

2020 - 2021

DEPARTMENT OF BIOCHEMISTRY
B.SC., BIOCHEMISTRY
POs and COs Mapping

Sem	Course Code	Title of the Course	COs	POS							
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	
SEM I	20110AEC11	Tamil I	CO1 Learn the changes occurred in literature since classical period.		3						
			CO2 Make use of vocabulary systematically		3						
			CO3 Understand how to lead one's life realizing the modernity and its environment/atmosphere.		3						
	20111AEC11	Advanced English-I	CO1 Develop vocabulary		3						
			CO2 Read and comprehend literature		3						
			CO3 Read and comprehend literature		3						
			CO1 Appreciate poetry and prose		3						
			CO2 Familiarize students with fiction.		3						
			CO3 Read and comprehend literature		3						
	20111AEC12	English-I	CO1 Recognize water as a universal solvent and elixir of life by knowing its importance						3		
			CO2 Identify the properties and classification of carbohydrates						3		
			CO3 Recall the role of various lipids in biomembrane including signal transduction							3	
			CO4 Categories the amino acids and know their properties								3
20115AEC13	Biomolecules										

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			computer hardware, software, networks, and the Internet in the workplace and in future coursework as identified by the internationally accepted Internet and Computing Core (IC3) standards.						
20160SEC01B	Soft Skill -I		Make effective communication			3			
			CO1 Learn grammar.			3			
			CO2 Enrich vocabulary			3			
20111SEC01L	Communicative English Lab-I		CO3 Understand the process of communication			3			
			CO4Develop listening skill			3			
			CO1 Democratic values and citizenship Training are gained.			3			3
			CO2 Awareness on Fundamental Rights are established.			3			3
2011INDCONS	Indian Constitution		CO3 Learn the functions of union and State Governments			3			3
			CO4Learn the power and functions of the Judiciary			3			3
			CO5Appreciate of Democratic Parliamentary Rule			3			3
			CO1 Know what devotion really is.			3			
20110AEC21	Tamil II		CO2 Know the fruitfulness obtained through devotion.			3			
			CO3 Perceive the progress achieved in the society through devotion.			3			
			CO1 Develop technological skill.			3			
20111AEC21	Advanced English-II		CO2 Able to write in a variety of formats			3			
			CO3 Read biographies and develop personality			3			
			CO1 Appreciate different forms of literature			3			
20111AEC22	English-II		CO2 Acquire language skills through literature			3			
			CO3 Broadens the horizon of knowledge			3			
	SEM II								

20115AEC23	Biochemical Techniques	CO1 The units of this paper are crucial for implementation of research ideas at molecular level.	3			3		3
		CO2 This skill based course will teach the students the various instrumentations that are used in the analytical laboratories.	3			3		3
		CO3 This course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules	3			3		3
		CO4 It trains the students in adopting various techniques in biological research.	3			3		3
		CO5 To learn various techniques and acquire the skills to use appropriate methods	3			3		3
		CO6 To acquire the good laboratory practices	3			3		3
		CO7 This significantly enhances the employability of the candidates in Biotechnological, Pharmaceutical Industries and Analytical Laboratories and research institutes.	3			3		3
20115AEC24L	Biochemical Techniques Lab-I	CO1 Gain knowledge on lab safety				3		3
		CO2 Trained on preparation of reagents and solution				3		3
		CO3 Students will understand the concept of spectrophotometer				3		3
		CO4 They will be able to assess the suitability of chromatographic techniques for solving specific bio-analytical problems and critically apply the knowledge for biomolecules separation				3		3
		CO5 Able to analyze biomolecules qualitatively and quantitatively				3		3
		CO6 Handle the instruments associated with the practical				3		3
20114AEC25	Chemistry II	CO1 Apply quantitative reasoning skills to matter and energy, and physical or Chemical changes that occur.	3					3
		CO2 Use accepted models to describe the reactions between acids and bases and basic equilibrium concepts.	3					3

