



# PGP COLLEGE OF ARTS AND SCIENCE

NH-7, Namakkal – Karur Main Road, Namakkal – 637 207

(Affiliated to Periyar University, Salem and Approved by AICTE,

New Delhi, Reaccredited by NAAC and Recognized by UGC with 2(f) & 12(B))



## DEPARTMENT OF BIOCHEMISTRY

### PROGRAMME OUTCOMES OF UG COURSES (2021 ONWARDS)

Name of the Programme: B.Sc Biochemistry	
PO1	<b>Disciplinary knowledge:</b> Ability to understand fundamental concepts of Biochemistry; Ability to apply basic principles of chemistry to Biological Systems and Molecular Biology; Ability to relate various interrelated physiological and metabolic events; A general awareness of current developments at the forefront in Biochemistry and Allied subjects; Ability to critically evaluate a problem and resolve to challenge blindly accepted concepts; Zeal and ability to work safely and effectively in a laboratory; Good experimental and quantitative skills encompassing preparation of laboratory reagents, conducting experiments, satisfactory analyses of data and interpretation of results; Awareness of resources, and their conservation; Ability to think laterally and in an integrating manner and develop interdisciplinary approach; Overall knowledge of the avenues for research and higher academic achievements in the field of Biochemistry and allied subjects.
PO2	<b>Communication Skills:</b> Ability to speak and write clearly in English; Ability to listen to and follow scientific viewpoints and engage with them.
PO3	<b>Problem solving:</b> ability to closely observe the situation, and apply lateral thinking and analytical skills.
PO4	<b>Analytical reasoning:</b> Ability to evaluate the strengths and weaknesses in scholarly texts spotting flaws in their arguments; Ability to use critics and theorists to create a framework and to substantiate one's argument in one's reading of scientific texts.
PO5	<b>Team work /Time Management:</b> Ability to participate constructively in class room discussions; Ability to contribute to group work; Ability to meet a deadline.
PO6	<b>Scientific reasoning:</b> Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective. Ability to formulate logical and convincing arguments.
PO7	<b>Self-directed learning:</b> Ability to work independently in terms of organizing laboratory, and critically analyzing research literature; Ability to postulate hypothesis, questions and search for answers.
PO8	<b>Digital literacy:</b> Ability to use digital sources, and apply various platforms to convey and explain concepts of Biochemistry
PO9	<b>Moral and ethical awareness/reasoning:</b> Ability to interrogate one's own ethical values and to be aware of ethical and environmental issues; Ability to read values inherited in society and criticism vis a vis, the environment, religion and spirituality as also structures of power
P10	<b>Leadership readiness:</b> Ability to lead group discussions, to formulate questions related to scientific and social issues.



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## PROGRAMME SPECIFIC OUTCOMES OF UG COURSES (2021 ONWARDS)

Name of the Programme: B.Sc Biochemistry	
PSO1	Understanding of structure and metabolism of macromolecules, regulation and disorders of metabolic pathways..
PSO2	Investigate the impact of science in society and plan to pursue research
PSO3	Gain proficiency in laboratory techniques in both Biochemistry and molecular biology and be able to apply the scientific method to the processes of experimentation and hypothesis testing.
PSO4	Understand the application of Biochemistry in clinical laboratory
PSO5	Acquire thorough knowledge in biochemical techniques, immunology, physiology, molecular biology, genetic engineering and biotechnology



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## COURSE OUTCOMES OF UG COURSES (2021 ONWARDS)

Name of the Programme: B.Sc Biochemistry		
Course Code & Course Title	Course Outcome	
<b>SEMESTER - I</b>		
<b>21UBC01 BASICS OF BIOCHEMISTRY</b>	CO1	Summarize structures, isomerism and functions of different types of carbohydrates
	CO2	Understand the nature of amino acids and proteins with their structure and their roles.
	CO3	Demonstrate about the lipids and lipoproteins along with their role.
	CO4	Explain the structure and properties of Nucleic acids and Nucleoproteins
	CO5	Describe about source and importance of Vitamins.
<b>SEMESTER - II</b>		
<b>21UBC02 TOOLS OF BIOCHEMISTRY</b>	CO1	Illustrate the cell fractionation techniques and clarify about the microscope handling.
	CO2	Disclose the chromatographic techniques for the separation components
	CO3	Explain the principles of centrifugation techniques for the separation of components
	CO4	Understand basic principles behind electrophoretic and spectroscopic techniques
	CO5	Describe about the measurement and the applications of radioisotopes
<b>21UBCP01 CORE PRACTAL – I</b>	CO1	Facilitate the learners to prepare solutions for biochemical experiments
	CO2	Make the students to prepare buffer solution and to know the preparation of pH solution
	CO3	Prepare crude macromolecules like starch, casein etc
	CO4	Facilitate the learners to correctly identify the carbohydrates, aminoacids and lipids
	CO5	Quantify the biomolecules



