

DUTIKA SAHU COLLEGE, LAIDA SAMBALPUR

DEPARTMENT OF ZOOLOGY

Programme Outcome

PO NO	PO STATEMENTS: On successful completion of this program, students will be able to -	
PO-1	This program is one of the fundamental unit of basic sciences studied at undergraduate level to learn and know about different biological systems, their coordination and control as well as evolution, behavior and biological roles of the animals in the ecosystem.	
PO-2	This program make students able to qualitatively and quantitatively analyze evolutionary parameters using various methods of bioinformatics and computational tools used in modern sciences that provide them with opportunities to explore different career avenues	
PO-3	Practical and theoretical skills gained in this program will be helpful to serve in industries or may opt for establishing their own industrial unit or in designing different public health strategies for social welfare.	
PO-4	This program has been designed to provide in-depth knowledge of applied subject ensuring the inculcation of employment skills so that students can make a career and become an entrepreneur in diverse fields.	

Programme Specific Outcome

PSO NO	PSO STATEMENTS: On successful completion of this program ,students will be able to -	
PSO-1	Understand distribution or inheritance of different traits and diseases among populations, their ethnicity and correlate with contemporary and modern techniques like genomics, metagenomics, genome editing and molecular diagnostic tools.	
PSO-2	Acquire practical skills in biotechnology, biostatistics, bioinformatics and molecular biology can be used to pursue career as a scientist in drug development industry in India or abroad.	
PSO-3	Identify the relationship or synchronization between structure and function at all levels: molecular, cellular, and evolution based on their morphological, anatomical and systemic organization that provide students professional advantages in teaching, research and taxonomist jobs in various government organizations.	

PSO-4	Acquired skills in diagnostic, testing, haematology, histopathology, staining procedures etc. used in clinical and research laboratories will provide them opportunity to work in diagnostic or research laboratory, Animal Behaviourist, Conservationist, Wildlife Biologist, Wildlife Educator, Zoology faculty, Forensic experts etc.	
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Course Structure of U.G. Zoology Honours

Semester	Course	Course Name	Credit	Total marks
Semester-I	AECC I	AECC I	4	100
	Core I (Theory)	Non-chordates I: Protista to Pseudocoelomates	4	75
	Core I (Practical)	Non-chordates I: Protista to Pseudocoelomates	2	25
	Core II (Theory)	Principles of Ecology	4	75
	Core II (Practical)	Principles of Ecology	2	25
	GE 1 (Theory)	GE 1 (Theory)	4	75
	GE I (Practical)	GE I (Practical)	2	25
Semester-II	AECC 2	AECC 2	4	100
	Core III (Theory)	Non chordates II: Coelomates	4	75
	Core III (Practical)	Non chordates II: Coelomates	2	25
	Core IV (Theory)	Cell biology	4	75
	Core IV (Practical)	Cell biology	2	25
	GE II (Theory)	GE II (Theory)	4	75
	GE II (Practical)	GE II (Practical)	2	25
Semester-III	Core V (Theory)	Diversity of Chordates	4	75
	Core V (Practical)	Diversity of Chordates	2	25
	Core VI (Theory)	Physiology: Controlling and Coordinating systems	4	75
	Core VI (Practical)	Physiology: Controlling and Coordinating systems	2	25
	Core VII (Theory)	Fundamentals of Biochemistry and Microbiology	4	75
	Core VII (Practical)	Fundamentals of Biochemistry and microbiology	2	25
	SEC 1	SEC 1	4	100
	GE III (Theory)	GE III (Theory)	4	75