			CO5 : To explain the types of streams, format and format of input and output operations.	3						
			CO6:To Known the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects.	3						
20117RMC37	Research Methodology		CO1 Understanding research questions and tools				3	3	3	3
			CO2 Experience in scientific writings				3	3	3	3
			CO3 Practice in various aspects of scientific publications				3	3	3	3
			CO4 Incultation of research ethics				3	3	3	3
20120SEC01AL	Package lab-III		CO1 Indicate the names and functions of the Excel interface components.	3						
			CO2 Enter and edit data.	3						
			CO3 Format data and cells.	3						
			CO4 Construct formulas, including the use of built-in functions, and relative and absolute references.	3						
			CO5 Create and modify charts.	3						
			CO6 Preview and print worksheets.	3						
20160SEC03B	Soft skill - III		Learn interpersonal relations and social responsibilities.			3				
20111SEC03L	Communicative english Lab-III		CO1 Learn grammar.					3		
			CO2 Enhance their fluency in English					3		
			CO3 Develop speaking and writing skills					3		
			CO4 Develop individual perspectives that demonstrate critical thinking skills					3		
SEM IV	20110AEC41	Tamil-IV	CO1 Realize how the ancient people changed their life style according to the ages				3			
			CO2 Learn how to change one's lifestyle according to the needs of the future				3			
			CO3 Accept the modern trend and its uses				3			

20111AEC41	Advanced english-IV	CO1 Develop writing skill.					3						
		CO2 Comprehend and describe poems					3						
		CO3 Learn interviewing skills					3						
20111AEC42	English-IV	CO1 Improve their ability to read and understand them					3						
		CO2 Know the genius of Shakespeare					3						
		CO3 Express in writing their views.					3						
20115AEC43	Human Physiology	CO1 The purpose of this course is to promote knowledge in the integration of theories, methods and research in human physiology.	3				3		3	3			
		CO2 Understand Anatomy & Physiology of various systems in Human which gives a clear picture about various systems and their respective disorders.	3				3		3	3			
		CO3 Acquire good knowledge on Nervous & Muscular systems	3				3		3	3			
		CO4 A Fair knowledge on Human Reproductive Biology provides information with the system, hormones involved, disorders associated with them in, and treatments in both genders respectively.	3				3		3	3			
		CO5 Understand "Anatomy & Physiology of various Systems such as Nervous system, Muscular system, Reproductive system, Liver.	3				3		3	3			
		CO6 It gives and exposure about human anatomy and physiology.	3				3		3	3			
20115AEC44L	Biochemical Techniques Lab-II	CO1 This skill based course will teach the students the various instrumentations that are used in the analytical laboratories.											
		CO2 This course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules						3				3	
		CO3 Perform skillful specimen collection, identification and processing							3			3	

		<p>CO4 Utilize communication skills necessary for working in the health care setting</p> <p>CO5 Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity.</p> <p>CO6 By the end of the course, students can be able to demonstrate the importance of the blood, buffer and their wide applications</p>							3				
<p>20120AEC45</p> <p>Fundamentals of Computing</p>	<p>CO1 Bridge the fundamental concepts of computers with the present level of knowledge of the students.</p> <p>CO2 Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet</p> <p>CO3 Understand binary, hexadecimal and octal number systems and their arithmetic.</p> <p>CO4 Understand how logic circuits and Boolean algebra forms as the basics of digital computer.</p> <p>CO5 Demonstrate the building up of Sequential and combinational logic from basic gates.</p>	<p>CO 1: Acquire knowledge about functionalities of World Wide Web and E-Mail.</p> <p>CO 2 :Apply a structured approach to identifying needs, interests, and functionality of a website.</p> <p>CO 3: Write well-structured, easily maintained, standards-compliant, accessible HTML code, Write CSS code to present html pages in different ways.</p> <p>CO 5: Explore Markup languages features and create interactive web pages using them</p> <p>CO 6: Design dynamic websites that meet specified needs and interests.</p> <p>CO 7: Learn and design Client side validation using scripting languages</p> <p>CO 8 :Acquire knowledge about Scripting libraries</p>	3	3	3	3	3	3					
<p>20120AEC46L</p> <p>Web Design Lab</p>			3	3	3	3	3	3					

