HOLY CROSS COLLEGE (AUTONOMOUS)
Affiliated to Bharathidasan University
Nationally Accredited (3rd Cycle) with 'A' Grade by NAAC
College with Potential for Excellence.
Tiruchirapalli – 620002

Programme: B.Sc. BIOCHEMISTRY

PO No.	Programme Outcomes *Upon completion of the B.Sc. Degree Programme, the graduate will be able*
PO-1	To enable to get quality education in the areas of Biochemistry
PO-2	Acquire practical skills to gather information, assess, create and execute new ideas to develop entrepreneurial skills.
PO-3	Gain Proficiency in basic laboratory techniques and able to apply the scientific method on lab to land
PO-4	Inculcate a domestic and international perspective and be competent enough in the area of life sciences.
PO-5	Learn to recognize potential laboratory safety and conserve nature and the environment.

PSO No.	Programme Specific Outcomes *Upon completion of these courses the student would*
PSO-1	Will use current biochemical and molecular techniques and carry out
PSO-2	Monitoring the changes in modern life styles leads to modern diseases
PSO-3	Develop skills in cultivation of plants and preparations of novel phyto medicines
PSO-4	Prepare them to do higher studies in other biological fields like Genetic, Entomology, Biological Oceanography etc
PSO-5	Developed critical thinking skills/laboratory techniques to be capable of designing, carrying out ,interpreting scientific experiments

COURSE TITLE	MAJOR CORE 1 – FUNDAMENTALS OF BIOCHEMISTRY		
CODE	U15BC1MCT01		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Recognize the structure and function of carbohydrates, lipids, amino acids, proteins, nucleotides, and nucleic	PSO 1	U
CO-2	Recognize and draw structural isomers (constitutional isomers), stereoisomers including enantiomers and diastereomers, racemic mixture, and	PSO 2	U
CO-3	explain the relationship between kinetic energy and temperature of a gas; between temperature and the velocity of a mass and the velocity of a gas	PSO 2	R
CO-4	discuss the three laws of thermodynamics and their applications	PSO 3	An
CO-5	Define solubility, percent concentration, molarity, mole fraction, and molality.	PSO 4	An

COURSE TITLE	ALLIED 1 (COMPULSORY) - FOOD AND NUTRITION		
CODE	U15BC1ACT01		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Demonstrate the knowledge and understanding of the fundamental concepts in food and nutrition.	PSO 1	U
CO-2	assess the nutritional status of individuals in various life- cycle stages	PSO 2	R
CO-3	Determine nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food	PSO 2	An
CO-4	Utilize the knowledge from the physical and biological sciences as a basis for understanding the role of food	PSO 3	R
CO-5	Describe the differences and relationships between food, diet and nutrients and understand how food nourishes the body	PSO 4	An

COURSE TITLE	ALLIED 2(COMPULSORY):NUTRITION & DIETETICS PRACTICALS		
CODE	U15BC1ACP02		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Describe the food choices to improve the nutritional status of individuals, groups and/or populations	PSO 1	R
CO-2	Evaluate nutrition information based on scientific reasoning for clinical, community, and food service	PSO 2	An
CO-3	Implement nutritional counseling and education to individuals, groups, and communities throughout the lifespan using a variety of communication strategies.	PSO 2	An
CO-4	Analyze the nutritional constituents of food products.	PSO 3	An
CO-5	Describe the differences and relationships between food, diet and nutrients and understand how food nourishes	PSO 4	U

COURSE TITLE	MAJOR CORE 2: CHEMISTRY OF BIOMOLECULES		
CODE	U15BC2MCT02		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the significance of hydrophobic and hydrophilic forces for the structure of biomolecules with examples	PSO 1	U
CO-2	Explain the significance of steric effects for the structure of biomolecules and give examples.	PSO 2	U
CO-3	Discuss the four structure levels of proteins	PSO 2	R
CO-4	Draw the basic structure of carbohydrates, nucleic acids, peptides/proteins and lipids.	PSO 3	U
CO-5	Name the functional groups in carbohydrates, nucleic acids, peptides/proteins and lipids.	PSO 4	An

