



DEPARTMENT OF BIOCHEMISTRY

2018 - 2019

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	17110AEC11	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							
	17111AEC11	Advanced English-I	CO1 Develop vocabulary					3			
			CO2 Read and comprehend literature				3				
			CO3 Read and comprehend literature				3				
	17111AEC12	English-I	CO1 Appreciate poetry and prose					3			
			CO2 Familiarize students with fiction.						3		
			CO3 Read and comprehend literature							3	
17115AEC13	Biomolecules	CO1 Recognize water as a universal solvent and elixir of life by knowing its importance					3				

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				3			3					
17114AEC16L	Volumetric Analysis Lab	CO3 Demonstrate competence in collecting and interpreting data in the laboratory.	3				3					
		CO1 To understand the apparatus used in volumetric analysis and correct volumetric analysis.	3								3	
		CO2 To know Good laboratory practice	3								3	
17120SEC01A	Package Lab-I	CO1 Recognize when to use each of the Microsoft Office programs to create professional and academic documents.	3									
		CO2 Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.	3									
		CO3 Apply skills and concepts for basic use of 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.	3									
17160SEC01B	Soft Skill -I	Make effective communication	3									
17111SEC01L	Communicative English Lab-I	CO1 Learn grammar.					3					
		CO2 Enrich vocabulary					3					
		CO3 Understand the process of communication					3					
		CO4 Develop listening skill					3					
171INDCONS	Indian Constitution	CO1 Democratic values and citizenship Training are gained.					3				3	
		CO2 Awareness on Fundamental Rights are established.					3				3	
		CO3 Learn the functions of union and State Governments					3				3	
		CO4 Learn the power and functions of the Judiciary					3				3	

				CO5 Appreciate of Democratic Parliamentary Rule				3			3		
SEM II	17110AEC21	Tamil II		CO1 Know what devotion really is.		3							
				CO2 Know the fruitfulness obtained through devotion.		3							
				CO3 Perceive the progress achieved in the society through devotion.		3							
	17111AEC21	Advanced English-II		CO1 Develop technological skill.		3							
				CO2 Able to write in a variety of formats		3							
				CO3 Read biographies and develop personality		3							
	17111AEC22	English-II		CO1 Appreciate different forms of literature		3							
				CO2 Acquire language skills through literature		3							
				CO3 Broadens the horizon of knowledge		3							
	17115AEC23	Biochemical Techniques		CO1 The units of this paper are crucial for implementation of research ideas at molecular level.	3						3		
			CO2 This skill based course will teach the students the various instrumentations that are used in the analytical laboratories.	3							3		
			CO3 This course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules	3							3		
				CO4 It trains the students in adopting various techniques in biological research.	3					3			3

17160SEC02B	Soft Skill -II	Build self development	3						
17111SEC02L	Communicative English Lab-II	CO1 Learn grammar.	3						
		CO2 Use a variety of reading strategies	3						
		CO3 Enhance the skill of making grammatically correct sentences.	3						
17110AEC31	Tamil III	CO1 Achieve one's goal by following the ancestral path	3						
		CO2 Learn to lead life of perfection by realizing the uncertainty in the life	3						
		CO3 Attain happiness through honesty	3						
17111ABC31	Advanced English-III	CO1 Understand phonetics.	3						
		CO2 Develop writing skill	3						
		CO3 Able to develop creative writing	3						
17111AEC32	English-III	CO1 Enable to appreciate different types of prose	3						
		CO2 Develop the conversational skills through one-act plays	3						
		CO3 Enhance the skill of making grammatically correct sentences.	3						
17115AEC33	Cell Biology and Genetics	CO1 Differentiate the prokaryotic and eukaryotic cell	3						
		CO2 Understand the principle behind studying the cell morphology using various microscope	3						
		CO3 Identify the structure and functions of each organelle in cell	3						
		CO4 Recognise the mechanism behind the protein sorting and transport to their destinations like lysosome, mitochondria and chloroplast	3						
		CO5 Maintenance of cytoskeleton structure and function of micro, macro and intermediary filaments	3						
SEM III									