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## SEMESTER - III

21UBC03 ENZYMES	CO1	Understand the basic features and classification of enzymes
	CO2	Figure out the characteristics of active site and nature of enzyme catalysis
	CO3	Understand the enzyme kinetics, enzyme inhibition and enzyme regulation with relevant examples
	CO4	Demonstrate the coenzymes, allosteric enzymes and multienzyme complex
	CO5	Explain the various immobilization techniques and application of enzymes in different fields
21UBCS01 CELL BIOLOGY	CO1	Understand the structure and function of different types of cell
	CO2	Succeed in understanding structural organization and role different organelles
	CO3	Expound the chromosomal organization
	CO4	Analyze cell cycle and types of cell division
	CO5	Describe the role of extracellular matrix and cell interactions

## SEMESTER - IV

21UBC04 INTERMEDIARY METABOLISM	CO1	Understand the basic principles of metabolic pathways
	CO2	Comprehend carbohydrate metabolism and its regulation
	CO3	Give the big picture about the biological oxidation process
	CO4	Comprehend the concepts of lipid metabolism and amino acid metabolism and urea cycle
	CO5	Understand concepts of nucleotide metabolism nucleic acid metabolism
21UBCS02 PLANT BIOCHEMISTRY	CO1	Understand the plant cell physiology
	CO2	Comprehend process of photosynthesis and photorespiration
	CO3	Demonstrate nitrogen fixation in plants
	CO4	Illustrate about the plant growth through seed germination and seed dormancy



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	CO5	Explain hormones and secondary metabolites of plants
21UBCP02 CORE PRACTICAL – II	CO1	Know about analytical techniques of separation of sugar, aminoacids lipids and plant pigments
	CO2	Analyse the biomolecules by colorimeter
	CO3	Analyse the enzyme assay
	CO4	Determine the effect of Substrate concentration, pH, Temperature and Enzyme concentration on the activity of Amylase
	CO5	Determine the effect of Substrate concentration, pH, Temperature and Enzyme concentration on the activity of Acid Phosphatase
<b>SEMESTER - V</b>		
21UBC05 CLINICAL BIOCHEMISTRY	CO1	Understand clinical aspects of biochemistry
	CO2	Describe about the blood components, blood coagulation system and Perform the hematology-based analysis.
	CO3	Acquire insight into disorders of carbohydrates and lipids metabolism
	CO4	Gain knowledge about various disorders of protein, nucleic acid and bilirubin metabolism
	CO5	Comprehend different organ function tests and clinical enzymology
21UBC06 MOLECULAR BIOLOGY	CO1	Understand the replication process
	CO2	Comprehend basic principles and mechanism of transcription
	CO3	Understand translation process and post translational modification of proteins
	CO4	Understand the protein targeting and processing and regulation of gene expression in prokaryotes
	CO5	Understand types and causes of mutation, and DNA repairing mechanisms
21UBC07 HUMAN PHYSIOLOGY	CO1	Illustrate about digestive secretions and absorptive mechanisms
	CO2	Comprehend the process of gaseous exchange in tissues and lungs
	CO3	Obtain an insight about muscle physiology and cardiovascular system
	CO4	Understand urine formation and physiology of reproductive system
	CO5	Get an idea about neuron structure and sensory physiology