20120SEC04AL	Package Lab – IV	CO1. Examine database concepts and explore the Microsoft Office Access environment.	3				
		CO2. Design a simple database.	3				
		CO3. Build a new database with related tables.	3				
		CO4. Manage the data in a table.	3				
		CO5. Query a database using different methods.	3				
		CO6. Design a form.	3				
		CO7. Generate a report.	3				
		CO8. Import and export data.	3				
20160SEC04B	Soft skill – IV	Develop etiquette and interviewing skills.		3			
20111SEC04L	Communicative English Lab-IV	CO1 Learn grammar.		3			
		CO2 Enable to express their views in conversation		3			
		CO3 Develop soft skills		3			
		CO4 Enhance presentation skills		3			
201ENVTSTU	Environmental Studies	CO1 to acquire awareness about immediate/wider surroundings through lived experiences on various themes related to daily life for example Family, Plants, Animals, Food, Water, Travel, and Shelter etc.	3			2	3
		CO2 To learn natural curiosity and creativity for the immediate surroundings.		3		2	3
		CO3 To develop various processes/skills e.g. observation, discussion, explanation, experimentation, logical reasoning, through interaction with immediate surroundings.		3		2	3
		CO4 To develop sensitivity for the natural, physical and human resources in the immediate environment.		3		2	3
		CO5 point out/raise issues related to equality, justice and respect for human dignity and rights.		3		2	3
		CO6 To Learn about environmental pollution.		3		2	3
		CO7 Familiarize with the social issues and the environment		3		2	3
20115AEC51	Enzymes	CO1. Understand the basic concepts on enzymes					
SEM V							

		CO2 Relate the initial velocity and substrate concentration of enzymes and be able to understand the kinetics of inhibition reactions	3	3	3	3	3	
		CO3. Able to understand the regulation pattern of various enzymes	3	3	3	3	3	
		CO4. Relate the regulation pattern of enzymes for its application in health and diseases	3	3	3	3	3	
		CO5. Understand the application of enzymes in Industrial and therapeutic.	3	3	3	3	3	
		CO 6 Exposure to the nature of non-protein enzymes such as ribozymes.	3	3	3	3	3	
		CO1 To shed knowledge on generation and transformation of energy in metabolic pathways.	3	3	3	3	3	
	20115AEC52	Bioenergetics and Metabolism	CO2 To know the various metabolic pathways associated with carbohydrate, lipid , protein and nucleic acid metabolism, their regulation and associated disorders.	3	3	3	3	3
			CO3 To understand the inter relationship of carbohydrate, lipid , protein and nucleic acid metabolism and understand the importance of TCA cycle.	3	3	3	3	3
			CO4 To aware about the Biological oxidation	3	3	3	3	3
			CO5 Understanding the importance of high energy compounds, electron transport chain, synthesis of ATP under aerobic and anaerobic conditions.	3	3	3	3	3
20115AEC53	Immunology	CO6 Understand the anabolic and catabolic processes associated with amino acids and nucleic acids and their regulation.	3	3	3	3	3	
		CO1 The students may understand the immune system, its components and various techniques used in bio manipulation.	3	3	3	3	3	
		CO2 Describe surface membrane barriers and their protective functions.	3	3	3	3	3	
		CO3 Explain the importance of phagocytosis and natural killer cells in innate body defense.	3	3	3	3	3	

							3		3		3	3	3
			CO4 Describe the roles of different types of T cells, B cells and APCs.				3		3				
			CO5 Compare and contrast the origin, maturation process, and general function of B and T lymphocytes.				3		3				3
			CO6 Along with this the students will become aware about concept, synthesis and action mechanism of vaccines.				3		3				3
			CO1 To illustrate various aspects of food engineering.				3			3	3	3	3
			CO2 To know the sources of enzymes and study the extraction and partial purification of enzyme.				3			3	3	3	3
		20115AEC54L	CO3 To standardize the optimum pH, optimum substrate concentration required for the maximum activity of enzyme.				3			3	3	3	3
			CO4 The students will be expertise in estimation of minerals in food.				3			3	3	3	3
			CO5 To understand the optimum activity of enzyme.				3			3	3	3	3
			CO6 Students will gain an understanding of buffers and their importance in the context of pH control.				3			3	3	3	3
			CO1 This course has been designed to provide hands-on experience on the tools and techniques used in immunology.				3			3	3	3	3
			CO2 The experiments have been designed in such a way that the student will have the opportunity to isolate a specific protein from a natural source, purify it and determine its activity				3			3	3	3	3
			CO3 Besides, students will get an opportunity to learn diffusion and electrophoresis.				3			3	3	3	3
		20115AEC55L	CO4 Basic understanding of Immunotechnology				3			3	3	3	3
			CO5 Study the principle and applications of various immuno techniques ranging from precipitation and agglutination reactions.				3			3	3	3	3
			CO6 To gain the experimental knowledge about ELISA, Radio immunoassay				3			3	3	3	3