SEM IV	17111SEC03L	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			
	17110AEC41	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			
	17111AEC41	Advanced english-IV	CO1 Develop writing skill.	3			
			CO2 Comprehend and describe poems	3			
CO3 Learn interviewing skills			3				
17111AEC42	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				
17115AEC43	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	
		CO3 Acquire good knowledge on Nervous & Muscular systems	3		3	3	
		CO4 A Fair knowledge on Human Reproductive Biology provides information with the system, hormones involved, disorders	3		3	3	

17115AEC52	Bioenergetics and Metabolism	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
		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
17115AEC53	Immunology	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	
		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	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	3	CO4 Describe the roles of different types of T cells, B cells and APCs.											
										CO5 Compare and contrast the origin, maturation process, and general function of B and T lymphocytes.											
										CO6 Along with this the students will become aware about concept, synthesis and action mechanism of vaccines.											
	17115AEC54L	Food and enzyme Analysis Lab			3	3	3	3	3	3	CO1 To illustrate various aspects of food engineering.										
											CO2 To know the sources of enzymes and study the extraction and partial purification of enzyme.										
											CO3 To standardize the optimum pH, optimum substrate concentration required for the maximum activity of enzyme.										
											CO4 The students will be expertise in estimation of minerals in food.										
											CO5 To understand the optimum activity of enzyme.										
											CO6 Students will gain an understanding of buffers and their importance in the context of pH control.										
											17115AEC55L	Immunology Lab			3	3	3	3	3	3	CO1 This course has been designed to provide hands-on experience on the tools and techniques used in immunology.
																					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
																					CO3 Besides, students will get an opportunity to learn diffusion and electrophoresis.

			sub cellular sites and process of protein degradation						
			CO5 Students will be able to describe how gene expression is regulated at the transcriptional and post-transcriptional level. CO6 They will be able to read and understand scientific articles related to subject and gain a critical understanding of their contents. They will be able to give a spoken and written presentation of scientific topics and research results. CO7 They will be familiarized with mechanism of action and resistance to antibiotics at molecular level CO8 To understand molecular concept of DNA, RNA						
			CO1 Explain the origin of blood cells and articulate the process of erythropoiesis and leukopoiesis as it relates to health and disease. CO2 Discuss the coagulation process and its role in maintaining hemostasis. CO3 Demonstrate current hematological procedures used to diagnose, monitor and evaluate disorders. CO4 Demonstrate the basic principles of hematology and clinical biochemistry instrumentation CO5 Describe and Identify inborn defects in metabolism and correlate them with deficiency of key metabolic markers in the clinical laboratory, their common methods of analysis, and their clinical significance.	3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3 3
17115AEC63L	Hematology and clinical biochemistry Lab			3	3	3	3	3	3

17117PRW67	Project Work	CO1 To outcome are the changes or result that the organization expects to be achieved the successful completion of the project	3			3	3
		CO2 The outcomes could be qualitative and qualitative or both	3			3	3
		CO3 The outcomes are the changes or results that the organization expects to be achieved the successful completion of the project	3			3	3
17120SEC06AL	Package Lab – VI	CO1. Learn to create animated graphics add sound and interactivity.	3				
		CO2. Can develop Website	3				
		CO3. CD based presentations	3				
17160SEC06B	Soft skill – VI	Develop life skills and other skills				3	
17111SEC06L	Communicative English Lab-VI	CO1 Apply study skills				3	
		CO2 Widen creative thinking				3	
		CO3 Be a good team worker				3	
		CO4 Make them proficient in English				3	

