



St. Xavier's College (Autonomous), Mumbai

Programme: B.Sc. Zoology - Biochemistry

Department of Zoology:

Programme Specific Outcomes (PSOs) and Course Outcomes (CO) for Zoology

Department of Life Science and Biochemistry:

Programme Specific Outcomes (PSOs) and Course Outcomes (CO) for Biochemistry



St. Xavier's College (Autonomous), Mumbai
Department of Zoology

Programme: B.Sc. Zoology

Programme Specific Outcomes (PSOs) for B.Sc. Zoology

Sr. No.	A student completing B.Sc. Zoology will be able to:
PSO 1	Develop a wholistic understanding of the diversity of life with respect to identification, unique aspects and conservation status of organisms.
PSO 2	Have an in-depth understanding of the basics of zoology, with evolution being the overall theme stitching together the fundamental areas in zoology.
PSO 3	Have a strong grounding in the fundamentals of the modern trends and applied areas of biology, and be equipped with the skill sets needed in these areas.
PSO 4	Develop critical thinking skills augmented by strong conceptual foundation in biology.
PSO 5	Be familiar with digital learning – use online databases to gather, curate and analyse data; form opinions based on facts, and have enhanced problem-solving skills.
PSO 6	Aim for a multifaceted career, either in industry, higher education, research or entrepreneurship.
PSO 7	Conduct basic research, design and perform experiments, present results in front of the peers and write a research paper; develop skills in experimental design, scientific writing and defense of results using proper statistical analyses.
PSO 8	Learn the basics of evolutionary theory and how this explains various phenomena in biology, through the cross-faculty course 'The Secret Lives of Animals', developed for the students of humanities; obtain glimpses of evolution of animal societies, adaptations and survival strategies evolved by animals in extreme environments.



Course Outcomes (COs): B.Sc. Zoology

Semester I

Course Title: Invertebrate Systematics and Biomolecules

Course Code: SZOO0101

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Recount the physical characteristics of the various invertebrate phyla and their classes.	1, 2	U, R
CO 2	Identify and classify various invertebrate specimens up to the phylum level.	1, 2	U, R
CO 3	Classify various biomolecules, draw their structures and state differences between them.	3, 4	U, R, Ap
CO 4	Understand the biological significance of the biomolecules and their role and importance in our day-to-day living.	3, 4	U, R, Ap

Course Title: Genetics and Evolution

Course Code: SZOO0102

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Analyse and understand the relationship between genes and phenotypes; solve basic mathematical problems in genetics.	2, 4	U, R, Ap
CO 2	Explain the molecular interactions that lead to a particular phenotypic expression in simple layman terms.	3, 4, 6	U, An, Ap
CO 3	Draw, analyse and interpret pedigree charts for genetic traits; be aware of career options in genetics.	4, 5, 6	U, R, An, Ap, E
CO 4	Have a clear and fundamental understanding of evolution; know what the preliminary evolutionary mechanisms are; acquire knowledge-base for more advanced concepts in evolution.	1, 2	U, R
CO 5	Analyse and answer questions in Mendelian genetics and human pedigree.	4, 5	An, Ap, E



Course Title: Zoology Practicals – I
Course Code: SZOO01PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Identify and classify the various invertebrate specimens, and detect macromolecules in tissue samples.	2, 3
CO 2	Build and analyse pedigree charts and genetic issues stemming from family trees.	3, 4



Semester II

Course Title: Vertebrate Systematics and Ecology

Course Code: SZOO0201

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Develop an understanding of the diversity of chordate life forms.	1, 2	U, R
CO 2	Classify vertebrate animals on the basis of their morphological characteristics.	1, 2	R, Ap
CO 3	Develop a critical understanding of how animal adaptations enhance survival and drive evolution.	2	U, Ap
CO 4	Be aware of the distribution of life forms and understand the functional basis of animal ecology.	1, 2	U, R, An
CO 5	Understand the consequences of loss of biodiversity; analyse human contribution to this loss.	2	U, An