COURSE TITLE	Major Core 3: Practical – I Analysis Of Biomolecules		
CODE	U15BC2MCP03		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Gain technical experience and handle adjustable micro pipettes in a reproducible manner	PSO 1	U
CO-2	Demonstrate the use of standard curves.	PSO 2	An
CO-3	Plan experiments, write protocols	PSO 2	U
CO-4	Perform logical reasoning and criticizing data	PSO 3	R
CO-5	Name the functional groups in carbohydrates, nucleic acids, peptides/proteins and lipids.	PSO 4	An

COURSE TITLE	ALLIED 3 (COMPULSORY): DIETETICS		
CODE	U15BC2ACT03		
CO No	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Demonstrate coherent and advanced knowledge of the principles and concepts associated with nutrition and dietetics.	PSO 1	R
CO-2	Demonstrate understanding of the etiology, pathophysiology and clinical features of diseases and conditions that require dietary modification.	PSO 2	R
CO-3	Apply knowledge of food, nutrition, dietetics and health to the nutritional care of children, adolescents, adults and old age people and their families.	PSO 2	An
CO-4	Translate current scientific knowledge of diseases and conditions into practical nutritional	PSO 3	U
CO-5	Demonstrate a professional approach to dietetic practice.	PSO 4	An

COURSE TITLE	Industrial Relation :Water Pollution Management		
CODE	U19BC2IRT01		
CO No	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Demonstrate the causes of water pollution	PSO 1	U
CO-2	Demonstrate understanding of the water sample testing	PSO 2	U,R
CO-3	Apply knowledge of biological parameters	PSO 2	U,An
CO-4	Analyze the current quality standers	PSO 3	An
CO-5	Demonstrate the prevention and control	PSO 4	An

COURSE TITLE	MAJOR CORE 4: ANALYTICAL BIOCHEMISTRY		
CODE	U15BC3MCT04		
CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the basic concepts and principles of biochemical techniques (spectrophotometry,)	PSO 1	R, U
CO-2	Understand how various chromatography detection	PSO 2	R
CO-3	Explain the theoretical principles of selected instrumental methods within centrifugation methods, and main components in such analytical instruments.	PSO 2	U
CO-4	Integrate different analytical techniques to solve analytical and bioanalytical problems in	PSO 3	R
CO-5	Understand the physical principles of a range of isotopes in biology	PSO 4	An

COURSE TITLE	MAJOR CORE 5 - HUMAN PHYSIOLOGY		
CODE	U15BC3MCT05		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the major organ systems, and list the organs associated with each.	PSO 1	U
CO-2	Describe the structure of major human organs and explain their role in the maintenance of healthy	PSO 2	U,R
CO-3	Explain the interplay between different organ systems and how organs and cells interact to maintain biological	PSO 2	An
CO-4	Explain how the activities of organs are integrated for maximum efficiency	PSO 3	R
CO-5	Explain the role of sex organs in the process of reproduction	PSO 4	An

COURSE TITLE	ALLIED- 4 (OPTIONAL): MICROBIOLOGY – GENERAL		
CODE	U15BC3AOT04		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes	PSO 1	U
CO-2	Describe diversity of microorganisms, bacterial cell structure and function, microbial growth and metabolism, and the ways to control their growth by	PSO 2	U
CO-3	Understand the concepts of pathogenicity, virulence, and epidemiology	PSO 2	U,R
CO-4	Explain the general bacteriological and microbial techniques	PSO 3	An
CO-5	Explain the processes used by microorganisms for their replication, survival, and interaction with their environment, hosts, and host populations;	PSO 4	An

COURSE TITLE	SBE 3: PAIN RELIEF FORMULATION AND COSMETICS		
CODE	U15BC3SBP03		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Apply the knowledge of preparing conventional dosage formulations	PSO 1	An
CO-2	Develop their interview skills	PSO 2	R
CO-3	Explain the relationship between disease and formulations	PSO 2	U,R
CO-4	Discuss the preparations and their applications	PSO 3	R,An
CO-5	Define solubility, percent concentration, molarity, mole fraction, and molality.	PSO 4	An

