

J.J. College of Arts & Science (Autonomous), Pudukkottai

Department of Biochemistry

Course Outcomes

M.Sc. Biochemistry – PSBC

Course Name - Biomolecules		Course Code - P1R1BCCC1
Upon Completion of the course students would be able to		
CO 1	Explain the significance of hydrophobic and hydrophilic forces for the structure of biomolecules with examples.	
CO 2	Explain the significance of steric effects for the structure of biomolecules and give examples.	
CO 3	Discuss the four structure levels of proteins.	
CO 4	Draw the basic structure of carbohydrates, nucleic acids, peptides/proteins and lipids.	
CO 5	Name the functional groups in carbohydrates, nucleic acids, peptides/proteins and lipids.	
Course Name - Analytical Biochemistry		Course Code - P1R1BCCC2
Upon Completion of the course students would be able to		
CO 1	Understand the basic concepts and principles of biochemical techniques (centrifugation, chromatography, spectrophotometry and electrophoresis etc)	
CO 2	Understand how various radiation detection instruments are constructed and become familiar with the electronic circuitry that is necessary for their operation	
CO 3	Explain the theoretical principles of selected instrumental methods within electro analytical and spectrophotometric methods, and main components in such analytical instruments.	
CO 4	Integrate different analytical techniques to solve analytical and bio analytical problems	
CO 5	Understand hazards and safety measure in laboratory.	
Course Name – Core Practical- I		Course Code – P1R1BCCC3P
Upon Completion of the course students would be able to		
CO 1	Fabricate components with their own hands.	
CO 2	Gain technical experience and handle adjustable micro pipettes in a reproducible manner	
CO 3	Demonstrate the use of standard curves	
CO 4	Perform logical reasoning and criticizing data	
CO 5	Know the bioinformatics tools	

Course Name - Bioinformatics		Course Code – P1R1BCCC4
Upon Completion of the course students would be able to		
CO 1	Describe computer networks and protocols	
CO 2	Access search and retrieve information from various data bases	
CO 3	Comparatively analyze the DNA and protein sequences	
CO 4	Understand the concept of genomics, proteomics and use FASTA and BLAST	
CO 5	Get an insight into Biological databases NCBI, PUBMED, genbank	
Course Name - Microbiology		Course Code – Elective Course
Upon Completion of the course students would be able to		
CO 1	Explain the processes used by microorganisms for their replication, survival, and interaction with their environment, hosts, and host populations;	
CO 2	Describe diversity of microorganisms, bacterial cell structure and function, microbial growth and metabolism, and the ways to control their growth by physical and chemical means	
CO 3	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes.	
CO 4	Understand the Microbes and Diseases-major human diseases caused by bacterial, viral and fungal pathogens.	
CO 5	Understand the Concept and characteristics of antiseptic, disinfectant and their mode of action	
Course Name – Enzyme Technology		Course Code – P2R1BCCC5
Upon Completion of the course students would be able to		
CO 1	Explain the characteristics and catalytic mechanisms of enzymes	
CO 2	Identify enzyme inhibition patterns and determine kinetics of single substrate enzyme catalyzed reactions	
CO 3	Understand the allosteric enzymes, covalently modulated enzyme and classes of proteolytic enzymes	
CO 4	Characterize enzymes and design enzyme assays	
CO 5	Describe immobilization techniques, and their principles, advantages and disadvantages	

Course Name - Plant Biochemistry		Course Code – P2R1BCCC6
Upon Completion of the course students would be able to		
CO 1	Explain the mechanism of photosynthesis and nitrogen metabolism in plants.	
CO 2	Describe about the plant stress, plant responses to abiotic and biotic stresses.	
CO 3	Understand the Special features of secondary plant metabolites and their function.	
CO 4	Understand the Toxins of plant origin, plants – reactive oxygen species.	
CO 5	Describe mechanism of action of phytohormones	
Course Name - Core Practical - II		Course Code – P2R1BCCC7P
Upon Completion of the course students would be able to		
CO 1	Upon completion of this laboratory course, students will be able to fabricate components with their own hands.	
CO 2	They will also get practical knowledge of the Media Preparation, culturing and plating techniques	
CO 3	Gain technical experience and handle adjustable micro pipettes in a reproducible manner	
CO 4	Demonstrate the use of standard curves related to bacterial growth	
CO 5	Plan experiments, write protocols	
Course Name – Metabolism and Regulation		Course Code – P2R1BCCC8
Upon Completion of the course students would be able to		
CO 1	Understand the regulation of blood glucose level	
CO 2	Understand the energy production and utilization in the body	
CO 3	Expose the knowledge of metabolism to our society	
CO 4	Understand the avoid of starvation	
CO 5	Describe biosynthesis and regulation of nucleotides	