Course Title: Biotechniques and Comparative Physiology

Course Code: SZOO0202

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Describe movement, locomotion, digestion, circulation and respiration in different life forms.	1, 2	U, R
CO 2	Understand neural conduction and reproductive systems in different organisms.	1, 2	U, R
CO 3	Demonstrate the skill of explaining and illustrating the physiology of animals.	4, 6	U, Ap
CO 4	Carry out experiments with different chemical solutions.	4, 6	Ap, An, E
CO 5	Classify and compare the types and workings of microscopes.	4, 6	U, Ap, An
CO 6	Illustrate the processes of centrifugation, chromatography and electrophoresis, their types and uses.	4, 6	U, A, E
CO 7	Explain the principles and applications of various biological techniques.	7	A, An



Course Title: Zoology Practicals – II
Course Code: SZOO02PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Identify and classify vertebrate life forms that are observed in the field, and quantify changes occurring in ecosystems over time.	2, 3
CO 2	Understand the applications of various biological techniques used.	3



Semester III

Course Title: Animal Behaviour and Parasitology

Course Code: SZOO0301

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Develop skills and carry out experiments to understand aspects of animal behaviour.	2, 3	U, An
CO 2	Understand and objectively evaluate information regarding routine animal behaviour.	3, 4	Ap, E
CO 3	Diagnose causative agents and vectors for the parasites studied; describe their pathogenesis, treatment and prophylaxis.	3, 4	U, R, Ap
CO 4	Use the knowledge gained as a foundation for a course in behavioural ecology.	4	U, An

Course Title: Biostatistics and Evolution

Course Code: SZOO0302

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Collect data using appropriate sampling techniques.	3, 7	U, Ap, C
CO 2	Describe the data using various aspects of statistics such as measures of central tendency, dispersion and different graphical methods.	5, 6, 7	U, Ap, An, C
CO 3	Formulate a hypothesis, choose an appropriate statistical test for it, and perform the test.	4, 5, 6, 7	U, Ap, An
CO 4	Develop a clear understanding of Darwin's theory, natural selection and modern synthesis of evolution.	2, 3, 4	U, An
CO 5	Understand the different proofs of the theory of evolution.	2, 3, 4	U, R, Ap
CO 6	Construct phylogenetic trees using parsimony analysis and Unweighted Pair Grouped Method with Arithmetic Mean.	2, 3, 4, 5	U, Ap, An, C



Course Title: Advanced Genetics and Bioinformatics
Course Code: SZOO0303

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Statistically compute and analyse gene frequencies from the data provided.	3,4,5	U, An, Ap, E
CO 2	Access biological databases, extract information and analyse it using bioinformatics software.	3,4,5	An, Ap, E
CO 3	Use the knowledge gained as a foundation for a course in molecular biology.	2,3	U, R Ap
CO 4	Join research in related areas such as genetic engineering, genetic disorders, human fertility programme, genotoxicity and bioinformatics.	3, 6	An, Ap, C

Course Title: Zoology Practicals – III
Course Code: SZOO03PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Understand and evaluate animal behaviour in the feral animals encountered in the field; be aware of the common parasites that could affect humans; be equipped with information regarding basic prophylactic measures to be taken for field visits.	3
CO 2	Perform basic descriptive statistics and basic inferential statistics; understand concepts in evolutionary biology and draw a phylogenetic tree.	2, 3, 4, 5
CO 3	Do a hands-on project in bioinformatics; develop basic microbiology laboratory skills.	3, 4, 5



Semester IV

Course Title: Developmental Biology and Information Flow

Course Code: SZOO0401

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Possess a strong foundation in developmental biology.	2, 3	U
CO 2	Understand the general features of development of multicellular organisms.	2, 3, 4	U, R, An
CO 3	Understand the basic features of early development such as fertilization, zygote formation, blocks to polyspermy, blastulation, gastrulation and cell differentiation including the fundamental molecular events behind cell differentiation.	2, 3, 4, 7	U, R, Ap, An
CO 4	Understand the four basic types of regeneration.	2, 3, 4	U, R, An
CO 5	Understand the details of prokaryotic and eukaryotic DNA transcription and translation including the factors required for the processes, different phases of the processes; know the similarities and differences between these processes in prokaryotes and eukaryotes.	2, 3, 4, 6	U, R, An
CO 6	Understand differential gene regulation in prokaryotes using lac operon as a system.	2, 3, 4	U, R, Ap
CO 7	Understand differential gene regulation in eukaryotes at different levels such as DNA-binding proteins, DNA transcription, post-transcription, translation and post-translation.	2, 3, 4, 6	U, R, An