COURSE TITLE	MAJOR CORE 6: ENZYMES		
CODE	U15BC4MCT06		
CO No	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Remember and understand the major classes of enzyme and their functions in the cell	PSO 1	R, U
CO-2	Explain the role of co-enzyme cofactor in enzyme catalyzed reaction	PSO 2	U
CO-3	Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km. Vmax, Kcat etc.)	PSO 2	R
CO-4	Define and describe the properties of enzymes in and regulates biochemical pathways (inhibition, allosterism)	PSO 3	R
CO-5	Elaborate the use of enzymes in industries.	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE 1 – CELL BIOLOGY		
CODE	U15BC4MET01		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially	PSO 1	U
CO-2	Explain how these cellular components are used to generate and utilize energy in cells	PSO 2	An
CO-3	Describe the cellular components underlying mitotic cell division	PSO 2	R
CO-4	Apply their knowledge of cell biology to selected examples of changes or losses in	PSO 3	An
CO-5	Understand responses to environmental or physiological changes, or alterations of cell	PSO 4	U

COURSE TITLE	ALLIED 5 (OPTIONAL): MICROBIOLOGY-APPLIED		
CODE	U15BC4AOT05		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the role of microorganisms in food production and preservation, and their ability to cause	PSO 1	U
CO-2	Demonstrate with examples the vital role of microorganisms in biotechnology, fermentation, medicine, and other industries important to human	PSO 2	R
CO-3	Demonstrate that microorganisms have an indispensable role in the environment, including elemental cycles, biodegradation, etc.	PSO 2	R
CO-4	Know various culture media and their applications and also understand various physical and chemical	PSO 3	An
CO-5	Know the general bacteriology and microbial techniques for isolation of pure cultures of bacteria,	PSO 4	An

COURSE TITLE	ALLIED 6 (OPTIONAL): MICROBIOLOGY – PRACTICALS		
CODE	U15BC4AOP06		
CO	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Demonstrate practical skills in the use of tools, technologies and methods common to microbiology, and apply the scientific method and hypothesis testing in the design and execution of experiment	PSO 1	U, R, An
CO-2	Evaluate the microbiological concepts and basic research findings through description, interpretation, and	PSO 2	R
CO-3	Demonstrate and employ practical skills with both classical and modern laboratory techniques	PSO 2	U
CO-4	Apply the microscopic evaluation for microbes	PSO 3	An
CO-5	Demonstrate the various methods in culture methods	PSO 4	An

COURSE TITLE	MAJOR CORE 7: INTERMEDIARY METABOLISM		
CODE	U15BC5MCT07		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	explain the general design of metabolic pathways based on bioenergetics principle	PSO 1	U
CO-2	describe how carbohydrates, lipids and nitrogenous compounds are synthesized and degraded	PSO 2	R
CO-3	explain how metabolic pathways are regulated and recognize the biochemical basis of some diseases arising defects in metabolism	PSO 2	R
CO-4	have a holistic view on metabolism, and recognize how different pathways are functionally interlinked and how they are regulated by extracellular	PSO 3	R,An
CO-5	recognize how metabolism can be related issues in lifestyle, health and disease	PSO 4	R,An

COURSE TITLE	MAJOR CORE 8: MOLECULAR BIOLOGY		
CODE	U15BC5MCT08		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand and apply the principles and techniques of molecular biology.	PSO 1	U
CO-2	Discuss the most significant discoveries and theories through the historical progress of biological scientific discoveries, and their impacts on the development of	PSO 2	U,R
CO-3	Explain the principles and laws of inheritance at the cell, individual and population levels.	PSO 2	U
CO-4	Explain concepts such as gene structure and function, gene regulation, microbial genetics, mutation and DNA repair, PCR and sequencing, cancer genetics and	PSO 3	U,R
CO-5	Describe how gene expression is regulated at different levels, how tissue-specific expression is achieved and exemplify how gene expression can be manipulated and	PSO 4	R,An

COURSE TITLE	MAJOR CORE-9: IMMUNOLOGY		
CODE	U15BC5MCT09		
CO	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	State the role of the immune system in the human body	PSO 1	U
CO-2	Describe the function of phagocytes in the non-specific immune system. Define the role of B-lymphocytes in the	PSO 2	An
CO-3	Describe professional antigen presenting cells and define their purpose	PSO 2	U,R
CO-4	Define the major histocompatibility complexes (MHCs) type 1 and 2 and explain their functions	PSO 3	U
CO-5	Explain how T-cells aid in eliminating pathogens from the body. List the symptoms of the inflammatory response and explain their causes.	PSO 4	R,An