Course Name - Biopharmaceuticals		Course Code – P2R1BCEC3
Upon Completion of the course students would be able to		
CO 1	Gain detail understanding of how drug acts inside the body.	
CO 2	Understand the process of product registration and different guidelines which control the manufacturer to follow Correct strategy for manufacturing of drug.	
CO 3	Write and file the patent; document clinical data of the concern Undergo drug research	
CO 4	Understand the Molecular aspects of drug designing	
CO 5	Understand the Structure, mechanisms and applications of different antibiotics like sulfonamides, griseofulvin, quinolones	
Course Name - Clinical Biochemistry		Course Code – P3R1BCCC9
Upon Completion of the course students would be able to		
CO 1	Understand the collection and preservation of biological specimens.	
CO 2	Establish clinical lab in future	
CO 3	Understand basic concepts in various clinical disorders.	
CO 4	Estimate blood glucose and explain its clinical significance.	
CO 5	Detect abnormal constituents of urine and explain its clinical significance.	
Course Name - Core Practical – III		Course Code – P3R1BCCC10P
Upon Completion of the course students would be able to		
CO 1	Fabricate components with their own hands .	
CO 2	Have practical knowledge of the Biochemical analysis of blood	
CO 3	Critically evaluate the role of clinical biochemistry in diagnosis, monitoring and treatment.	
CO 4	Gain technical experience and handle adjustable micro pipettes in a reproducible manner	
CO 5	Clinically assess the laboratory indicators of physiologic conditions and diseases Plan experiments, write protocols	
CO 6	Perform logical reasoning and criticizing data	

Course Name - Molecular Endocrinology		Course Code - P3RBCCC11
Upon Completion of the course students would be able to		
CO 1	Understand the endocrine system of the study	
CO 2	Prevent the hormonal disorder in future	
CO 3	Protect the body from diabetes mellitus	
CO 4	Demonstrate the role of hormones in maintaining body function.	
CO 5	An understanding of the basic properties of hormones	
Course Name - Immunotechnology		Course Code - P3R1BCCC12
Upon Completion of the course students would be able to		
CO 1	Acquired knowledge regarding the lymphoid organs.	
CO 2	Understood about the immune cells.	
CO 3	Become aware of vaccination.	
CO 4	Obtained detailed knowledge regarding immune imbalance.	
CO 5	Understand the Immunoglobulin, structure, types and functions	
Course Name - Molecular Biology		Course Code - P3R1BCCC13
Upon Completion of the course students would be able to		
CO 1	Acquired knowledge about the complete structure and replication of prokaryotic and eukaryotic DNA.	
CO 2	Understood about the various types of RNA and their mechanism of synthesis.	
CO 3	Become aware of the genetic code and the way the codes are translated into functional form of proteins.	
CO 4	Obtained detailed knowledge regarding DNA damage and repair mechanism.	
CO 5	Understand the genomic organization or living organisms, study of genes genome, chromosome	

Course Name - Biotechnology and Genetic Engineering		Course Code - P3R1BCCC14
Upon Completion of the course students would be able to		
CO 1	Gained insight in applications or recombinant DNA technology.	
CO 2	Understood the principles of animal culture, media preparation.	
CO 3	Known the bio safety hazards.	
CO 4	Acquired knowledge about the IPR patent and about the bioethics and human research	
CO 5	Understand the Techniques and application DNA sequencing	
Course Name - Medicinal Plants and Phytotherapy		Course Code - Elective Course
Upon Completion of the course students would be able to		
CO 1	Describe the basic methods used in the extraction of the active ingredient of medicinal plants.	
CO 2	Identify different relationships between phototherapy and conventional medicines	
CO 3	Communicate with the patients regarding the proper use of herbal products.	
CO 4	Explain the different herb-drug interactions and herb-herb interactions	
CO 5	Explain the efficacy of medicinal plants/extracts in certain disease state	

Course Name - Evolutionary and Environmental Biology		Course Code - Elective Course
Upon Completion of the course students would be able to		
CO 1	Gained knowledge about biodiversity.	
CO 2	Obtained skill in identifying the resources and conserve them.	
CO 3	Known the value of biodiversity.	
CO 4	Understand the Phytoremediation-Concept(Rhizofiltration,Phytotransformation,Phytostimulation)	
CO 5	Describe the barriers, dispersals and their impact on animal Distribution	

Course Name - Bioprocess Technology		Course Code - Elective Course
Upon Completion of the course students would be able to		
CO 1	Obtained knowledge in Cloning the gene of interest.	
CO 2	Known the various methods to introduce the chimeric DNA into the host.	
CO 3	Acquired skill in expressing the gene of interest in a host.	
CO 4	Understand the Biosorption and Bioleaching of metals	
CO 5	Understand the Types and principles of biofuels	
Course Name - Genomics and Proteomics		Course Code - Elective Course
Upon Completion of the course students would be able to		
CO 1	Known the gene structure.	
CO 2	Acquired knowledge on proteomics.	
CO 3	Understand the concept of gene library.	
CO 4	Study the phenomenon of dominance, laws of segregation, independent assortment of genes.	
CO 5	Practical and theoretical knowledge in proteomics.	