B.Sc. ZOOLOGY

PROGRAMME SPECIFIC OUTCOME

PSO1 Understand and identify animal diversity through systematic classification and evolutionary significance with an emphasis on environment conservation and sustainable development.

PSO2 Analyze and understand the concepts and principles of genetics, cell biology, biochemistry, molecular biology, bioinformatics and the pattern of inheritance in human traits.

PSO3 Understand various aspects and concepts of human physiology, reproductive and developmental biology, gender studies, immunology, microbiology and biotechnology.

PSO4 Perform laboratory techniques and procedures as per standard protocols, to understand and develop technical skills in the areas of animal diversity, environmental biology, ethology, evolution, cell biology, genetics, molecular biology, bioinformatics, physiology, developmental biology, immunology, biotechnology, microbiology and biostatistics.

COURSE OUTCOME

SJZOL1B01T: ANIMAL DIVERSITY: NON-CHORDATA PART- I

SJZOL1B01T CO1	Describe the principles of classification and nomenclature.
SJZOL1B01T CO2	Explain the five-kingdom classification of living organisms.
SJZOL1B01T CO3	Understand the concepts of classification of animals.
SJZOL1B01T CO4	Explain the classification with examples and characteristic features of kingdom Protista and describe the morphology and structural organization of *Paramecium*.
SJZOL1B01T CO5	Describe the characteristic features of subkingdom Mesozoa.
SJZOL1B01T CO6	Explain the classification of phylum Porifera and elucidate the salient features of each class.
SJZOL1B01T CO7	Describe the characteristic features of phylum Cnidaria and Ctenophora, illustrate the classification of phylum Cnidaria down to classes and explain the structural organization of *Obelia*.
SJZOL1B01T CO8	Explain the salient features of phylum Platyhelminthes and illustrate its classification down.
SJZOL1B01T CO9	Explain the characteristic features and classification of super-phylum Aschelminthes and phylum Nematoda.
SJZOL1B01T CO10	Elucidate the characters of Pseudocoelomate minor phyla Rotifera and Gastrotricha.

SJZOL2B02T: ANIMAL DIVERSITY: NON-CHORDATA PART – II

SJZOL2B02T CO1	Explain the classification with examples and characteristic features of phylum Annelida and describe the morphology and structural organization of *Neanthes*.
SJZOL2B02T CO2	Describe the distribution, peculiarities and affinities of phylum Onychophora.
SJZOL2B02T CO3	Explain the classification of phylum Arthropoda; elucidate the salient features of each class and describe the morphology and structural organization of *Penaeus*.
SJZOL2B02T CO4	Describe the characteristic features of phylum Mollusca, illustrate its classification down to classes and explain the structural organization of *Pila globosa*.
SJZOL2B02T CO5	Explain the salient features of phylum Echinodermata and illustrate its classification down to classes.
SJZOL2B02T CO6	Understand the salient features and affinities of phylum Hemichordata.
SJZOL2B02T CO7	Elucidate the characters of coelomate minor phyla Phoronida, Ectoprocta and Echiura.

SJZOL3B03T: ANIMAL DIVERSITY: CHORDATA PART - I

SJZOL3B03T CO1	Explain the characteristics of chordates and outline classification of Phylum Chordata.
SJZOL3B03T CO2	Describe the salient features and affinities of subphylum Urochordata and its classification down to classes; elucidate the morphology and structural organization of Ascidia.

SJZOL3B03T CO3	Explain the salient features and affinities of subphylum Cephalochordata with reference to *Branchiostoma*.
SJZOL3B03T CO4	Describe the salient features of subphylum Vertebrata, illustrate its classification down to classes and elucidate the characteristics of division Agnatha.
SJZOL3B03T CO5	Enumerate the salient features of superclass Pisces and illustrate its classification down to orders and the morphology and structural organization of *Mugil cephalus*.
SJZOL3B03T CO6	Describe the salient features and affinities of class Amphibia and its classification up to orders; explain the morphology and organ systems of *Hoplobatrachus tigerinus*.
SJZOL3B03T CO7	Elucidate the characteristic features of the class Reptilia and its classification down to orders; describe the morphology and organ systems of *Calotes versicolor*.