COURSE TITLE	MAJOR CORE 10: PRACTICALS – II ENZYMES AND ANALYTICAL TECHNIQUES		
CODE	U15BC5MCP10		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Acquire direct laboratory experience in spectrophotometry	PSO 1	U
CO-2	Recognize and draw structural isomers (constitutional isomers), stereoisomers including enantiomers and diastereomers,	PSO 2	U,R
CO-3	Learn how to calculate and present the resultant data in tabular and graphical format.	PSO 2	U,An
CO-4	Have insight in the physico-chemical properties of proteins that underlie purification methods.	PSO 3	R
CO-5	Gain an appreciation of working as part of an integrated research team	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE-2: BIOSTATISTICS		
CODE	U15BC5MET02		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Select, use and interpret results of descriptive statistical methods effectively	PSO 1	R, An
CO-2	Demonstrate an understanding of the central concepts of modern statistical theory and their	PSO 2	U
CO-3	Select, use, and interpret results of, the principal methods of statistical inference and design	PSO 2	R, An
CO-4	Communicate the results of statistical analyses accurately and effectively	PSO 3	R
CO-5	Make appropriate use of statistical software. Read and learn new statistical procedures independently	PSO 4	An

COURSE TITLE	NON MAJOR ELECTIVE PAPER I- FIRST AID MANAGEMENT		
CODE	U15BC5NMT01		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Identify the most important action you can take in a life- threatening emergency. Identify the major structures of the respiratory, circulatory, nervous, and musculoskeletal systems.	PSO 1	U
CO-2	Explain why you should follow the emergency action steps/principles in any emergency.	PSO 2	R
CO-3	Describe the purpose of and demonstrate rescue breathing for an adult	PSO 2	R,U
CO-4	Describe and demonstrate first aid care for a conscious and an unconscious victim with an	PSO 3	R,An
CO-5	Identify signals of a heart attack. Describe the purpose of and demonstrate CPR for an adult	PSO 4	R,U

COURSE TITLE	SBE 4: FOOD PRESERVATION TECHNOLOGY		
CODE	U15BC5SBP04		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Apply the knowledge of preparing various foods	PSO 1	An
CO-2	Develop their interview skills	PSO 2	R
CO-3	Explain the relationship between food and diet	PSO 2	U,R
CO-4	Discuss the preparations and their applications	PSO 3	R,An
CO-5	Define solubility, percent concentration, molarity, mole fraction, and molality.	PSO 4	An

COURSE TITLE	MAJOR CORE 11: PRINCIPLES OF GENETIC ENGINEERING		
CODE	U15BC6MCT11		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic.	PSO 1	U
CO-2	understand the concept of recombinant DNA technology or genetic engineering	PSO 2	U,R
CO-3	describe DNA fingerprinting, and restriction fragment length polymorphism (RFLP) analysis and their applications	PSO 2	R
CO-4	explain the concept and applications of monoclonal antibody technology	PSO 3	R,An
CO-5	Explain the general principles of generating transgenic plants, animals and microbes.	PSO 4	An

COURSE TITLE	MAJOR CORE 12 -CLINICAL BIOCHEMISTRY		
CODE	U15BC6MCT12		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Discuss the biochemistry and pathophysiology associated with tests performed in a clinical biochemistry laboratory	PSO 1	U
CO-2	Compare and contrast the basic differences between carbohydrate, lipid and protein metabolism abnormalities	PSO 2	R
CO-3	Describe and identify the main characteristics of diagnosis, screening, and prognosis of disease.	PSO 2	U,R
CO-4	Critically evaluate the role of clinical biochemistry in diagnosis, monitoring and treatment.	PSO 3	R
CO-5	Applications of biochemistry on health, medical diagnostics and pharmacy.	PSO 4	An