Course Title: Cell Biology
Course Code: SZOO0402

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand the structure and functions of plasma membrane and endo-membrane systems.	3, 4	U, R
CO 2	Explain the detailed structures and functions of mitochondria and nucleus.	3, 4	U, R
CO 3	Describe the cell cycle and stages of cell division; distinguish between mitosis and meiosis.	3, 4, 6	U, An
CO 4	Categorise types of cell culture; know the requirements for establishment and maintenance of primary cell culture and cell lines.	3, 4, 6, 7	U, Ap, An, C
CO 5	Explain types of cancer, its hallmarks, and carcinogens.	4, 6, 7	U, Ap, C

Course Title: Biochemistry and Applied Zoology
Course Code: SZOO0403

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Apply the knowledge of importance of buffers in the day-to-day living and solve problems related to the topic.	3, 4, 5	U, Ap, An
CO 2	Understand the different metabolic pathways, and represent them schematically; know terminologies and disorders associated with metabolism of carbohydrates, lipids and proteins.	3, 4	U, R, Ap, An
CO 3	Possess knowledge of the types of fishery in India, methods of capture, preservation and uses; be conversant with various types of local commercial fish.	1, 2, 3	U, R, Ap
CO 4	Understand the technicalities, conditioning factors and environmental impacts of culturing fish, prawn and pearl; understand the maintenance of dairy farm, along with the knowledge of various diseases associated with it.	1, 2, 3, 4	U, R, Ap, An, E
CO 5	Know broad areas of career options in applied zoology (aquaculture and dairy science).	6, 7	U



Course Title: Secret Lives of Animals
Course Code: ASPC04018

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Develop a basic understanding of evolutionary biology and how it applies to various phenomena seen in biology.	8	U, R, Ap
CO 2	Understand that the theory of evolution has been proven with ample evidence, and it is not just a hypothesis yet to be proven.	8	U, Ap, An
CO 3	Understand forms and functions of different animal societies.	8	U, R, Ap
CO 4	Understand theories that explain evolution of sociality in animals.	8	U, Ap
CO 5	Understand the challenges posed by extreme environments to animals living there.	8	U, R
CO 5	Understand adaptation and survival strategies evolved by the animals living in extreme environments.	8	U, R

Course Title: Zoology Practicals – IV
Course Code: SZOO04PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Know the importance of fishery and dairy science which could be used for entrepreneurship.	3, 6
CO 2	Identify embryonic stages of organisms such as frog, chick and fruit-flies; make permanent slides of the early embryonic stages of chick.	2, 3, 4
CO 3	Maintain primary cell lines.	4, 6



Semester V

Course Title: Vertebrate Ontogeny, Behaviour and Ecology

Course Code: SZOO0501

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand the evolution of vertebrate systems, integrating structure and function.	1, 2	R, U
CO 2	Understand and objectively evaluate the role of behaviour in the survival of wild species.	4, 7	U, Ap
CO 3	Understand different methods to estimate population size and population dynamics including models of population growth, life tables and population pyramids; know interactions among populations of different species on spatial and temporal scales.	1, 2, 3, 4, 6	U, R, Ap, An, C
CO 4	Use the principles of wildlife management to reduce local/national human-animal conflicts; and contribute to conservation of wildlife.	1, 5	An, E
CO 5	Be aware of the opportunities in the tourism sector (tourism writing, package tour operation) or institutes / NGOs involved in curtailing illegal wildlife trade.	6	Ap, C