20116DSC56A	Pharmaceutical Chemistry A	CO1 Students are able to explain biopharmaceutical, physiological, biochemical and cell biology-related aspects on the transport and metabolism of drugs in the gastrointestinal tract and in the liver.			3		3	3	3
		CO2 Students be able to explain mechanisms behind the transport of drug and metabolism and how drugs can interact with other drugs and food and methods to study these - having developed its ability to plan, compile, analyze and report experiment that has importance for biopharmaceutical issues -		3		3	3	3	3
		CO3 Students be able to account for regulatory requirements within the biopharmaceutical area		3		3	3	3	3
		CO4 Students be able to describe the role of bio pharmaceutics in drug development within the pharmaceutical industry		3		3	3	3	3
		CO5 To describe action of different drugs		3		3	3	3	3
		CO6 To analyze drugs to inhibit the particular enzymes and treatment of diseases		3		3	3	3	3
20116DSC56B	Basic Biotechnology	CO1 To understand principles of animal culture, media preparation.	3				3	3	
		CO2 To explain basic principles of cloning.	3				3	3	
		CO3 To describe culture and clonal propagation of plants on a commercial scale.	3				3	3	
		CO4 To get insight in applications or recombinant DNA technology in agriculture, production of therapeutic proteins.	3				3	3	
		CO5 To describe commercial production of fuels, microbial enzymes.	3				3	3	
		CO6 To explain the microbial degradation of pesticides, Bioremediation& Biofertilizers	3				3	3	
20117BRC57	Participation in Bounded Research	CO1 Hands on exposure to problem solving tools in contemporary research				3			

		Managements	CO2 Understand the management process and integrated approach in management. CO3 Manage service organizations by accepting the inbuilt challenges. CO4 Manage hospitals by understanding the complexity, levels and role of hospital administrator. CO5 Understand the current issues that have an implication in administration practice hospital administration	3 3 3 3					3 3 3 3	3 3 3 3			
			CO1 To outcome or result that the organization expects to be achieved the successful completion of the project CO2 The outcomes could be qualitative and qualitative or both CO3 The outcomes are the changes or results that the organization expects to be achieved the successful completion of the project	3 3 3				3 3 3		3 3 3			
	20117PRW67	Project Work		3				3		3			
	20120SEC06AL	Package Lab – VI	CO1. Learn to create animated graphics add sound and interactivity. CO2. Can develop Website CO3. CD based presentations	3 3 3				3 3 3					
	20160SEC06B	Soft skill – VI	Develop life skills and other skills CO1 Apply study skills					3 3					
	20111SEC06L	Communicative English Lab-VI	CO2 Widen creative thinking CO3 Be a good team worker CO4 Make them proficient in English					3 3 3 3					

		CO3 To acquire fundamental knowledge on enzymes and their importance in biological reactions.	3	3			3
		CO4 Exposure to the concept of activation energy and its importance in biological reactions.	3	3			3
		CO5 Understanding the role of enzymes in clinical diagnosis and industries.	3	3			3
		CO 6 Exposure to the nature of non-protein enzymes such as ribozymes.	3	3			3
		CO 7 Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km, Vmax, Kcat etc)	3	3			3
		CO1 By the end of the course, students can be able to demonstrate the importance of the protein chemistry and their wide applications.					
		CO2 This skill based course will teach the students the various instrumentations that are used in the analytical laboratories.	3	3		3	3
		CO3 This course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules	3	3		3	3
		CO4 Perform skillful specimen collection, identification and processing	3	3		3	3
		CO5 Utilize communication skills necessary for working in the health care setting	3	3		3	3
		CO6 Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity.	3	3		3	3
		CO1 To use basic analytical techniques to generate results	3				3
		CO2 interpret results of commonly used statistical analyses in written summaries	3				3
		CO3 demonstrate statistical reasoning skills correctly and contextually	3				3
		CO4 They play an important role in interpretation of result of experiments and research work. This course will provide information how to utilize various tools of biostatistics in interpretation of biological data.	3				3
		CO5 The students will understand the principles of collection of data in biological experiments, proper statistical analysis of the data and its presentation.	3				3
		CO6 Knowing statistical methods will help students in improving their analytical and interpretation skill.	3				3
20215D SC15B	Immunology	CO1 The students may understand the immune system, its components and various techniques used in bio manipulation.	3	3			3
20215S EC14L	Biochemical Techniques Lab - I						
20215D SC15A	Biostatistics						