SJZOL3B04T: ANIMAL DIVERSITY: CHORDATA PART - II

SJZOL3B03T CO1	Describe the classification of class Aves down to orders, salient features of each order with suitable examples.
SJZOL3B03T CO2	Describe the external characters and functional systems of *Columba livia*.
SJZOL3B03T CO3	Enumerate the salient features and classification of class Mammalia down to orders with suitable examples.
SJZOL3B03T CO4	Elucidate the external characters and functional systems of *Oryctolagus cuniculus*.
SJZOL3B03T CO5	Compare the circulatory, excretory and nervous systems of vertebrates.

SJZOL4B05P: ZOOLOGY CORE PRACTICAL – I

SJZOL4B05P CO1	Identify and describe specified protists and acoelomate & pseudocoelomate non-chordates and perform the culture of selected protists; understand the histological features of coelenterate, platyhelminth and nematode.
SJZOL4B05P CO2	Identify and describe specified coelomate non-chordates and the transverse sections of annelids; Perform mounting of the specified organs of selected non-chordates.
SJZOL4B05P CO3	Identify and describe specified chordates and specified bones of chordates; Prepare key for identification of venomous snakes; Perform mounting and dissection of specified organ systems of chordates.
SJZOL4B05P CO4	Identify and describe selected vertebrates and specified bones of vertebrates.

SJZOL5B06T: CELL BIOLOGY AND GENETICS

SJZOL5B06T CO1	Understand the principles and applications of various types of light microscopes, electron, Scanning-tunnelling and Atomic force microscope and illustrate the histological and histochemical processing of tissues.

SJZOL5B06T CO2	Explain the basic structure of a eukaryotic cell and the structure and functions of plasma membrane, mitochondria, lysosome, cytoskeletal elements and interphase nucleus.
SJZOL5B06T CO3	Illustrate the nucleosome organization of chromatin and higher order structures; structure of chromosomes and giant chromosomes.
SJZOL5B06T CO4	Enumerate eukaryotic cell cycle and cell division by amitosis, mitosis and meiosis.
SJZOL5B06T CO5	Explain the causes of transformation, characteristics of transformed cells and the role of protooncogenes and tumor suppressor genes in malignant transformation; mechanism and significance of apoptosis.
SJZOL5B06T CO6	Enumerate allelic and non-allelic gene interactions; supplementary, complementary, polymeric, duplicate and modifying genes and polygenic inheritance.
SJZOL5B06T CO7	Illustrate multiple allelism and solve problems related to blood group inheritance.
SJZOL5B06T CO8	Explain characteristics of linkage groups and linkage map; crossing over and calculation of recombination frequency; sex-linked, sex-influenced and sex-limited characters; sex differentiation and disorders of sexual development.
SJZOL5B06T CO9	Describe the mechanisms of sex determination including chromosomal, genic, haploid-diploid mechanisms; the hormonal and environmental influence on sex determination and gynandromorphism.
SJZOL5B06T CO10	Explain mutagenesis, mutagens and chromosomal and gene mutations.
SJZOL5B06T CO11	Enumerate the classification and grouping of human chromosomes; numerical and mutational human autosomal and sex chromosomal anomalies; polygenic human traits and genetic counselling.

SJZOL5B07T: BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY

SJZOL5B07T CO1	Illustrate the steps in genetic engineering and animal cell culture.
SJZOL5B07T CO2	Explain transfection methods, transgenic animals and ethical issues of transgenic animals.
SJZOL5B07T CO3	Enumerate the applications of biotechnology.
SJZOL5B07T CO4	Understand the biological diversity of microbial forms and the various techniques for handling microbes in the laboratory.
SJZOL5B07T CO5	Enumerate the basic structure and life cycle of bacteria and virus.
SJZOL5B07T CO6	Understand the industrial and medical importance of microorganisms.
SJZOL5B07T CO7	Describe different types of immunity and the cells and organs of the immune system.
SJZOL5B07T CO8	Explain antigen, antibody, immunity and major histocompatibility complex.
SJZOL5B07T CO9	Enumerate autoimmune and immunodeficiency diseases and immunology of tumour and organ transplantation.