	GE III (Practical)	GE III (Practical)	2	25
Semester-IV	Core VIII (Theory)	Comparative anatomy of Vertebrates	4	75
	Core VIII(Practical)	Comparative anatomy of Vertebrates	2	25
	Core IX (Theory)	Physiology: Life Sustaining Systems	4	75
	Core IX (Practical)	Physiology: Life Sustaining Systems	2	25
	Core X (Theory)	Biochemistry of Metabolic Processes	4	75
	Core X (Practical)	Biochemistry of Metabolic Processes	2	25
	SEC 2	SEC 2	4	100
	GE IV (Theory)	GE IV (Theory)	4	75
	GE IV (Practical)	GE IV (Practical)	2	25
Semester-V	Core XI (Theory)	Molecular Biology	4	75
	Core XI (Practical)	Molecular Biology	2	25
	Core XII (Theory)	Principles of Genetics	4	75
	Core XII (Practical)	Principles of Genetics	2	25
	DSE I (Theory)	DSE 1	4	75
	DSE I (Practical)	DSE 1	2	25
	DSE II (Theory)	DSE II	4	75
	DSE II (Practical)	DSE II	2	25
Semester- VI	Core XIII (Theory)	Developmental Biology	4	75
	Core XIII(Practical)	Developmental Biology	2	25
	Core XIV (Theory)	Evolutionary Biology	4	75
	Core XIV(Practical)	Evolutionary Biology	2	25

	DSE III (Theory)	DSE III	4	75
	DSE III (Practical)	DSE III	2	25
	DSE IV (Theorywith Practical /Project)	Project/ Economic Zoology	6	100
Total			148	2600

COURSE OUTCOMES

SEMESTER	PAPER CODE	SUBJECT	CREDITS
I	CORE-I	NON-CHORDATES I: PROTISTA TO PSEUDOCOELOMATE S	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Acquire knowledge about general characteristics , classification , locomotion and reproduction in protista along with their life cycle and pathogenicity. They will also have an idea about canal system and spicules present in phylum porifera with their general characteristics and classification.	
CO-2	Study about general characteristics and classification of coelenterates, corals and coral reefs and ctenophore along with their evolutionary significance	
CO-3	Brief understanding about general characteristics and classification of phylum platyhelminthes alongwith their lifecycle and evolutionary significance.	
CO-4	Brief understanding about general characteristics, classification, lifecycle and evolutionary significance of phylum nemathelminthes alongwith parasitic adaption in helminthes.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
I	CORE-II	Principles of Ecology	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Acquire basic knowledge about Ecosystem, Types of Ecosystem , food chain , food web, Bio-geochemical cycle and importance of conservation and management of wildlife in Ecosystem.	
CO-2	Learn about basic attributes of Population, Its growth patterns, interactions and regulations in ecosystem.	
CO-3	Understand characteristics of community and Ecological Succession with different theories pertaining to climax community.	
CO-4	Apply methods of Biometry in sampling process , graphical representation of Data , interpretation of Data and in formulation and testing of Hypothesis in biology.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
II	CORE-III	Non- Chordates II: Coelomates	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about General characteristics, classification, Metamerism and method of excretion in phylum Annelida with evolution of coelom.	
CO-2	Know about General characteristics, classification, vision respiration and metamorphosis in phylum Arthropoda with basic idea about Social life in Honey bees and Termites. It also provide knowledge about general characteristics and evolutionary significance of phylum Onychophora.	
CO-3	Understand General characteristics , classification , Respiration , Torsion and Detorsion process of phylum Mollusca with evolutionary significance of its Trochophore Larva.	
CO-4	Know about General characteristics , classification, Water vascular System and Larval forms of phylum Echinodermata and its affinities with Chordates.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
II	CORE-IV	CELL BIOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse basic concepts of cell with an idea about Virus, viroids, Mycoplasma and Prions. This also explains about various models of plasma membrane and different methods of transport across it.	
CO-2	Understand structural and functional aspects of Cytoskeleton and Endomembrane System such as Endoplasmic Reticulum, Golgi apparatus , Lysosomes in cell.	
CO-3	Know structure ,Semi Autonomous nature, Endosymbiotic Hypothesis , chemiosmotic Hypothesis of mitochondria with mitochondrial respiratory chain. It also explain structure and function of peroxisomes in cell.	
CO-4	Learn structural and functional aspects of Nucleus , Nucleolus, chromosome and cell division and its regulations with basic idea about role of GPCR and c AMP.	