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<b>21UBCE01</b> <b>INUTRITIONAL</b> <b>BIOCHEMISTRY</b>	CO1	Describe energy content of various foods and nutritional significance of different biomolecules
	CO2	Understand nutritional requirements and techniques to measure energy expenditure
	CO3	Explain the effect protein energy malnutrition
	CO4	Describe nutritional requirement, significance and deficiency disorders of dietary minerals
	CO5	Obtain an insight about Regulation and standardization of foods in food industry
<b>21UBCS03</b> <b>GENETIC ENGINEERING</b>	CO1	Get an idea about the role of DNA manipulative enzymes and restriction enzymes used in rDNA technology.
	CO2	Advance their knowledge about the vectors suitable for rDNA technology
	CO3	Understanding of various methods adapted for gene transfer and screening of recombinants
	CO4	Obtain knowledge about advance techniques in genetic engineering
	CO5	Understand applications of rDNA technology in various fields
<b>SEMESTER - VI</b>		
<b>21UBC08</b> <b>IMMUNOLOGY</b>	CO1	Understand basics of immune system and about the cells and organs of immune system.
	CO2	Describe the Antigen and Antibody structure and properties and obtain the knowledge about the hybridoma technology
	CO3	Comprehend the antigen and antibody reactions and immunological techniques.
	CO4	Get a clear idea about the immunization and hypersensitivity reactions.
	CO5	Familiarize with complement system, autoimmunity and immunodeficiency disorders





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<p>21UBC09</p> <p><b>ENDOCRINOLOGY</b></p>	CO1	Gain knowledge about the basic terminologies, classification and mechanism of action of hormones and to demonstrate various types of second messengers and their action.
	CO2	Understand hypothalamic and pituitary hormones
	CO3	Learn various functions of thyroid, parathyroid and pancreatic hormones along with their mechanism of action.
	CO4	Demonstrate the biological functions and dysfunction of various GI tract hormones as well as adrenal gland hormones.
	CO5	Understand about the male and female reproductive hormones and also gain the knowledge about some local hormones.
<p>21UBC10</p> <p><b>PHARMACEUTICAL BIOCHEMISTRY</b></p>	CO1	Understand drug dosage, routes of administration and about bioavailability of drugs
	CO2	Understand about basic principles involved in pharmacokinetics.
	CO3	Understand about the drug receptor interactions and gain knowledge on metabolism.
	CO4	Describe the general principles of adverse drug reactions and acute poisoning.
	CO5	Advance the knowledge on drug discovery process and ethical issues in drug discovery process and in preclinical toxicological studies.
<p>21 21UBCE02</p> <p><b>INDUSTRIAL BIOCHEMISTRY</b></p>	CO1	Learn about the culture techniques for isolation of microbes from various sources and preserve the isolates.
	CO2	Gain basic knowledge about basic principles of fermentation and types of fermenters.
	CO3	Describe the microbial production of bioactive compounds such as organic acids, bacterial and fungal polysaccharides, antibiotics and vitamins.
	CO4	Learn about Industrial production of alcohol, alcoholic beverages, production of Single Cell Protein, bioethanol and biogas production
	CO5	Provide fundamental insights to exploit microbes for protecting environment



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<p>21UBCS04 <b>BIOINFORMATICS AND NANOTECHNOLOGY</b></p>	CO1	Understand basic principles and applications of bioinformatics in lifescience and get trained in database searching
	CO2	Acquire knowledge of biological databases for the sequence alignments and predicting the structures of biomolecules such as nucleic acids and proteins.
	CO3	Describe the different tools available for sequence alignment and and predicting the structures
	CO4	Describe the different tools available for sequence alignment and and predicting the structures
	CO5	Describe history of nanotechnology, Properties of nanoparticles, types, synthesis of nanoparticles and the characterization of nanoparticles using Microscopy techniques such as SEM, TEM, AFM, STM.
<p>21UBCP03 <b>CORE PRACTICAL III</b></p>	CO1	Estimate and identify the hematological parameters
	CO2	Experiment the assay of serum marker enzymes
	CO3	Analyse the blood parameters like urea, bilirubin cholesterol etc
	CO4	Experiment urine samples
	CO5	To observe the Physical properties of urine
<p>21UBCP04 <b>CORE PRACTICAL – IV</b></p>	CO1	Demonstration on PTC media preparation ,and callus induction
	CO2	Experiment the genetic engineering protocols
	CO3	Investigate on immunological experiments
	CO4	Experiment and interpret the microbiological experiments





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## PROGRAMME OUTCOMES OF PG PROGRAMMES (2021 ONWARDS)