SJZOL5B08T: BIOCHEMISTRY AND MOLECULAR BIOLOGY

SJZOL5B08T CO1	Understand the elements of biological importance and the non-covalent interactions that stabilize biomolecules.
SJZOL5B08T CO2	Describe the classification, types, structure, reactions and biological roles of carbohydrates, and diabetes Type I and II.

SJZOL5B08T CO3	Enumerate the properties and classification of amino acids and their standard abbreviations; hierarchial levels of protein structure, classification, separation, purification and sequencing of proteins.
SJZOL5B08T CO4	Explain the classification and functions of lipids and fatty acids; chemistry and structure of nucleic acids and sequencing of DNA.
SJZOL5B08T CO5	Understand the classification, nomenclature and properties of enzymes; enzyme action, co-enzymes, cofactors, isozymes, ribozymes and allosteric enzymes.
SJZOL5B08T CO6	Explain glycolysis, Kreb's cycle, glycogenesis, glycogenolysis, gluconeogenesis, HMP pathway; amino acid and fatty acid oxidation and oxidative phosphorylation.
SJZOL5B08T CO7	Describe the mechanism of DNA duplication and the role of enzymes.
SJZOL5B08T CO8	Understand the concept of gene and gene expression; genetic code and wobble hypothesis.
SJZOL5B08T CO9	Explain the mechanism of transcription and post-transcriptional modification of hnRNA.
SJZOL5B08T CO10	Enumerate the processes of translation and post-translational modification and targeting of peptides.
SJZOL5B08T CO11	Describe the regulation of trp operon, C-value, repetitive DNA, satellite DNA, selfish DNA, overlapping genes, pseudogenes, cryptic genes, transposons and retrotransposons.
SJZOL5B08T CO12	Explain the structure and life cycle of bacteriophages and the gene transfer mechanisms in bacteria.

SJZOL5B09T: METHODOLOGY IN SCIENCE, BIOSTATISTICS AND BIOINFORMATICS

SJZOL5B09T CO1	Explain science, its importance, disciplines and the major steps in formulating a hypothesis, various hypothesis models, theory, law and importance of animal models, simulations and virtual testing.
SJZOL5B09T CO2	Illustrate the principles and procedures in designing experiments and elaborate the requirements for carrying out experiments.
SJZOL5B09T CO3	Describe the ethical concerns in practicing science.
SJZOL5B09T CO4	Understand the Scope and role of statistics; methods and procedures of sampling; Construction of tables, charts and graphs.
SJZOL5B09T CO5	Calculate central tendency and measures of dispersion and application of its knowledge on hypothesis testing as well as in problem solving.
SJZOL5B09T CO6	Enumerate major biological databases and database search engines.
SJZOL5B09T CO7	Perform DNA and protein sequence analysis, including sequence alignment and sequence similarity search using BLAST, FASTA, CLUSTAL W and CLUSTAL X.
SJZOL5B09T CO8	Understand molecular phylogenetics and tools and methods for construction of phylogenetic tree.
SJZOL5B09T CO9	Explain genome sequencing technologies, functional genomics, proteomic technologies and molecular docking and drug design.

SJZOL5D01T: REPRODUCTIVE HEALTH AND SEX EDUCATION

SJZOL5D01T CO1	Understand the reproductive health, and importance of sex education for teen and youth.

SJZOL5D01T CO2	Explain the chromosomal mechanism of sex determination and sex chromosomal anomalies.
SJZOL5D01T CO3	Describe the structural and functional features of human reproductive system, fertilization, implantation, pregnancy, gestation, placenta, parturition and lactation.
SJZOL5D01T CO4	Explain the scope of reproductive technologies in infertility management and the assisted reproductive techniques.
SJZOL5D01T CO5	Understand the different methods of prenatal diagnosis and associated ethical issues.
SJZOL5D01T CO6	Describe the different methods of fertility control.
SJZOL5D01T CO7	Understand the symptoms, mode of transmission, diagnosis and treatment of different sexually transmitted diseases and their socio-economic dimensions.
SJZOL5D01T CO8	Describe sexual orientation, sexual abuse and myths.
SJZOL5D01T CO9	Understand the ethical aspects of sex.