COURSE TITLE	MAJOR CORE 13: PRACTICAL III CLINICAL AND IMMUNOCHEMICAL ANALYSIS		
CODE	U15BC6MCP13		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Critically evaluate the role of clinical biochemistry in diagnosis, monitoring and treatment.	PSO 1	U,R
CO-2	Applications of biochemistry on health, medical diagnostics and pharmacy	PSO 2	R, An
CO-3	clinically assess the laboratory indicators of physiologic conditions and diseases	PSO 2	U.R
CO-4	know the biochemical and molecular tools needed to accomplish preventive, diagnostic, and therapeutic	PSO 3	R
CO-5	Define solubility, percent concentration, molarity, mole fraction, and molality.	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE 3: PHARMACEUTICAL CHEMISTRY & PHARMACOGNOSY		
CODE	U15BC6MET03		
CO	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Demonstrate the importance of chemistry in the development and application of therapeutic drugs.	PSO 1	U
CO-2	Develop an understanding of the physico-chemical properties of drugs and state the physicochemical properties of drug molecules, pH, and solubility	PSO 2	R,An
CO-3	Assess the mechanism of drug action and its relevance in the treatment of different diseases.	PSO 2	R
CO-4	describe the extraction procedures for natural compounds and their therapeutic significance	PSO 3	R,An
CO-5	Assess the therapeutic role of phytoconstituents and their applications in drug development.	PSO 4	An

COURSE TITLE	NON MAJOR ELECTIVE – II HOME MANAGEMENT		
CODE	U15BC6NMT02		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the meaning and importance in Home Management and scope of Home management	PSO 1	U
CO-2	understand the food, nutrition, food preservation, health, safety in food, home and environment	PSO 2	U
CO-3	Discuss the significance and positive impacts of time, energy and money management	PSO 2	R
CO-4	Extrapolates the concepts of food science and food management to individuals and groups and to the institution	PSO 3	R
CO-5	Understand Family resource, planning and controlling	PSO 4	An

Course Title	SBE – 5 Computer Literacy for Biochemistry		
Code	U19BC6SBT05		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Identify various presentation software, Recall principles of multimedia applications	PSO1	An
CO-2	Define digital literacy and recognize principles of computer literacy, how computers are used in society	PSO4	E
CO-3	Recall the inner components and working patterns of smart electronic devices	PSO5	R
CO-4	Differentiate between the various uses of the internet and software for searching, productivity and	PSO3	An
CO-5	Recognize the basics of piracy and principles of cyber crimes	PSO2	R
CO-6	Utilization of banking facilities through online with easy conveyance mode for 24×7 services	PSO1	Ap
CO-7	Equip the skills required for protecting and recovering self data from government and public	PSO5	Ap

M.Sc. BIOCHEMISTRY

PO No.	Programme Outcomes *Upon completion of the M.Sc. Degree Programme, the graduate will be able to*
PO-1	Get quality education in the areas of Biochemistry
PO-2	Focus on experimental learning and project based lab
PO-3	Acquire an appreciation for the impact of science on society.
PO-4	Develop a local, regional, national and international perspective and be competent enough in the area of Biomedical research.
PO-5	Learn to respect and conserve nature and the environment through lifescience innovations

PSO No.	Programme Specific Outcomes *Upon completion of these courses the student would*
PSO-1	Use current biochemical and molecular techniques and carry out experiments
PSO-2	Prepare for a career in Biochemical and Biomedical research, Biotechnology andGenetic Engineering, Pharmaceutical and other related fields
PSO-3	Understand and practice the Ethics surrounding Scientific research
PSO-4	Gain awareness about the secondary metabolites as defense mechanism in the herbal medicines for common ailments and traditional nutritive food
PSO-5	Develop critical thinking skills/laboratory techniques to be capable of designing,carrying out and interpreting scientific experiments

COURSE TITLE	MAJOR CORE 1 – BIOMOLECULES		
CODE	P18BC1MCT01		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Know the structure and function of different biomolecules	PSO 1	U
CO-2	Understand various metabolic pathways crucial for the sustenance of living systems.	PSO 2	R
CO-3	Explain the role of water in synthesis and breakdown of polymers.	PSO 2	R
CO-4	Understand and analyze the structure and function of the oligo and polysaccharides	PSO 3	R
CO-5	Understand and recall the functions of Nucleic acids and Minerals.	PSO 4	R,An