2021SS EC23	Neuro Bioche mistry	CO5 Understanding the importance of high energy compounds, electron transport chain, synthesis of ATP under aerobic and anaerobic conditions.	3	3	3	3	3
		CO6 Understand the anabolic and catabolic processes associated with amino acids and nucleic acids and their regulation.	3	3	3		3
		CO7 Able to understand the energy homeostatis during starvation and energy excess.	3	3	3		3
		CO1 To understand various neurological system	3	3			3
		CO2 Recognize the need for, and engage in life-long learning in neurological system	3	3			3
		CO3 To understand various Exocytosis of neurotransmitter	3	3			3
		CO4 To able to understand DNA microarrays, Methodology, types and applications	3	3			3
2021SS EC24L	Enzymo logy Lab- II	CO5 To acquire knowledge related to LEARNING AND MEMORY	3	3			3
		CO6 Gain knowledge of contemporary issues	3	3			3
		CO7 to understand BIOCHEMISTRY OF VISION AND MUSCLE CONTRACTION	3	3			3
		CO1 Students will gain an enhanced overall understanding of enzymology, enzyme assays, and in particular the influence of various physicochemical characteristics upon enzyme activity.	3	3		3	3
		CO2 Acquiring training to estimate activity of enzymes.	3	3		3	3
		CO3 To determine pH optimum, Km and Vmax of enzymes and to analyse enzyme kinetics	3	3		3	3
		CO4 To determine optimum temperature for the activity of an enzyme.	3	3		3	3
2021SD SC25A	Endocri nology	CO5 Students will gain direct laboratory experience in spectrophotometry.	3	3			3
		CO6 Students will gain an understanding of buffers and their importance in the context of pH control.	3	3		3	3
		CO7 Students will gain an appreciation of working as part of an integrated research team.	3	3		3	3
		Apply the knowledge from this course while working in medical laboratory to diagnose different hormone disorders	3	3		3	3
		Understand the scientific research that have been used to understand endocrine and hormone function	3	3		3	3
		Explain recent laboratory methods in diagnosis hormone disorders	3	3		3	3

			Knowledge and Understanding the synthesis of different endocrine gland hormones	3	3	3	3	3
			Ability to analyze and solve problems related to hormone tests	3	3	3	3	3
			Ø To know the pathophysiology significance of the system with special reference to humans	3	3	3	3	3
			CO1 To learn glycemic index, balanced diet, micronutrient deficiencies and the remedies, nutraceuticals and their importance, junk foods and their hazards	3	3	3	3	3
			CO2 Understanding merits and demerits of vegetarian and non-vegetarian foods	3	3	3	3	3
			CO3 To understand the need for specialized food for people with special needs - diabetes, pregnancy, inherited genetic disorders.	3	3	3	3	3
			CO4 To know the use of alternate crops – cereals and pulses and their importance.	3	3	3	3	3
			CO5 Patients receive medical or surgical help with their conditions, but some have conditions that can also benefit from special diets. Eating more of certain foods, and/or avoiding certain things can help to control a patient's symptoms.	3	3	3	3	3
			CO6 In some cases, by carefully monitoring what a sick patient eats and drinks, the dietitian can reduce the chance that patient will have problems in the long-term, and can establish and/or help maintain the patient's quality of life.	3	3	3	3	3
			Ø The student will choose biological data, submission and retrieval from databases.	3	3	3	3	3
			Ø The students will be able to experiment pair wise and multiple sequence alignment and will analyze the secondary and tertiary structures of protein sequences.	3	3	3	3	3
			The students will acquire training in different areas of bioinformatics related to various biological databases such as protein databases, nucleic acid databases, metabolic pathway databases, etc.	3	3	3	3	3
			to understand the Role of computers in Biology	3	3	3	3	3
			To know the Software in Bioinformatics - C, C++, bioperl, Biopython and oracle	3	3	3	3	3
			Ø The student will understand the data structure (databases) used in bioinformatics and interpret the information (especially: find genes; determine their functions), understand and be aware of current research and problems relating to this area.	3	3	3	3	3
20215D SC25B	Clinical nutrition and dietetics							
20215D SC25C	Bioinformatics							