Course Title: Physiological Adaptations

Course Code: SZOO0502

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Develop an understanding of form, function and adaptation in organ systems central to the maintenance of life and its interaction with the environment.	2	U, R, Ap, C
CO 2	Illustrate the role of signalling pathways and their components in adaptation.	3, 4, 6	U, A, An
CO 3	Understand the basics of astrobiology including origin and evolution of life on Earth, habitable zones, search for exoplanets and for life on other-than-Earth systems.	1, 2, 3, 4, 6	U, R, An
CO 4	Understand the basics of meteorites and their role with respect to life on Earth.	2	U, R
CO 5	Understand the effect of space environment on human physiology, including adverse effects and the counter-measures for the same.	1, 2, 3, 6	U, R, An



Course Title: Zoology Practicals – V
Course Code: SZOO05PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Identify bones of vertebrate life forms encountered in the field; know animals that belong to different zoological realms, and be aware of their conservation status and related problems; understand the importance of environment in shaping adaptations required for survival.	2, 3, 5
CO 2	Identify and understand different types of meteorites; understand different parts of astronauts' suits and their functions.	2, 3
CO 3	Make life history tables, and use population estimation techniques.	5,

Course Title: Insect Taxonomy and Applied Entomology
Course Code: SZOO05AC

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Apply the knowledge of taxonomy to identify and classify insects.	1, 2	U, R
CO 2	Understand anatomical features and their variations in different insects.	1, 2	U, R
CO 3	Know the parts and the working of the various systems within an insect, and adaptive modifications seen in different insects.	1, 2	U, R, Ap
CO 4	Realise how insects are affected by various ecological factors such as temperature, light and humidity, and how they adapt to variations in these factors.	1, 2, 3	U, R, Ap, An
CO 5	Know the different types of honeybees, their nesting habits, apiculture methods, harvest of commercial products from them, and their role in pollination services.	1, 2, 3, 6	U, R, Ap, An
CO 6	Understand the life cycle and culturing of mulberry silkworm, lac insect, cochineal bug and blister beetle; know products of commercial importance associated with them.	1, 2, 3, 6	U, R, Ap



Course Title: Applied Component Practicals – I
Course Code: SZOO05ACPR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Take up further studies in taxonomy of insects with the basic understanding of anatomy and morphology of insects.	2, 3
CO 2	Understand the basic biology and rearing of insects of economic importance such as honeybees, silkmoths and lac insects.	3, 6



Semester VI

Course Title: Basics of Enzymes, Toxicology, Histology and Nanoscience

Course Code: SZOO0601

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand the concept of enzymes, their role in chemical reactions, and how various factors affect enzymes and enzyme kinetics.	3, 4	U, R, Ap, An
CO 2	Understand the basic concept of toxicology; know the mechanisms of systemic and organ toxicity as a result of various toxicants entering a living system.	3, 4, 6	U, R, Ap, An
CO 3	Know how toxicants disrupt normal functioning at the cellular, genomic and proteomic level.	3, 4, 6	U, R, Ap, An, E
CO 4	Describe the histological structure of various exocrine and endocrine glands, their functions and their abnormalities.	2, 3, 4	U, R, Ap
CO 5	Understand the concept of nanoscience and apply this knowledge to various fields in the day-to-day living.	3, 4, 5, 6, 7	U, R, Ap, An, C
CO 6	Apply the knowledge of toxicology and nanoscience for career development in higher education and commercial research and development.	6, 7	U

Course Title: Immunology and Recombinant DNA Technology

Course Code: SZOO0602

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand how immune responses are initiated and regulated by T cells and B cells.	2, 3	U, R, Ap
CO 2	Understand how hypersensitivity reactions are activated and the responses shown by the host.	2, 3	U, An, AP
CO 3	Explain misunderstandings about vaccines to laymen, and educate them about the importance of vaccines in public health.	3, 4, 5	U, An, E
CO 4	Join research laboratories; conduct immunological assays.	3, 5, 6	An, Ap, E
CO 5	Be well versed in recombinant DNA technology with applications in biomedical science, agriculture and environmental science.	2, 3, 5, 6	U, R, An, Ap
CO 6	Independently work on a research project, analyse data and defend the conclusions.	4, 5, 6, 7	An, Ap, E, C