SEMESTER	PAPER	SUBJECT	CREDITS
III	CORE-V	Diversity and distribution of Chordates	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse General characteristics, classification, origin of Chordates and protochordates with their different larval forms and retrogressive metamorphosis in Urochordates.	
CO-2	Understand General characteristics, classification, pattern of migration, parental care and Evolutionary significance of Agnatha , Pisces and Amphibia in Chordates.	
CO-3	Compare General characteristics and classification of Reptiles and Birds with learning of special features such as Biting mechanism in snakes, Affinities of Sphenodon, Archaeopteryx as connective link, Flight adaptation and Migration in Birds.	
CO-4	Learn General characteristics and classification of Mammals in different Zoogeographical realms with reference to their Locomotory appendages and different theories such as Plate tectonic and Continental Drift theory pertaining to its distribution.	

III	CORE-VI	Physiology: Controlling and Coordinating Systems	6
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CO NO	CO STATEMENTS: On successful completion of this course ,students will be able to -	
CO-1	Analyse Structure , Location ,Classification and Functions of Epithelial Tissue , Connective Tissue , Muscular Tissue , Nervous tissue , Bones and Cartilage with process of Ossification, Bone Growth and resorption.	
CO-2	Understand Structure and Types of Muscles with mechanism of molecular and chemical basis of Muscle contraction and Neurons with Origin of Action potential across nerve fibres and formation of types of synapses , mechanism of synaptic transmission and Neuromuscular Junction. They will also have an idea of Reflex Action and Physiology of vision and hearing in man.	
CO-3	Compare Histology, physiology and Methods of Contraception in male and female reproductive system with basic idea about Hypothalamus –Pituitary and Gonadal Axis , Ovarian Cycle and Placental hormones.	
CO-4	Learn Histology, Location, Secretion , Mechanism of Hormone action and Function of different Hormones secreted by different endocrine glands in vertebrates such as Hypothalamus, Pituitary, Thyroid , Parathyroid , Pancreas , Adrenal in vertebrates.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
III	CORE-VII	Fundamentals of Biochemistry and microbiology	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Structure and Biological importance of Monosaccharides, Disaccharides , Polysaccharides of Carbohydrates and Saturated and unsaturated fatty acids, Triacylglycerol, phospholipids, Glycolipids and steroids of Lipids.	
CO-2	Understand Structure , classification , properties and importance of Amino acids , immunoglobulins and Proteins with their level of organization , Denaturation and renatuaration state.	
CO-3	Compare Structure and types of DNA and RNA with basic idea about denaturation and renaturation , hypo-hyperchromaticity and complementarity of DNA.	
CO-4	Learn Nomenclature , classification and mechanism of action of Enzymes with derivation of Michaelis – menten Equation, concept of Km and Vmax, Lineweaver Burk plot Allosteric enzyme, Enzyme inhibition and regulation of Enzyme action.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
IV	CORE-VIII	Comparative Anatomy of Vertebrates	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Structure , functions and derivatives of Integument , Axial and Appendicular Skeleton , Jaw suspensorium , Visceral Arches in vertebrates.	
CO-2	Understand Structure,Types and function of Digestive , Respiratory and Accessory respiratory organs in vertebrates.	
CO-3	Compare Structure , function and evolution of circulatory , urinogenital system and Mammalian uterus in vertebrates.	
CO-4	Learn comparative account of Nervous system and Sense organs in vertebrates.	

IV	CORE-IX	Physiology: Life Sustaining Systems	6
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CO NO	CO STATEMENTS: On successful completion of this course ,students will be able to -	
CO-1	Learn about structural organization of alimentary canal, Mechanical and chemical Digestion of Food , Absorption of food and hormonal control of secretion of enzymes in Gastro-intestinal tract.	
CO-2	Understand structure of respiratory system, Mechanism of Respiration , Respiratory volumes and capacities , Transport of Oxygen and Carbon Dioxide in Blood , Respiratory Pigments , Dissociation curves and factors influencing it , Carbon monoxide Poisoning and Control of Respiration in man.	
CO-3	Compare Structure , function , mechanism of Urine formation and regulation of water balance and acid – base in Kidney with the study of structure , components and functions of Blood with knowledge of Haemoglobin , Haemostasis , Haemopoiesis , Mechanism of blood clotting system, Blood Groups , Rh Factor , ABO and MN system.	
CO-4	Analyse Structure ,working of Mammalian Heart with origin and conduction of cardiac impulses ,Cardiac cycle, Cardiac output and its regulation, Frank starling Law ,Nervous and chemical regulation of Heart rate , Electrocardiogram , Blood pressure and its regulation	