SJZOL5D02T: NUTRITION, HEALTH AND HYGIENE

SJZOL5D02T CO1	Describe the basic concepts in nutrition.
SJZOL5D02T CO2	Demonstrate the understanding of nutrients and energetics.
SJZOL5D02T CO3	Enumerate the vitamins and minerals and their roles in human nutrition.
SJZOL5D02T CO4	Explain balanced diet, RDA and factors that affect it and meal planning for various categories of people.
SJZOL5D02T CO5	Illustrate diet therapy and dietary management of various conditions.
SJZOL5D02T CO6	Explain health, fitness and hygiene.
SJZOL5D02T CO7	Describe the major communicable, non-communicable, congenital and sexually transmitted human diseases.
SJZOL5D02T CO8	Perform first aid management in emergency situations.

SJZOL5D03T: APPLIED ZOOLOGY

SJZOL5D03T CO1	List and describe the pests and vectors, their habits, damages and control measures and mechanisms of insect pest management.
SJZOL5D03T CO2	Develop personal, academic, employability and self-management skills in apiculture, lac-culture, sericulture and vermiculture.
SJZOL5D03T CO3	Demonstrate an understanding of the various strategies in pisciculture, prawn culture, mussel culture and pearl culture.
SJZOL5D03T CO4	Recognize the significance of poultry farming and its economic implications in rural India.
SJZOL5D03T CO5	Reviews Indian breeds of cattle and goats and the strategies in their breeding.
SJZOL5D03T CO6	Recognize the significance of parasitic mode of life and their implications in human health.

SJZOL6B10T: PHYSIOLOGY AND ENDOCRINOLOGY

SJZOL6B10T CO1	Describe the regulation of digestion in man, nutrition in pregnancy and infancy, nutritional disorders, balanced diet, starvation, fasting and obesity.

SJZOL6B10T CO2	Understand the mechanism of transport and exchange of respiratory gases and its neurophysiological control and physiological problems in diving mammals, new-born and aged individuals.
SJZOL6B10T CO3	Describe functions, composition, coagulation, transfusion, agglutination and clinical analysis of blood, haemoglobinopathies, types of heart and common cardio-vascular problems.
SJZOL6B10T CO4	Understand the osmoregulatory mechanisms in hormonal control and common renal disorders in man.
SJZOL6B10T CO5	Explain the ultrastructure of skeletal energetics of muscle contraction.
SJZOL6B10T CO6	Understand the different types of nerve cells, glial cells and nerve fibres, and the mechanism of nerve impulse transmission.
SJZOL6B10T CO7	Understand the types, physiology and significance of bioluminescence, and the structure and functions of electric organs.
SJZOL6B10T CO8	Describe invertebrate neuro-endocrine organs and hormones, vertebrate endocrine glands, their hormones and functions.
SJZOL6B10T CO9	Understand the concept of neurosecretion and the mode of action of peptide and steroid hormones.

SJZOL6B11T: REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY

SJZOL6B11T CO1	Explain the reproductive strategies in invertebrates and vertebrates and structural and functional features of human reproductive system.
SJZOL6B11T CO2	Describe process of fertilization, pregnancy, gestation, placentation, parturition and lactation in humans.
SJZOL6B11T CO3	Explain the scope of reproductive technologies in infertility management; prenatal diagnostic techniques and methods of fertility control.
SJZOL6B11T CO4	Understand the phases and theories of development, and classification of eggs.
SJZOL6B11T CO5	Enumerate the types of cleavage, arrangement of blastomeres, germ layers and their derivatives, cell lineage in Planocera and different types of blastula.
SJZOL6B11T CO6	Illustrate the early developmental process of egg in Amphioxus, frog, chick and man.
SJZOL6B11T CO7	Explain the basics of cell differentiation and its genetic control, stem cells and applications of stem cell technology.
SJZOL6B11T CO8	Describe parthenogenesis, types, and significance.
SJZOL6B11T CO9	Explain fate map construction, Spemann's constriction experiments on amphibian embryos, organizers in development, embryonic induction, gradient experiments in sea urchin eggs, cloning experiments in sheep and teratogenesis.