Course Title: Zoology Practicals – VI
Course Code: SZOO06PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Pursue research in the field of toxicology relating it to enzymes and histology of various tissues; enter the field of nanoscience.	3, 6
CO 2	Perform experiments in molecular biology and immunology to complement the theory; know useful techniques required for further education.	3, 4, 6

Course Title: Forensic Entomology and Pest Management
Course Code: SZOO06AC

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Develop the skills of observation, collection and preservation of insects as evidence from a crime scene.	3, 4	U, R
CO 2	Estimate the PMI using the evidence, and critically analyse the crime scene.	3, 4, 6	An, Ap
CO 3	Devise a strategy for control of insect pests; and develop data collection methodology.	3, 4, 6	U, An, Ap
CO 4	Integrate technology with biology and come up with innovative pest-control solutions.	3, 5, 6	U, An, Ap, C
CO 5	Develop the basic skills needed for the concerned industry or set up a start-up company.	2, 5, 6	An, Ap
CO 6	Write a field report based on a visit, and carry out a small project in the area of forensic entomology, or pest control.	4, 6, 7	An, Ap, E, C

Course Title: Applied Component Practicals – II
Course Code: SZOO06ACPR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Develop the skill of observation and the knowledge regarding what and how to collect and preserve insects of forensic importance.	3, 4
CO 2	Know the basics of toxicity testing in animals and the calculations for quantification of toxicity of a chemical pesticide.	3, 4



St. Xavier's College (Autonomous), Mumbai
Department of Life Science and Biochemistry

**Programme: For B.Sc. Botany-Biochemistry / B.Sc. Life Science and Biochemistry /
B.Sc. Microbiology-Biochemistry / B.Sc. Zoology-Biochemistry**

Programme Specific Outcomes (PSOs) for T.Y.B.Sc. Biochemistry

Sr. No.	On completing T.Y.B.Sc. Biochemistry, the student will be able to:
PSO 1	Associate the structure of molecules with their chemical interactions/kinetics and role in the organism and to recognise the operation of fundamental scientific principles in the functioning of the human body.
PSO 2	Comprehend the significance of bio-molecules/nutrients, their metabolic fate, energetics and interconversion, and the integration of biochemical pathways within organisms; and apply this knowledge for a better understanding of nutrition, health and allied fields of biology.
PSO 3	Understand the principle and working of various analytical instruments and methods, and their appropriate selection for biochemical investigations.
PSO 4	Be equipped to perform the calculations required for preparation of reagents, to perform/design simple biochemical experiments, to apply her/his knowledge to solve theoretical and practical problems based on concepts, and to do troubleshooting in the laboratory.
PSO 5	Be able to use search engines and bioinformatics tools for literature surveys, reference citations, and analysis of biological sequence and structural data.
PSO 6	Be capable of working in a heterogeneous group towards a common goal through research projects, and be empowered to present ideas logically and with confidence, in a scientific paper and an oral presentation.

Biochemistry is offered only in the third year of the UG programme.



Course Outcomes (COs): T.Y.B.Sc. Biochemistry

Semester V

Course Title: Molecules of Biological Significance

Course Code: SBCH0501

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Recall structures of biomolecules like carbohydrates, lipids, proteins, vitamins, nucleic acids, and secondary plant metabolites.	1, 5	R, U
CO 2	Compare biomolecules based on their chemistry and functions.	1, 5	R, U
CO 3	Summarize and evaluate the significance of biomolecules and minerals in health and deficiency conditions.	1, 5	U
CO 4	Explain the structure and function of biocatalysts and evaluate the role of regulators of biochemical pathways.	1, 5	U, E
CO 5	Comprehend the basics of enzyme kinetics and inhibition; solve problems based on the above concepts.	1, 4, 5	R, U