Name of the Programme: M.Sc BIOCHEMISTRY	
PO1	<b>To be capable of demonstrating comprehensive knowledge</b> and have a fundamental/systematic or coherent understanding of major concepts, theoretical principles and experimental findings in biochemistry .
PO2	<b>To get acquire skills in areas related to the current and emerging developments</b> in the field of Biochemistry
PO3	<b>To identifying and applying appropriate biochemical principles</b> and methodologies to solve a wide range of problems associated with Biochemistry
PO4	<b>Communicate the results of studies undertaken</b> in Biochemistry accurately in a range of different contexts using the main concepts, constructs and techniques of the subject learnt in a clear and concise manner in writing and oral skills.
PO5	<b>Plan and execute the experiments</b> , investigate, analyze and interpret data collected using appropriate experimental methods, and report the findings of the experiment and relate the interpretations and conclusions to relevant theories of Biochemistry.
PO6	They will have the <b>ability to employ critical thinking, scientific reasoning and efficient problem</b> solving skills in the basic areas of biochemistry.
PO7	Be able to <b>demonstrate relevant generic skills and competencies</b> such as (i) problem solving skills, (ii) investigative skills, (iii) communication skills (iv) analytical skills, (v) ICT skills, (vi) skills such as the ability to work both independently and in a group
PO8	<b>Demonstrate professional behaviour</b> such as (i) unbiased and truthful in all aspects of work (ii) follow moral and ethical practices (iii) Life long learners aimed at personal development and for improving knowledge/skill development (iv) focusing on issues related to social cause.



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## PROGRAMME SPECIFIC OUTCOMES OF PG COURSES (2021 ONWARDS)

Name of the Programme: M.Sc BIOCHEMISTRY	
PSO1	To acquire necessary knowledge and skills in core themes, principles and components of basic Biochemistry
PSO2	To demonstrate the knowledge of biochemical processes from the cellular and molecular aspects
PSO3	To Integrate and apply the techniques studied and to compare and contrast the depth of scientific knowledge in the broad range of fields
PSO4	To be able to understand, analyze and apply the studied basic and concepts in wide variety of applications including diagnostics, biochemical pathway regulation and drug development and use this knowledge and apply the same for multitude of laboratory applications.
PSO5	To provide students with the knowledge and skill base that would enable them to go for self-employment and entrepreneurship



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## COURSE OUTCOMES OF PG COURSES (2021 ONWARDS)

Name of the Programme: M.Sc BIOCHEMISTRY		
Course Code & Course Title	Course Outcome	
<b>SEMESTER - I</b>		
21PBC01 Biomolecules	CO1	To explain about the structure, properties and functions of polysaccharides
	CO2	Illustrate on structure, properties and functions of lipids, interactions of lipids in biological membrane
	CO3	Determine the classification, properties and significance of proteins
	CO4	Explain about the DNA properties and functions, biological importance of histone proteins
	CO5	To determine the significance of vitamins and its antioxidant activity, minerals of biological significance
21PBC02 Advanced Enzymology	CO1	Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and Compare methods for production, purification, characterization of enzymes
	CO2	To derive the equations of Enzyme kinetics. Discuss the factors affecting enzymatic reactions. Mechanism of enzyme catalysis and structure and functions of coenzymes
	CO3	Describe the concepts of co-operative behavior, enzyme inhibition and allosteric regulation
	CO4	Compare methods for production, purification, characterization and immobilization of enzymes. Describe the multi enzyme complex with example. To know about the biosensors and its functions
	CO5	Describe the major applications of enzymes in industry, understand the principles of enzyme immobilisation techniques and enzyme extraction procedures. Develop new ideas for the development of enzyme-based drugs. Discover the current and future trends of applying enzyme technology for the commercialization purpose of biotechnological products