COURSE TITLE	MAJOR CORE 2: BIOANALYTICAL TECHNIQUES		
CODE	P18BC1MCT02		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand working principle of spectrophotometer and able to handle spectrophotometer.	PSO 1	U
CO-2	Elaborate the PCR techniques.	PSO 2	R
CO-3	Explain classification, principle and application of chromatography	PSO 2	U,An
CO-4	Explain the principle and application of electrophoresis.	PSO 3	R,An
CO-5	Understand and explain the principle and application of centrifugation.	PSO 4	R

COURSE TITLE	MAJOR CORE 3: CELL BIOLOGY		
CODE	P18BC1MCT03		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the Animal cells and various cell organelles by using microphotographs	PSO 1	U
CO-2	Explain the concept vital staining, distinguishing points between nuclear stain and cytoplasmic stain.	PSO 2	R
CO-3	Understand the techniques using for the study of blood corpuscles.	PSO 2	U
CO-4	Understand the meaning of Osmotic pressure, isotonic, hypotonic, and hypertonic.	PSO 3	R
CO-5	Describe the cell cycle and know the importance of various cells in body of organisms	PSO 4	An

COURSE TITLE	MAJOR CORE 4: HUMAN PHYSIOLOGY AND HISTOCHEMISTRY		
CODE	P18BC1MCT04		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the Digestive and Excretory system Physiology	PSO 1	R, U
CO-2	Understand the Circulatory, Respiratory system	PSO 2	U,R
CO-3	Understand the Muscular and Nervous system.	PSO 2	U
CO-4	Understand the principles of histochemistry	PSO 3	R
CO-5	Recall and apply the procedures involved in histopathology to identify the diseases.	PSO 4	An

COURSE TITLE	MAJOR CORE 5: BIOMOLECULES, CELL BIOLOGY AND PHYSIOLOGY		
CODE	P18BC1MCP05		
CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Gain technical experience and handle adjustable micro pipettes in a reproducible manner	PSO 1	U
CO-2	Demonstrate the use of advance microscope.	PSO 2	R
CO-3	Plan experiments, write protocols	PSO 2	U,R
CO-4	Perform logical reasoning and criticizing data	PSO 3	R
CO-5	Understand and interpretation the ECG recording and BP	PSO 4	U,An

COURSE TITLE	MAJOR ELECTIVE 1: ECOLOGY AND EVOLUTION		
CODE	P18BC1MET01		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the diversity of evolutionary thoughts	PSO 1	R, U
CO-2	Identify the species concepts, Life history strategies; adaptive radiation.	PSO 2	R, An
CO-3	Explain the Environmental and Community Ecology	PSO 2	U
CO-4	Explain the role of Ecosystem structure, function, energy flow	PSO 3	R
CO-5	Understand the Biodiversity and its conservation	PSO 4	U

COURSE TITLE	MAJOR ELECTIVE 1: MICROBIOLOGY		
CODE	P18BC1MET02		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Describe the structure and functions of major components of microbial cells.	PSO 1	R, U
CO-2	Understand the concept of microbial growth, its measurement and growth curves.	PSO 2	R
CO-3	Classify microorganisms based on nutrition.	PSO 2	U
CO-4	Isolate bacteria on solid media.	PSO 3	R
CO-5	Discuss various methods of sterilization and disinfection.	PSO 4	R,An

COURSE TITLE	MAJOR CORE 6: ENZYMOLOGY		
CODE	P18BC2MCT06		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Remember and understand the major classes of enzyme and their functions in the cell.	PSO 1	R, U
CO-2	Explain the role of co-enzyme cofactor in enzyme catalyzed reaction.	PSO 2	R
CO-3	Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km. Vmax, Kcat etc).	PSO 2	R
CO-4	Define and describe the properties of enzymes in and regulates biochemical pathways (inhibition, allosterism)	PSO 3	R
CO-5	Explain the role of enzymes in different fields.	PSO 4	An

COURSE TITLE	MAJOR CORE 7: INTERMEDIARY METABOLISM & REGULATION		
CODE	P18BC2MCT07		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand and explain major pathways like Glycolysis, TCA cycle, Urea cycle etc.	PSO 1	R, U
CO-2	Analyse and explain the amino acid catabolism like transamination, transmethylation, decarboxylation ,	PSO 2	R
CO-3	Understand biosynthesis and elongation of fatty acids.	PSO 2	U,R
CO-4	Understand regulation of heme synthesis, involvement of organs to achieve energy, explain the nucleic acid	PSO 3	U,R
CO-5	Analyse bioenergetics of carbohydrates, fatty acids etc. in plants and animals	PSO 4	R,An

