCHEMISTRY, 16SCCBC9:

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Course outcome			<del>-</del>	11301	Programme outcome	oute	ome.					Prop	gram	me S	pecil	ic ou	Programme Specific outcome	ACCEPTED DISSESSED OF	-
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CO1: An advanced																			
understanding and															/				Nicotor
applied knowledge of the					<														
theory and practice of																			
clinical biochemistry.	and the state of t	The second second	Contraction of the Contraction o				The state of the s	To contract the	September 1	Company of the last	and the same of th	-	-	Mayor de	The state of the s	Chivilla 26 Pur di como Civilla	constitution of constitution	The same of the sa	
CO2: The student will be able																			
to describe the structure,															_	/			
function and metabolic																-			
pathways for																		-	
carbohydrates, amino																			
acids and lipids					i i		-					and the same of th	page (page page)	- Company of the Comp	-	vill-manage -	Control of Control of Control	and charles	
CO3: To learn the alterations											-						Provide the same fractions		
in lipid and carbohydrate			/	\															
metabolism that occurs																	-		
as a result of diabetes									-			-	-		CORNEL MANAGEMENT OF THE PERSON	uniformity inter-	and contract of the contract o		
CO4: Explain the metabolism													-			\			
of lipoproteins, medical						,	<u> </u>								_		-		
problems associated with																			
abnormal lipoprotein						-					-			- Company					

CO9: Describe intercellular and intracellular signal transductions and explain the molecular mechanism of drug actions	CO8: Students can apply biochemistry concepts to solve clinical scenarios	110	CO7: To study various diagnostic and	various diseases and disorders	CO6: To impart thorough knowledge about the biochemical basis of	biological membranes, as well as drug transporters	membranes including chemical composition and structure of	CO5: To make the students biochemistry of	agents used to treat lipid disorders
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#### DEPARTMENT OF BIOCHEMISTRY

#### ENDOCRINOLOGY,16SMBEBC2:

Course outcome			ק.	rogra	mm	Programme outcome	come	(0)				Pro	gram	me S	Deci	Programme Specific outcome	tcor.	ne	
	PO	РО	PO PO	PO	РО	PO	РО	PO PO	РО	Ю	PSO	PSO	PSO	PSO	PSO	PSO PSO PSO PSO PSO PSO	PSO		PSO
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CO1: Students will be expected																			
to gain knowledge and																			
understanding of the structure																			
and function of mammalian																			
endocrine tissues																			
CO2: The manner in which the																			
regulatory control and																		3	
actions of individual																			
endocrine tissues are															\			,	
integrated to maintain							<								<				
appropriate physiological																			
and metabolic responses to																			
changes in the internal and																			
external environment		-	-		-		-	_		_	-								