IV	CORE-X	Biochemistry of Metabolic Processes	6
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CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn basic idea about Metabolism such as Catabolism vs Anabolism, Stages of catabolism, Compartmentalization of metabolic pathways, Shuttle systems and membrane transporters; ATP as "Energy Currency of cell"; coupled reactions; Use of reducing equivalents and cofactors; Intermediary metabolism and regulatory mechanisms.	
CO-2	Understand metabolism of Carbohydrates through study of reactions and regulation of glycolysis, Citric acid cycle, Phosphate pentose pathway, Gluconeogenesis, Glycogenolysis and Glycogenesis in cell.	
CO-3	Compare metabolism of Lipids through study of β -oxidation and omega -oxidation of saturated fatty acids with even and odd number of carbon atoms; Biosynthesis of palmitic acid; Ketogenesis and protein metabolism by Catabolism of amino acids: Transamination, Deamination, Urea cycle; Fate of C-skeleton of Glucogenic and Ketogenic amino acids in cell.	
CO-4	Analyse Redox systems; Review of mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System in cell.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
V	CORE-XI	MOLECULAR BIOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Salient features of DNA and RNA, Watson and Crick model of DNA, cot curves, denaturation and renaturation of DNA, Mechanism of DNA Replication in prokaryotes and eukaryotes, RNA priming, replication of telomeres, Pyrimidine dimerization and mismatch repair	
CO-2	Understand Mechanism of transcription and translation in prokaryotes and eukaryotes, and their regulations with Inhibitors of protein synthesis and Genetic code.	
CO-3	Compare Structure of Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing process in cell.	
CO-4	Learn Principles of transcriptional regulation in prokaryotes from lac operon and trp operon; Transcription regulation in eukaryotes with proces s of Gene silencing and RNA interference.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
V	CORE-XII	Principles of Genetics	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Principles of inheritance, Incomplete dominance , co-dominance, Multiple alleles, Lethalalleles, Epistasis, Linkage and Molecular mechanisms of crossing over including models of recombination, Recombination frequency as a measure of linkage intensity, Two factor and three factor crosses, Interference and coincidence and Somatic cell hybridization.	
CO-2	Understand Types of gene mutations and chromosomal aberrations, Molecular basis of mutations in relation to UV light and chemical mutagens; Detection of mutations: CLB method and attached X method.	
CO-3	Compare Chromosomal mechanisms of sex determination in <i>Drosophila</i> and Man; Criteria for extra- chromosomal inheritance, Antibiotic resistance in <i>Chlamydomonas</i> , Mitochondrial mutationsin <i>Saccharomyces</i> , Infective heredity in <i>Paramecium</i> and Maternal effects.	
CO-4	Learn process of recombination through Conjugation, Transformation, Transduction in Bacteria with Transposons in bacteria, human, Ac-Ds elements in maize and P elements in <i>Drosophila</i> .	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
VI	CORE-XIII	DEVELOPMENTAL BIOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Historical perspective and basic concepts of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division with elaborate learning of Gametogenesis, Spermatogenesis, Oogenesis and Fertilization in vertebrates.	
CO-2	Recognise Planes and patterns of cleavage; Types of Blastula; Fate maps ; Early development of frog and chick with Embryonic induction and organizers.	
CO-3	Understand Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo , Placenta and its types in human .	
CO-4	Learn about Changes, hormonal regulations in amphibians and insects during metamorphosis; different modes of Regeneration; Ageing ; Agents of teratogenesis and their effects on embryonic development; In vitro fertilization, Stem cell and Amniocentesis.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
VI	CORE-XIV	EVOLUTIONARY BIOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Analyse Life's Beginnings : Chemogeny, RNA world, Biogeny, Evolutionary concept: Lamarckism, Darwinism, Neo-Darwinism. Evidences of Evolution from types of Fossil record ,Sources of variations, types and their role in evolution , types of extinction with detailed example of K-T extinction.	