M.SC., BIOCHEMISTRY
POs and COs Mapping

Sem	Course Code	Title of the Course	COs							
			PO1	PO2	PO3	PO4	PO5	PO6		
SEM ESTE R I	17215S EC11	Biomolecules	CO1- Recognize water as a universal solvent and elixir of life by knowing its importance	3	3					
			CO2- Identify the properties and classification of carbohydrates	3	3			3		
			CO3 -Recall the role of various lipids in biomembrane including signal transduction	3	3			3		
			CO4 -Categories the amino acids and know their properties	3	3			3		
			CO5 -Differentiate the structure, properties and functions of DNA and RNA	3	3			3		
			CO6 -List the functions and deficiency disease of fat and water soluble vitamins	3	3			3		
	17215S EC12	Biochemical and Instrumental analysis	CO 1 This skill based course will teach the students the various instrumentations that are used in the analytical laboratories.	3	3		3			
			CO2 Understanding the principles of Electrophoresis, Spectrophotometry and ELISA and their applications in biological investigations/experiments	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			
			CO 4 Develop competence in handling various chromatographic techniques and apply them in isolating and characterizing different biological molecules.	3	3		3			
			CO 5 Purify proteins by affinity chromatography	3	3		3			
			CO 6 Understanding the principles of Electrophoresis, Spectrophotometry and ELISA and their applications in biological investigations/experiments	3	3		3			
17215S EC13	Enzymology	CO 7 To learn various techniques and acquire the skills to use appropriate methods	3	3		3				
		CO 8 To acquire the good laboratory practices	3	3		3		3		
		CO1 Upon successful completion of this course, the student will learn, the major classes of enzyme and their functions in the cell.	3	3			3			
		CO2 The course also provides information pertaining to role of co-enzyme cofactor in enzyme catalyzed reaction, properties of enzymes and regulation of biochemical pathways.	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
172155 EC14L	Biochemical Techniques Lab - I	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
17215 DSC15 A		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
	Immunology	CO1 The students may understand the immune system, its components and various techniques used in bio manipulation.	3	3			3 3

SEM ESTE R II	17215 DSC15 B		CO2 The course will provide technical knowledge as to how different diseases are caused and various responses mediated by living cells to combat pathogen attack.	3	3	3	3	3	
			CO3 Compare and contrast the origin, maturation process, and general function of B and T lymphocytes.	3	3	3	3	3	
			CO4 At The course will provide sound knowledge of how immune system deals with various pathogens, different processes and cell types involved in prevention of disease.	3	3	3	3	3	
	17215 RLC16	Research led seminar	CO5 To understand the principles of tolerance, autoimmunity and the role of immunity in protection against pathogens.	3	3	3	3	3	
			CO6 Along with this the students will become aware about concept, synthesis and action mechanism of vaccines.	3	3	3	3	3	
			CO1 Exposure to various research domains		3	3	3		
		17215S EC21	Cellular Biochem istry	CO2 Acquaintance with languages of research		3	3	3	
				CO3 Development of research aptitude		3	3	3	
				CO1 Describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms.	3	3	3	3	3
				CO2 Describe the structure and function of biological membranes including the roles of gradients in energy transduction.	3	3	3	3	3
17215S EC22	Metaboli sm and Regulati on	CO3 Explain the basic pathways and mechanisms in biological energy transduction from oxidation of metabolites to synthesis of ATP.	3	3	3	3	3		
		CO4 Explain various levels of gene regulation and protein function including signal transduction and cell cycle control.	3	3	3	3	3		
		CO5 To become aware with the variations in the levels of triglycerides and lipoproteins and their relationship with various diseases.	3	3	3	3	3		
		CO6 Relate properties of cancerous cells to mutational changes in gene function.	3	3	3	3	3		
		CO1 Gain knowledge on glucose anabolic and catabolic pathways that ultimately control the glucose homeostatis.	3	3	3	3	3		
17215S EC22	Metaboli sm and Regulati on	CO2 Describe surface membrane barriers and their protective functions.	3	3	3	3	3		
		CO3 Able to explain the role of lipids, their metabolism and their stringent control by hormones and other factors.	3	3	3	3	3		
		CO4 To acquire knowledge related to the role of TCA cycle in central carbon metabolism, importance of anaplerotic reactions and redox balance.	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	