SEME STER III	20215R MC26	Research Method ology	CO1 Understanding research questions and tools	3	3	3	3	3
		20215B RC27	Participation in Bound Research	CO2 Experience in scientific writings	3	3	3	3
				CO3 Practice in various aspects of scientific publications	3	3	3	3
				CO4 Inculcation of research ethics	3	3	3	3
	20215S EC31	Molecular Biology	CO1 Hands on exposure to problem solving tools in contemporary research	3	3	3	3	
			CO2 Evolution of research intuitiveness and orientation	3	3	3	3	
			CO3 Familiarity with cutting edge research trends	3	3	3	3	
			CO1 Understand the structure of nucleic acids and the DNA replication process	3	3	3	3	
			CO2 Learn about the process of transcription	3	3	3	3	
	20215S EC32	Clinical Bioche mistry	CO3 Understand the mechanism of translation	3	3	3	3	
			CO4 Learn about gene regulation in prokaryotes	3	3	3	3	
			CO5 Study the discovery of DNA as genetic material, transcription, DNA repair and translation.	3	3	3	3	
			CO6 Analyse coding and non-coding regions of eukaryotic genome and their importance.	3	3	3	3	
20215S EC33L	Clinical Bioche	CO7 Exposure with the importance of E. coli lac operon	3	3	3	3		
		CO1 To learn about the normal constituents of urine, blood and their significance in maintaining good health.	3	3	3	3		
		CO2 Exposure to the mechanisms of causation of diseases of liver and kidney.	3	3	3	3		
		CO3 Develop understanding of the current concepts related to mechanism of Cancer.	3	3	3	3		
		CO4 To become aware with the variations in the levels of triglycerides and lipoproteins and their relationship with various diseases.	3	3	3	3		
		CO5 able to describe the diagnostic laboratory, according to the main stages pre-analytical, analytical and post-analytical.	3	3	3	3		
		CO6 describe the diagnostic significance of the main laboratory investigations know the problems related to the preparation of the patient, the collection and knowledge of the samples	3	3	3	3		
		CO1 Identify the principal analytical procedures used to measure biochemical magnitudes.	3	3	3	3		

			research	CO3 Development of critical thinking and synergistic research approach.			3		
				CO1 Attain a thorough knowledge on the molecular mechanisms for Tuberculosis, Typhoid, Cholera					
				CO2 Understand the pathological changes during infectious diseases.					
				CO3 Provide an insight into the history of pathology covering all the basic definitions and common terms.					
			Molecular Basis of diseases	CO4 Detail on the survival mechanism in diseases, an insight into microscopic and cellular pathology.					
		2021SS EC41		CO5 Elaborate the overview of Dengue Hemorrhagic Fever, and Chlamydiae, opportunistic fungal pathogens					
				CO6 review the causes and mechanisms of Emerging and re-emerging infectious diseases and pathogens					
				CO1 students will be able to explain fundamentals of earth atmosphere and its interconnectivity between various components.	3	3	3	3	3
				CO2 students will be able to describe different elements of the environments and their impact on sustaining the environment.	3	3	3	3	3
			Environmental Biochemistry	CO3 students will be able to interpret the fundamentals of ecology and its role in biological evolution	3	3	3	3	3
		2021SS EC42		CO4 Gain knowledge about pollution control	3	3	3	3	3
				CO5 understand the importance of Structure and functions of ecosystem	3	3	3	3	3
				CO6 exposure with the importance of Value of Biodiversity	3	3	3	3	3
				CO1 After the completion of this course, the student will be able to Learn how to isolate genomic DNA.	3	3	3	3	3
			Molecular and Environmental biochemistry lab	CO2 Track various techniques adopted for separation of DNA.	3	3	3	3	3
		2021SS EC43L		CO3 Demonstrate separation of protein by Western blotting and Animal Tissue culture.	3	3	3	3	3
				CO4 Separate chromosomal and plasmid DNA using enzyme.	3	3	3	3	3
				CO5 Gain the knowledge about COD and BOD	3	3	3	3	3
				CO6 demonstrate basis of Animal tissue culture	3	3	3	3	3
		2021SD SC44A	Medical Biotech	CO1 Explain insights about genetic diseases and also about the molecular aspects related to human disease	3	3	3	3	3