COURSE TITLE	MAJOR CORE 8: MOLECULAR BIOLOGY		
CODE	P18BC2MCT08		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the mechanism of Prokaryotic replication, transcription and regulation.	PSO 1	R, U
CO-2	Describe the mechanism of Eukaryotic replication, transcription and regulation.	PSO 2	R
CO-3	Enumerate the features of Genetic code and translation mechanism.	PSO 2	U
CO-4	Evaluate the cellular mechanism of Gene expression and regulation.	PSO 3	R
CO-5	Understand the concept of Protein- DNA interactions. And molality.	PSO 4	U,An

COURSE TITLE	PRACTICAL II – ENZYMOLOGY AND MOLECULAR TECHNIQUES		
CODE	P18BC2MCP09		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Acquire direct laboratory experience in electrophoresis	PSO 1	U
CO-2	Recognize ,draw graph and calculated the enzyme analysis	PSO 2	U,R
CO-3	Learn how to run gel and chromatography	PSO 2	U,R
CO-4	Have insight in the physico-chemical properties of proteins that underlie purification methods.	PSO 3	R
CO-5	Gain an appreciation of working as part of an integrated research team	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE 2 – ENDOCRINOLOGY		
CODE	P18BC2MET03		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain various hormones secreted by endocrine glands and their functions.	PSO 1	R, U
CO-2	Understand the anatomy of the endocrine system.	PSO 2	R
CO-3	Understand the basic properties of hormones.	PSO 2	U
CO-4	Explain the role of the hormones in maintaining body function.	PSO 3	R
CO-5	Understand and explain the major endocrine disorders	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE 2 –PLANT BIOCHEMISTRY		
CODE	P18BC2MET04		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the plant tissue structure, transport mechanism	PSO 1	R, U,An
CO-2	Understand the photosynthesis system.	PSO 2	U,An
CO-3	Understand the basic properties of Plant hormones.	PSO 2	U,R
CO-4	Explain the role of the nitrogen cycle in plants.	PSO 3	R
CO-5	Understand and explain the Host parasite interaction	PSO 4	U,An

COURSE TITLE	NME 1: NON MAJOR ELECTIVE -I FOOD PROCESSING & PACKAGING		
CODE	P18BC2NMT01		
CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the requirements for meat export and chemical and physiological structure of meat.	PSO 1	R, U
CO-2	Demonstrate processing techniques used to produce a variety of milk products.	PSO 2	R
CO-3	Analyse the process of harvesting, processing and storage of seafood.	PSO 2	U,An
CO-4	Evaluate variety of egg products produced in the food processing industry including egg structure and egg	PSO 3	R
CO-5	Understand the sources and processing of Edible Fats and Oils	PSO 4	R,An

COURSE TITLE	MAJOR CORE 10: PRINCIPLES AND APPLICATIONS OF GENETIC ENGINEERING		
CODE	P18BC3MCT10		
CO No	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Provide examples of current applications of biotechnology and Intellectual Property Rights and	PSO 1	U, An
CO-2	understand the concept of recombinant DNA technology or genetic engineering	PSO 2	U,R
CO-3	Understand the Plant Tissue Culture and Transgenic plant technology	PSO 2	U,R
CO-4	explain the concept and applications of In vitro fertilization and embryo transfer methods	PSO 3	R, An
CO-5	Explain the general principles and applications of Bioprocess Technology	PSO 4	R, An

COURSE TITLE	MAJOR CORE 11 – IMMUNOLOGY		
CODE	P18BC3MCT11		
O No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	State the role of the immune system in the human body	PSO 1	U,R
CO-2	Describe the functions of Immunity and Complement System	PSO 2	An
CO-3	Describe Immunological techniques	PSO 2	U,R
CO-4	Define the gene organization and explain their functions	PSO 3	R,U
CO-5	Explain Autoimmune and Immunodeficiency Disorders and explain their causes.	PSO 4	R,An