		CO6 Understand the anabolic and catabolic processes associated with amino acids and nucleic acids and their regulation.	3	3		3	3	3
		CO7 Able to understand the energy homeostasis during starvation and energy excess.	3	3		3	3	3
		CO1 To understand various neurological system	3	3		3	3	3
		CO2 Recognize the need for, and engage in life-long learning in neurological system	3	3		3	3	3
		CO3 To understand various Exocytosis of neurotransmitter	3	3		3	3	3
		CO4 To able to understand DNA microarrays, Methodology, types and applications	3	3		3	3	3
		CO5 To acquire knowledge related to LEARNING AND MEMORY	3	3		3	3	3
		CO6 Gain knowledge of contemporary issues	3	3		3	3	3
		CO7 to understand BIOCHEMISTRY OF VISION AND MUSCLE CONTRACTION	3	3		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	3
		CO2 Acquiring training to estimate activity of enzymes.	3	3		3	3	3
		CO3 To determine pH optimum, Km and Vmax of enzymes and to analyse enzyme kinetics	3	3		3	3	3
		CO4 To determine optimum temperature for the activity of an enzyme.	3	3		3	3	3
		CO5 Students will gain direct laboratory experience in spectrophotometry.	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
		CO7 Students will gain an appreciation of working as part of an integrated research team.	3	3		3	3	3
		Apply the knowledge from this course while working in medical laboratory to diagnose different hormone disorders	3	3		3	3	3
		Understand the scientific research that have been used to understand endocrine and hormone function	3	3		3	3	3
		Explain recent laboratory methods in diagnosis hormone disorders	3	3		3	3	3
		Knowledge and Understanding the synthesis of different endocrine gland hormones	3	3		3	3	3
17215S EC23	Neuro Biochem istry							
17215S EC24L	Enzymol ogy Lab- II							
17215 DSC25 A	Endocrin ology							

		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
		CO1 Understanding research questions and tools	3	3	3	3	3
		CO2 Experience in scientific writings	3	3	3	3	3
		CO3 Practice in various aspects of scientific publications	3	3	3	3	3
		CO4 Inculcation of research ethics	3	3	3	3	3
17215 DSC25 B	Clinical nutrition and dietetics						
17215 DSC25 C	Bioinformatics						
17215 RMC2 6	Research Methodology						

SEM ESTE R III	17215 BRC27	Participation in Bounded Research	CO1 Hands on exposure to problem solving tools in contemporary research CO2 Evolution of research intuitiveness and orientation CO3 Familiarity with cutting edge research trends	3 3 3	3 3 3	3 3 3	3 3 3
	17215S EC31	Molecular Biology	CO1 Understand the structure of nucleic acids and the DNA replication process CO2 Learn about the process of transcription CO3 Understand the mechanism of translation CO4 Learn about gene regulation in prokaryotes CO5 Study the discovery of DNA as genetic material, transcription, DNA repair and translation. CO6 Analyse coding and non-coding regions of eukaryotic genome and their importance. CO7 Exposure with the importance of E. coli lac operon	3 3 3 3 3 3 3	3 3 3 3 3 3 3	3 3 3 3 3 3 3	3 3 3 3 3 3 3
	17215S EC32	Clinical Biochemistry	CO1 To learn about the normal constituents of urine, blood and their significance in maintaining good health. CO2 Exposure to the mechanisms of causation of diseases of liver and kidney. CO3 Develop understanding of the current concepts related to mechanism of Cancer. CO4 To become aware with the variations in the levels of triglycerides and lipoproteins and their relationship with various diseases. CO5 able to describe the diagnostic laboratory, according to the main stages pre-analytical, analytical and post-analytical. 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 3 3 3	3 3 3 3 3 3 3	3 3 3 3 3 3 3	3 3 3 3 3 3 3
	17215S EC33L	Clinical Biochemistry Lab	CO1 Identify the principal analytical procedures used to measure biochemical magnitudes. CO2 Interpret and integrate the analytical data from the principal biochemical and molecular genetics tests for the screening, diagnosis, prognosis and monitoring of pathologies. CO3 Interpret experimental results and identify consistent and inconsistent elements.	3 3 3	3 3 3	3 3 3	3 3 3