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<p>21PBC03 <b>Cell and Molecular Biology</b></p>	CO1	Know about tissue types, organization and classes of cell junctions and describe the role of cell adhesion molecules and ECM components.
	CO2	Understand what happens during the cell cycle and cell death and explain about membrane transports and checkpoints in the cell cycle.
	CO3	To understand the basic structures, properties and organisation of eukaryotic and prokaryotic chromosomes.
	CO4	To emphasize the molecular mechanism of DNA replication and recombination involved in eukaryotes and prokaryotes.
	CO5	Deeply understand the transcription process in prokaryotes and eukaryotes.
	CO6	To knows about the translation and post translational modification in prokaryotes and eukaryotes.
	CO7	Learn the changes and consequences in chromosome structure and its related disorders, thereby know how the DNA repair mechanism by anticancer therapeutics involved against DNA mutation and uncontrolled cell growth.
<p>21PBCE01 <b>Biochemical Techniques</b></p>	CO1	Illustrate the cell fractionation techniques and clarify about the microscope handling.
	CO2	Disclose the chromatographic techniques for the separation components
	CO3	Explain the principles of centrifugation techniques for the separation of components
	CO4	Understand basic principles behind electrophoretic and spectroscopic techniques
	CO5	Describe about the measurement and the applications of radioisotopes
	CO2	Design and develop algorithms to solve combinatorial problems.
	CO3	Choose appropriate algorithmic techniques to solve computational problems.
	CO4	Analyze algorithms to reduce their time complexities.
	CO5	Implement the algorithm for various computational problems



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SEMESTER - II		
<b>21PBC04</b> <b>Intermediary metabolism</b>	CO1	Understand the concepts of metabolism, characteristics of metabolic pathways and strategies used to study these pathways.
	CO2	To relate various metabolic interrelationship and its control
	CO3	Gain a detailed knowledge of various catabolic and anabolic pathways
	CO4	Understand the regulation of various pathways
	CO5	Understand concepts of nucleotide metabolism nucleic acid metabolism
<b>21PBC05</b> <b>Genetic Engineering and Cancer Biology</b>	CO1	Explain the basic techniques in gene manipulation and various enzymes used in gene transfer.
	CO2	Analyze on basic characteristic features and significance of cloning vectors, gene transfer methods and various cloning techniques.
	CO3	Depict on the significance and applications of recombinant DNA technology.
	CO4	Pertain on Overview of cell cycle, cell growth, tumors, cancers and isolation techniques
	CO5	Describe on carcinogenesis
<b>21PBC06</b> <b>Plant Biochemistry and Biotechnology</b>	CO1	Understand the basic knowledge of mechanism of water transport and Photosynthesis
	CO2	Describe the nitrogen fixation mechanisms in plants and interrelationship between photosynthesis and nitrogen metabolism.
	CO3	Get the Knowledge about the Biosynthesis, transport, distribution, mechanism of action and physiological effects of plant hormones
	CO4	Understand the role of secondary metabolites in drug development
	CO5	Know about the isolation, fusion and culture of protoplast and also understand genetic manipulation of plants. Understand the gene transfer methods for plants and also know marker free gene methodologies and gene targeting.



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<b>21PBCP01</b> <b>Lab Course I</b>	CO1	Learn how to standardize the biochemical tests.
	CO2	Can do chromatographic techniques.
	CO3	Separate sugars and amino acids by Paper chromatography.
	CO4	Can do titrations.
	CO5	Isolate glycogen from tissues
<b>21PBCP02</b> <b>Lab Course II</b>	CO1	Extraction and Purification of Enzyme and Specific Activity
	CO2	To understand the Immobilization of Enzyme ( peroxidase/Acid phosphatase )
	CO3	Assay the activity of Acid Phosphatase and Alkaline Phosphatase
	CO4	Determine the effect of Substrate concentration, pH, Temperature and Enzyme concentration on the activity of Peroxidase and Urease
	CO5	Determine the effect of Substrate concentration, pH, Temperature and Enzyme concentration on the activity of Acid Phosphatase
<b>21PBCP03</b> <b>Lab Course III</b>	CO1	To get knowledge about Plant tissue culture techniques
	CO2	To prepare the media and grow the pure culture in a sterile condition
	CO3	To isolate the phytochemicals in medicinal plants and Analyse
	CO4	Extraction of phytochemicals from plant
	CO5	Quantitative analysis of phytochemicals
<b>21PBCP04</b> <b>Lab Course IV</b>	CO1	Demonstration on PCR and Southern Blotting
	CO2	Experiment the genetic engineering protocols
	CO3	Investigate on DNA and RNA
	CO4	Experiment and interpret the microbiological experiments
	CO5	Able to isolate the plant microbial DNA