SJZOL6B12T: ENVIRONMENTAL AND CONSERVATION BIOLOGY

SJZOL6B12T CO1	Explain the structure of ecosystem and its functioning through energy flow and nutrient cycling.
SJZOL6B12T CO2	Enumerate biogeochemical cycles and understand the concept of limiting factors.
SJZOL6B12T CO3	Describe the ecology of population, community and habitat as a self-regulating system.

SJZOL6B12T CO4	Understand various types of population interactions and appraise the co-evolution.
SJZOL6B12T CO5	Comprehend the diverse environmental and sustainability challenges ranging from local to global and the establishment of perfect harmony between economic development, social issues and environmental conservation.
SJZOL6B12T CO6	Enumerate the several tools and techniques employed for studies on populations, communities and ecosystems.
SJZOL6B12T CO7	Understand the threats to biodiversity, and strategies adapted for the conservation of diversity of organisms.
SJZOL6B12T CO8	Describe the various international strategies for conserving biodiversity.
SJZOL6B12T CO9	Describe the toxic chemicals, their toxicity levels and the health hazards caused by them.

SJZOL6B13T: ETHOLOGY, EVOLUTION AND ZOOGEOGRAPHY

SJZOL6B13T CO1	Describe the patterns and mechanisms of animal behaviour.
SJZOL6B13T CO2	Illustrate biological rhythms and the chemical basis of communication.
SJZOL6B13T CO3	Identify major evolutionary transitions over time, and explain the tools and evidences that support current hypotheses of the history of life on earth.
SJZOL6B13T CO4	Describe the evidences for evolution and its required corollaries.
SJZOL6B13T CO5	Explain the various theories of evolution.
SJZOL6B13T CO6	Describe the mechanisms by which evolution occurs.
SJZOL6B13T CO7	Recognize the significance of reproductive isolation in reducing gene flow between populations, biological and morphological species concepts and distinguish between prezygotic and postzygotic barriers to reproduction.
SJZOL6B13T CO8	Review the events in human evolution.
SJZOL6B13T CO9	Explain ecological and historical foundations for understanding the distribution and abundance of species, and their changes over time and comprehend the basic principles of biogeography as a discipline.

SJZOL6B14 (E) 01T: HUMAN GENETICS AND GENDER STUDIES

SJZOL6B14(E)01TCO1	Explain the characteristics, nomenclature and classification of human chromosomes; non-disjunction of chromosomes and the phenotypic effects of chromosome structural modifications.
SJZOL6B14(E)01TCO2	Understand the construction of pedigrees of Sex-linked and Autosomal dominant and recessive gene mutation disorders and presentation of molecular genetic data in pedigrees.
SJZOL6B14(E)01TCO3	Enumerate the major autosomal and X-linked dominant and recessive human genetic disorders.
SJZOL6B14(E)01TCO4	Explain multifactorial inheritance.
SJZOL6B14(E)01TCO5	Understand the basic genetics of reproduction and development.
SJZOL6B14(E)01TCO6	Explain the major genetic services and genetic counselling.
SJZOL6B14(E)01TCO7	Describe human genetic variations, archaeogenetics of South Asia and genetic origin of Indian populations.
SJZOL6B14(E)01TCO8	Understand the basics of sex, gender, queer perspective and eco-feminism.

SJZOL6B14 (E) 02T: AQUACULTURE, ANIMAL HUSBANDRY AND POULTRY SCIENCE

SJZOL6B14(E)02TCO1	Explain aquaculture and the process of prawn, mussel and pearl culture.
SJZOL6B14(E)02TCO2	Illustrate the methodology of pisciculture and understand common culture fishes and ornamental fishes.
SJZOL6B14(E)02TCO3	Identify major fishing crafts and gear and enumerate fish utilization and preservation.
SJZOL6B14(E)02TCO4	Enumerate the poultry rearing techniques and understand major breeds of fowl.
SJZOL6B14(E)02TCO5	Understand the major breeds of cattle, cattle feeds and diseases of cattle.
SJZOL6B14(E)02TCO6	Illustrate the steps in dairy processing and identify the role of dairy development in rural economy.