COURSE TITLE	MAJOR CORE 12: CLINICAL BIOCHEMISTRY		
CODE	P18BC3MCT12		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Discuss the biochemistry and pathophysiology associated with tests performed in a clinical biochemistry laboratory	PSO 1	U
CO-2	Compare and contrast the basic differences between carbohydrate, lipid and protein metabolism	PSO 2	R
CO-3	Describe and identify the main characteristics of diagnosis, screening, and prognosis of disease.	PSO 2	U,R
CO-4	Critically evaluate the role of clinical biochemistry in diagnosis, monitoring and treatment.	PSO 3	R
CO-5	Applications of biochemistry on health, medical diagnostics and pharmacy.	PSO 4	An

COURSE TITLE	MAJOR CORE 13 -PRACTICAL-III - CLINICAL BIOCHEMISTRY & IMMUNOLOGY		
CODE	P18BC3MCP13		
CO NO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Critically evaluate the role of clinical biochemistry in diagnosis, monitoring and treatment.	PSO 1	U,R
CO-2	Applications of biochemistry on health, medical diagnostics and pharmacy.	PSO 2	R, An
CO-3	clinically assess the laboratory indicators of physiologic conditions and diseases	PSO 2	U.R
CO-4	know the biochemical and molecular tools needed to accomplish preventive, diagnostic, and therapeutic intervention on hereditary and acquired disorders	PSO 3	R
CO-5	Define solubility, percent concentration, molarity, mole fraction, and molality.	PSO 4	An

COURSE TITLE	MAJOR ELECTIVE III –BIOSTATISTICS AND RESEARCH METHODOLOGY		
CODE	P18BC3MET05		
CONo.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Select, use and interpret results of descriptive statistical methods effectively	PSO 1	R, An
CO-2	Demonstrate an understanding of the central concepts of modern statistical theory and their probabilistic foundation;	PSO 2	U
CO-3	Select, use, and interpret results of, the principal methods of statistical inference and design	PSO 2	R, An
CO-4	Understand the Research and scientific methods	PSO 3	R
CO-5	Understand the Goals and Criteria for identifying problems for research	PSO 4	U,An

COURSE TITLE	MAJOR ELECTIVE III –Basics of Bioinformatics		
CODE	P18BC3MET05		
CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Identify various presentation software, Recall	PSO1	An
CO-2	Define how computers are used in database and	PSO4	E
CO-3	Recall the inner components and working patterns of smart gene bank	PSO5	R
CO-4	Differentiate between the various uses of the internet and software for searching, productivity in novel drugs	PSO3	An
CO-5	Utilization of softwares in sequences formation	PSO1	Ap

COURSE TITLE	NME 1I: NON MAJOR ELECTIVE PAPER II- WASTE MANAGEMENT AND BIOREMEDIATION		
CODE	P18BC3NMT02		
CO NO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Critically evaluate the Wastes collection, storage, segregation and disposal methods	PSO 1	U,R
CO-2	Understand the recovery of recyclable and non-recyclable wastes	PSO 2	U,R,
CO-3	assess the Hazardous Waste Management	PSO 2	U.R
CO-4	know the Sources, Facts and figures of plastic wastes in national and international level	PSO 3	R
CO-5	Define Remediation of Pollutants	PSO 4	U,An

COURSE TITLE	MAJOR CORE – 14- GENETICS AND DEVELOPMENTAL BIOLOGY		
CODE	P18BC4MCT14		
CO NO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Critically evaluate the Wastes collection, storage, segregation and disposal methods	PSO 1	U,R
CO-2	Understand the recovery of recyclable and non-recyclable wastes	PSO 2	U,R,
CO-3	assess the Hazardous Waste Management	PSO 2	U.R
CO-4	know the Sources, Facts and figures of plastic wastes in national and international level	PSO 3	R
CO-5	Define Remediation of Pollutants	PSO 4	U,An

COURSE TITLE	BASICS OF HERBAL MEDICINE		
CODE	P18BC4SST01		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Demonstrate the importance of Ethanomedicine	PSO 1	U
CO-2	Develop an understanding of medicinal plants	PSO 2	R,An
CO-3	Assess the mechanism of drug action of tribal medicine	PSO 2	R
CO-4	describe the source of Drugs in Tamilnadu	PSO 3	R,An
CO-5	Assess the therapeutic role of plants in day to day life	PSO 4	An