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SEMESTER - III		
<p>21PBC06 <b>Advanced Clinical Biochemistry</b></p>	CO1	Understand the collection and analysis of blood and urine samples.
	CO2	Understand the role of carbohydrates and lipid metabolism in various diagnostic and therapeutic approaches
	CO3	Have a clear knowledge about inborn error and hereditary defects in amino acids metabolism
	CO4	Know about the gastric function test for diagnosis and therapeutic complications
	CO5	To learn the differentiate blood tests that are used to evaluate renal function test and liver functions. Know in detail about the disorders of mineral metabolism and Erythrocyte metabolisms
<p>21PBC07 <b>Concepts of Immunology</b></p>	CO1	Understand the humoral and cell mediated immunity. □
	CO2	Know the primary and secondary lymphoid organ.
	CO3	Describe the theories of antibody formation and factors influencing antibody production
	CO4	To learn the types of transplantation and understand how its malfunction linked with autoimmune disease and hyper sensitivity
	CO5	Understand the active and passive immunization and learn how to make recombinant vector vaccines
	CO6	Clear knowledge about the agglutination and precipitation techniques involved in research level.
<p>21PBC08 <b>Pharmaceutical Biochemistry and Toxicology</b></p>	CO1	Understand clearly about the basic concepts of pharmacology
	CO2	Have a thorough knowledge about the mechanism of drug action, Drug interaction, Receptors
	CO3	Recognize the principles of toxicology, Antidotes and the management of poisoning
	CO4	Know the aspects of New discovery of drugs and drug designing.



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	CO5	It gives the knowledge to the students to avail job in pharma industry
21PBC09 <b>Biostatistics And Research Methodology</b>	CO1	On completion of this course, students are able to understand about biostatistics, bioethics, IPR and legal protection, patent filling and infringement and biosafety.
	CO2	Understand the sample, population and statistical inference
	CO3	Gain knowledge about concept, philosophical consideration and epistemology of science, ethical terms, principles and theories of bioethics
21PBCE03 <b>Microbial Biochemistry</b>	CO1	Understand the classification and controlling of microbes and study isolation of microbes and maintenance.
	CO2	Describe important characteristic of microorganisms, thereby identify different type of microorganisms
	CO3	Study about various types of microorganisms involved in infection of food products
	CO4	Recognise the sources and transmission of infections and how the factors involving in infection
	CO5	Know about the different types of microscopes and its functioned.
<b>SEMESTER - IV</b>		
21PBC10 <b>Human Physiology And Endocrinology</b>	CO1	To understand the fundamental mechanisms of body fluids and blood cells.
	CO2	Illustrate the circulatory system includes heart structure, cardiac cycles and cardiac factors and respiratory system includes anatomy, physiology, gas exchange and explain the role of lungs in acid base balance.
	CO3	Learn about the anatomy of digestive system and secretions, composition and functions of gastric and biliary system thereby learn how to digest the biomolecules in intestine
	CO4	Understand the classification, biosynthesis and mechanism of anterior and posterior pituitary hormones in biological regulation and know about its deficiency diseases
	CO5	Know in detail about synthesis, secretion, regulation, transport, metabolic fate and biological actions of thyroid hormone and learn about thyroid function test.



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	CO6	To learn clear picture about adrenal hormone's synthesis, regulation, transport, metabolism and biological effects.
<b>21PBCE04</b> <b>Bioinformatics And</b> <b>Nanotechnology</b>	CO1	Understand the basic concepts of bio-informatics databases and tools on internet. Learn how to apply computational facility in different fields of life sciences, physical and chemical sciences.
	CO2	Have a clear detail about different protein structure and its predicting method.
	CO3	To learn how can utilize the BLAST and FASTA analysis for biological sequence.
	CO4	Recognize how can visual the structures and classification of proteins by visualization tools and learn to utilize this tools for alignment and analysis.
	CO5	Understand the drug designing through computer based odification programs using synthetic or natural source.
	<b>21PBCP05</b> <b>Lab course V</b>	CO1
CO2		The students will learn the role of enzymes in clinical diagnosis of diseases and know the diagnostic procedures for tumor development
<b>21PBCP05</b> <b>Lab course V</b>	CO1	The students recall the basic principles involved in immunology and clinical biochemistry
	CO2	The students can learn to demonstrate the techniques involved in immunology and clinical biochemistry
	CO3	The students can develop and apply the recent technology involved in diagnostic techniques of immunology and clinical biochemistry
	CO4	The students can examine and analyze the results involved in immune techniques, clinical biochemistry and genetic engineering.



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