SJZOL6B14 (E) 03T: APPLIED ENTOMOLOGY

SJZOL6B14(E)03TCO1	Describe the branches of entomology and insect services.
SJZOL6B14(E)03TCO2	Identify and explain the life-cycle, damages and control of insect pests of crop plants and domestic animals.
SJZOL6B14(E)03TCO3	Review the insect control strategies.
SJZOL6B14(E)03TCO4	List and describe the useful insects and the products derived from bees, silkworms and lac insects.

SJZOL6B15P: ZOOLOGY CORE PRACTICAL – II

SJZOL6B15P CO1	Perform experiments in cell biology and genetics including demonstration of Barr body in buccal epithelial cells of man, polytene chromosome in the salivary glands of D. melanogaster larva, mitotic division in onion root tip cells, micrometry of microscopic objects, prepare whole mounts of microscopic objects, and calculate mitotic and metaphase index from slides.
SJZOL6B15P CO2	Enumerate the inheritance of major human genetic traits, pedigree chart, normal and abnormal human karyotypes, phenotypic differences of male and female Drosophila and solve problems on Monohybrid, dihybrid crosses, blood groups and sex-linked inheritance.
SJZOL6B15P CO3	Understand electrophoresis, PCR, Northern blotting, Southern blotting and Western blotting, DNA sequencing and fingerprinting and isolation of genomic DNA.
SJZOL6B15P CO4	Perform gram staining and preparation of culture media for bacteria and demonstrate bacterial motility by standard laboratory protocols.
SJZOL6B15P CO5	Understand the detection of human blood groups and organs of immune system.
SJZOL6B15P CO6	Perform standard biochemical tests for the detection of reducing and non-reducing sugars, polysaccharides, proteins and lipids.
SJZOL6B15P CO7	Understand the staining of mitochondria, tissue homogenization and isolation of nuclei, effect of colchicine on cell division, extraction of DNA and polyacrylamide and agarose gel electrophoresis.
SJZOL6B15P CO8	Solve basic problems in biostatistics and bioinformatics.

SJZOL6B16P: ZOOLOGY CORE PRACTICAL – III

SJZOL6B16P CO1	Perform standard laboratory experiments for the estimation of Hb, presence of hCG/abnormal constituents in urine, detection of blood pressure, bleeding and clotting time and identification of formed elements in blood.
SJZOL6B16P CO2	Identify selected stages in the development of frog and chick and chosen larval forms of invertebrates and vertebrates.
SJZOL6B16P CO3	Carry out experiments of laboratory standards to estimate water quality parameters including, dissolved Oxygen, Carbon dioxide, hardness and pH; determination of adulteration of selected food items and identify marine planktons and soil organisms.
SJZOL6B16P CO4	Demonstrate the behavioural response of earthworm/dipteran larva to selected stimuli.
SJZOL6B16P CO5	Describe homologous, analogous and vestigial organs, connecting links, adaptive radiation and evolution of man.
SJZOL6B16P CO6	Illustrate zoogeographical realms, Wallace line, Weber line, Wallacea and the distribution of Peripatus, lung fishes, Sphenodon, monotremes and marsupials.
SJZOL6B16P CO7	Identify the normal and selected abnormal human karyotypes and inheritance of chosen traits from pedigree charts/describe ornamental and other culture fishes/ describe chosen beneficial and harmful insects.