			CO4 To introduce them to metabolic pathways of the major biomolecules and relevance to clinical conditions.	3	3	3	3	3
			CO5 Manage information and the organization and planning of work.	3	3	3	3	3
			CO6 To learn qualitative and quantitative analysis of constituents of biological fluids such as urine, blood and their estimation using standard methods.	3	3	3	3	3
			CO1 Comprehensive, detailed understanding of the chemical basis of heredity	3	3	3	3	3
			CO2 Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms.	3	3	3	3	3
			CO3 Comprehensive detailed understanding of cellular mechanisms of developmental stages.	3	3	3	3	3
			CO4 Exposure to the concepts of genomics, proteomics, metabolomics and their importance in human health	3	3	3	3	3
			CO5 Acquaintance with the merits and demerits of transgenic crops.	3	3	3	3	3
			CO6 To produce insulin using recombinant DNA technology.	3	3	3	3	3
			CO1 Understanding the importance of Immobilized enzymes in Pharmaceutical Industries.	3	3	3	3	3
			CO2 Genetic engineering applications in relation to production of pharmaceuticals	3	3	3	3	3
			CO3 This course gives information on drug designing, novel techniques in drug discovery and the role of biotechnology in pharmaceuticals.	3	3	3	3	3
			CO4 Importance of Monoclonal antibodies in Industries	3	3	3	3	3
			CO5 Appreciate the use of microorganisms in fermentation technology	3	3	3	3	3
			CO6 Exposure with the importance of expression vectors and their importance in Biotechnology.	3	3	3	3	3
			CO1 Sensitization of social needs for innovation				3	
			CO2 Team work towards interdisciplinary synchronous research strategy				3	
			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.					
SEM ESTE R IV	17215 DSC34 A	Genetics and Genetic Engineering						
	17215 DSC34 B	Pharmaceutical Biotechnology						
	17215S RC35	Design/Socio technical research						
	17215S EC41	Molecular Basis of diseases						

			CO6 able to interpret the molecular basis of diseases	3	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	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	3
			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	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	3
			CO5 will have learnt Microbial products in pharmaceutical and agriculture industry	3	3	3	3	3
			CO6 exposure with Medical microbiology and microbial metabolism	3	3	3	3	3
			CO1 exposure for safe laboratory practices by handling high end equipments and chemical reagents.	3	3			3
			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
			CO3 analyze current literature research for research topic of his/her area of expertise.	3	3			3
			CO4 rationalize the research gap for new innovation and design and execute independent experimental approach	3	3			3
			CO5 able analyze the data obtained from a particular experiment and make to plot graphs, power point presentations.	3	3			3
			CO6 comprehend expertise for writing the research reports.	3	3			3
17215 DSC44 B	Applied Microbia I Biochem istry							
17215P RW45	Project Work							

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

Sem	Course Code	Title of the Course	COs	POS						
				PO1	PO2	PO3	PO4	PO5	PO6	
Sem I	17RMG11	Research methodology	Understanding research questions and tools	*		*	*	*	*	*
			Experience in scientific writings	*		*	*	*	*	*
			practice in various aspects of scientific publications inculcation of research ethics	*		*	*	*	*	*
173BC12	Advanced Biochemistry	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	173RPW14	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	*			*	*	*	*
			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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