Course Title: Nutrition and Metabolism
Course Code: SBCH0502

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Describe and discuss fundamental concepts of nutrition, nutritional and eating disorders, food regulation, body composition and energy expenditure.	2, 4, 5	R, U
CO 2	Analyze and assess nutrition panels, design a nutritional plan by extrapolating nutritional information to personal health and disease.	2, 5	Ap, An, E
CO 3	Identify the location of, and describe the pathways that lead to the oxidation (aerobically/anaerobically), synthesis and storage of glucose and fatty acids in the human body.	1, 2, 5	R, U
CO 4	Explain the role of electron transport chain and ATP synthase in using the energy of electrons (extracted from simple sugars and fatty acids) to make ATP in the mitochondria.	2, 4, 5	U, An
CO 5	Describe the role of chloroplast in harnessing energy and analyze the steps involved in the fixation of atmospheric carbon dioxide by a plant.	2, 4, 5	U, An
CO 6	Determine the link between nutrition, metabolism and energy.	2	U, An, E

Course Title: Biochemistry Practicals – I
Course Code: SBCH05PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Acquire the fundamental skill of understanding the concepts of concentration and dilution, and apply these in accurately and efficiently preparing and storing laboratory reagents for use.	3, 4
CO 2	Identify and critically analyze the principle and working of various analytical instruments such as pH meter, colorimeter, spectrophotometer, centrifuge; choose appropriate techniques for biochemical investigations associated with qualitative and quantitative analysis of carbohydrates, proteins, lipids, various inorganic ions and micronutrients, confidently applying this learning to real-life quality assurance situations.	3, 4



Semester VI

Course Title: Biophysical and Bio-analytical Chemistry

Course Code: SBCH0601

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Derive equations involving terms such as pH, K_w , pI etc., understand the working of a pH meter and interpret the contribution of physiological buffers to homeostasis in humans.	3, 4	U, An
CO 2	Understand the various principles and processes involved in extracting and purifying proteins.	3, 4, 5	U, Ap
CO 3	Correlate and apply basic gas laws and concepts of viscosity and dipoles in living systems.	1	Ap, An, E
CO 4	Comprehend and apply the principles of common analytical techniques like centrifugation, chromatography, electrophoresis and spectrophotometry to the separation and analyses of biomolecules.	3, 4, 5	R, U
CO 5	Apply the knowledge of instrumentation to solve simple problems.	3, 4, 5	Ap



Course Title: Metabolism, Clinical Biochemistry and Pharmacology
Course Code: SBCH0602

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Describe the steps in the synthesis of a peptide and the role of ubiquitin and proteosomes in its degradation.	2, 4, 5	R, U
CO 2	Provide an overview of: the fates of amino acids, metabolism of purines and pyrimidines, excretion of protein nitrogen as urea and also appreciate the integration of carbohydrate, lipid and amino acid metabolism in the human body.	2, 5	R, U, An
CO 3	Comprehend the importance of signal molecules, with emphasis on hormones and their role in the regulation of metabolism and to understand the etiology of some disorders associated with carbohydrate, protein and lipid metabolism.	2, 5	R, U
CO 4	Relate inborn errors of metabolism to the associated enzymatic and biochemical profiles, to interpret the same in the context of human health and disease, and identify suitable enzymatic and diagnostic techniques.	2, 5	U, An, E
CO 5	Select the right bioinformatics tools to analyse biological molecules and the sequence and structural information they contain.	2, 4, 5	Ap, An
CO 6	Discuss in-depth the concepts of Pharmacodynamics, Pharmacokinetics and Pharmacogenomics, and be able to distinguish between the various allied fields of pharmacology.	2, 5	R, U

Course Title: Biochemistry Practicals – II
Course Code: SBCH06PR

Sr. No.	On completing the course, the student will be able to:	PSOs addressed
CO 1	Understand and integrate the principles of protein purification, enzymology, chromatographic and electrophoretic separations, and their appropriate selection for biochemical investigations.	3, 4
CO 2	Plan, design and execute simple biochemistry-based group research projects, defend the verified results before a panel of teachers in an oral presentation, and submit them as scientific research papers.	3, 4