	nology	CO2 Gain new insights into molecular mechanisms of nucleic acid and gene therapy	3	3		3	3
		CO3 Gain knowledge about therapeutic recombinant proteins and immunotherapy for the treatment of different diseases	3	3		3	3
		CO4 understand then Nucleic acid based Therapy	3	3		3	3
		CO5 exposure with Gene therapy	3	3		3	3
		CO6 able to interpret the molecular basis of diseases	3	3		3	3
		CO1 Will be acquainted with methods of measuring microbial growth, calculating growth kinetic parameters with understanding of steady state and continuous growth.	3	3		3	3
		CO2 Will have gained an in-depth knowledge of primary, secondary and group translocation transport systems existing in bacteria, simultaneously learning membrane transport proteins and kinetics of solute transport.	3	3		3	3
20215D SC44B	Applied Microbi al Bioche mistry	CO3 Will have learnt central metabolic pathways for carbon metabolism in bacteria enlisting differences with eukaryotic systems and their regulation in diverse physiological conditions. This allows students to apply the acquired knowledge in engineering metabolic pathways for developing industrially useful strains.	3	3		3	3
		CO4 Will have gathered understanding of inorganic and organic nitrogen assimilation and its regulation. Also knows role of glutathione in cellular redox regulation and biochemistry of glutamate overproducing strains.	3	3		3	3
		CO5 will have learnt Microbial products in pharmaceutical and agriculture industry	3	3		3	3
		CO6 exposure with Medical microbiology and microbial metabolism	3	3		3	3
		CO1 exposure for safe laboratory practices by handling high end equipments and chemical reagents.	3	3			3
20215P RW45	Project Work	CO2 Biochemistry can be better understood with parallel practical components. In this regard the committee strongly felt that there shall be a guideline to maintain the students' teacher ratio for both theory and practical classes.	3	3			3

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CO3 analyze current literature research for research topic of his/her area of expertise.

CO4 rationalize the research gap for new innovation and design and execute independent experimental approach

CO5 able analyze the data obtained from a particular experiment and make to plot graphs, power point presentations.

CO6 comprehend expertise for writing the research reports.

**M.Phil., Biochemistry
POs and COs Mapping**

Sem	Course Code	Title of the Course	COs	POS						
				PO1	PO2	PO3	PO4	PO5	PO6	
Sem I	20RMG11	Research methodology	Understanding research questions and tools	*		*	*	*	*	*
			Experience in scientific writings	*		*	*	*	*	*
Sem I	203BC C12	Advanced Biochemistry	practice in various aspects of scientific publications inculcation of research ethics	*		*	*	*	*	*
			<ul style="list-style-type: none"> ➤ Develop and demonstrate an advanced level of understanding of gene and protein functionalities and their relevance to specific problems and research directions in field such as human health, environmental sciences. ➤ Explain some of the complexities of cellular control mechanisms in higher organism and inborn errors of metabolism. ➤ Develop and demonstrate an advanced level of understanding of the enzymes, proteins and other biochemical compounds. ➤ Demonstrate advanced level skills in theoretical, critical analysis of data, communication. ➤ Understand the Basic concepts and principles of Clinical Biochemistry, detail on the various biological specimens including the process of collection, preservation and storage. ➤ Gain Knowledge on the collection, and analysis of Amniotic fluid and on the Immunological tests related to diagnosis. ➤ Understand the pathophysiological processes responsible for common biochemical disorders such as jaundice, Hepatitis, Fatty liver etc. ➤ Differentiate three types of jaundice and their systematic analysis. Detailed study of Jaundice, Cirrhosis, Hepatitis, Fatty liver and gall stones. Serum enzyme activities in diseases. ➤ Elaborate on the Clinical features of atherosclerosis. 	*	*	*	*	*	*	
Sem II	203RP W14	Research Project	develop ability to independently carry out a complete scientific work process	*		*	*	*	*	*
			skilled students who can do further research and contribute to fields of Biochemistry to trend the research students in the analytical tools required	*		*	*	*	*	*
Sem II	203RP W14	Research Project	gain then knowledge on review, theses, conference and project reports	*		*	*	*	*	*
			Learn about how to write dissertation and proposal for the scientific community	*		*	*	*	*	*

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