B.Sc. ZOOLOGY: COMPLEMENTARY COURSE

SJZOL1C01T: ANIMAL DIVERSITY AND WILDLIFE CONSERVATION

SJZOL1C01T CO1	Describe the general characters of protists and salient features of phylum – Rhizopoda, Ciliophora, Dinoflagellata and Apicomplexa.
SJZOL1C01T CO2	Enumerate the salient features and examples of Phylum – Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Onychophora, Mollusca and Echinodermata, and the structural organization of Peneaus sp.
SJZOL1C01T CO3	Describe the characteristic features and classification of phylum Chordata with examples and, structural organization of Oryctolagus cuniculus.
SJZOL1C01T CO4	Explain levels of biodiversity, threats to biodiversity, biodiversity hotspots, importance and strategies for conservation of wildlife and sustainable development.

SJZOL2C02T: ECONOMIC ZOOLOGY

SJZOL2C02T CO1	Explain parasitism and the major protist, cestode, trematode and nematode parasites of man and major insect vectors of human diseases and their control.

SJZOL2C02T CO2	Understand major beneficial and harmful insects, damages caused to host plants and their control measures.
SJZOL2C02T CO3	Understand pisciculture, prawn, mussel and pearl culture.

SJZOL3C03T: PHYSIOLOGY AND ETHOLOGY

SJZOL3C03T CO1	Describe the structure of plasma membrane and the various trans-membrane transport mechanisms.
SJZOL3C03T CO2	Enumerate the constituents of normal diet and the mechanism of digestion and absorption of carbohydrates, proteins and lipids and the regulation of gastrointestinal function.
SJZOL3C03T CO3	Explain the mechanism of transport of respiratory gases, control of respiration, respiratory problems and artificial ventilation.
SJZOL3C03T CO4	Explain the structure and working of human heart and mechanism of regulation of heart beat; constituents of human blood and blood transfusion and cardiovascular problems.
SJZOL3C03T CO5	Illustrate the structure of human kidney, the mechanism of urine formation, hormonal control of kidney function and kidney disorders; osmoregulation and urea cycle.
SJZOL3C03T CO6	Enumerate the structure of myofibrils and myofilaments; muscle contractile and regulatory proteins and mechanism of muscle contraction.
SJZOL3C03T CO7	Explain different types of nerve cells and glial cells, maintenance of resting membrane potential, generation and propagation of action potential and synaptic transmission.
SJZOL3C03T CO8	Describe innate behaviour, learned behaviour, patterns of behaviour and factors that affect behaviour.
SJZOL3C03T CO9	Enumerate biological rhythms, communication in animals and social organization in mammals.

SJZOL4C04T: GENETICS AND IMMUNOLOGY

SJZOL4C04T CO1	Describe human karyotype, chromosomal anomalies and polygenic inheritance.
SJZOL4C04T CO2	Explain the mechanisms of sex determination.
SJZOL4C04T CO3	Enumerate the concept of genes, gene expression, genetic code, transcription and translation.
SJZOL4C04T CO4	Illustrate the mechanism of recombinant DNA technology and its practical applications.
SJZOL4C04T CO5	Explain the types of cancer, causes of transformation and characteristics of transformed cells.
SJZOL4C04T CO6	Identify the cells and organs of immune system, antigens and antibodies.
SJZOL4C04T CO7	Enumerate antigen-antibody interaction, generation of B-cell and T-cell response and major immunotechniques.
SJZOL4C04T CO8	Explain primary and secondary immunodeficiency diseases, autoimmune diseases, vaccination and vaccines.

SJZOL4C05P: ZOOLOGY COMPLEMENTARY PRACTICAL

SJZOL4C05P CO1	Identify the salient features of the phylum; taxonomic position, habit, habitat, adaptations/importance of selected protists, non-chordates and chordates.
SJZOL4C05P CO2	Describe major human parasites and economically important insects, molluscs and fishes.
SJZOL4C05P CO3	Perform detection of human blood groups and prepare human blood smear as per laboratory standards; mounting of specialized organs of selected non-chordates and chordates, and demonstrate the presence of biomolecules in samples by standard laboratory protocols.
SJZOL4C05P CO4	Illustrate the normal and selected abnormal human karyotypes and mode of inheritance of selected human genetic disorders and perform the dissection of earthworm and sardine to demonstrate the alimentary canal and Penaeus to demonstrate the nervous system.