CO-2	Evaluate Population genetics by using Hardy-Weinberg Law ;concept of fitness and selection coefficient of natural selection, Mechanism of Genetic Drift with founder's and bottleneck phenomenon; Role of Migration and Mutation in evolution.	
CO-3	Understand Product of evolution: Micro evolutionary changes ,inter-population variations, clines, races, Species concept, modes of speciation—allopatric, sympatric, Parapatric ,Adaptive radiation.	
CO-4	Learn about Origin and evolution of man from phylogeny of <i>Dryopithecus</i> leading to <i>Homo sapiens</i> by molecular analysis with construction and interpretation of Phylogenetic tree done by Multiple sequence alignment.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
V	DSE -I	ANIMAL BEHAVIOUR AND CHRONOBIOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about Origin and history of Ethology; Brief profiles of Karl von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen; Behaviour as a basis of evolution with Instinct, Stimulus filtering, Sign stimuli and Code breakers in animals.	
CO-2	Analyse Stereotyped Behaviours (Orientation, Reflexes); Individual behavioural patterns- Instinct vs. Learnt Behaviour; Associative learning - classical and operant conditioning, Habituation and Imprinting behavior in animals.	
CO-3	Understand Social Behaviour , Communication ,Altruism , society of Honey bee ,Sexual Behaviour and Sexual conflict in parental care in animals.	
CO-4	Learn about Historical developments in chronobiology; Types and characteristics of biological rhythms: Short- and Long-term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Circannual rhythms and Role of melatonin in animal behaviour.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
V	DSE -II	IMMUNOLOGY	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about Early theories of Immunology, Cells and organs of the Immune system. Anatomical barriers, Inflammation innate immunity, Adaptive immunity ,Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune dysfunctions with reference to Rheumatoid Arthritis and tolerance, AIDS.	
CO-2	Analyse Antigenicity and immunogenicity, Adjuvants and haptens, B and T-Cell epitopes, Immunoglobulins: Structure and functions of different classes of immunoglobulins, Antigen antibody interactions, Immunoassays (ELISA-Direct, Indirect, Competitive, Sandwich and RIA).	
CO-3	Understand Structure and functions of MHC molecules. Endogenous and exogenous pathways of antigen processing and presentation; Cytokines -Properties and functions of cytokines, Complement System -Components and pathways of complement activation.	
CO-4	Explain Gell and Coombs' classification of hypersensitivities ,Vaccines and Advances in vaccine production.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
VI	DSE –III	FISH AND FISHERIES	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about Systematic classification of native/exotic fishes, Types of fins and their modification; Locomotion in fishes; Hydrodynamics; Types and Use of scales in classification and determination of age of fish; Gills and gas exchange; Swim bladder; Reproductive strategies ;Electric organs; Bioluminescence; Mechanoreceptors; Schooling; Migration.	
CO-2	Analyse Inland fisheries; Marine fisheries; Environmental factors influencing the seasonal variation in fish; Fishing crafts and Gears; Depletion of Fisheries resources; Fisheries laws and regulations.	
CO-3	Understand Sustainable aquaculture; Extensive, semi-intensive and intensive culture of fish; Polyculture; Composite fish culture; brood stock management; Induced breeding of fish;Preparation and maintenance of fish aquarium. Factors affecting aquaculture.	
CO-4	Recognise Fish diseases, Processingof harvested fish, Fishery byproducts; Transgenic fish, zebrafish as a model organism in research.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
VI	DSE -IV	PROJECT WORK	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	know about identifying and classifying animals will provide students professional advantages in teaching, research and taxonomist jobs in various government organizations; including Zoological Survey of India and National Parks/Sanctuaries.	
CO-2	Inculcate skills involved in rearing fish, bees and silk moth which would help them in starting their own ventures and generating self employment making them successful entrepreneurs.	
CO-3	Acquire skills in diagnostic, testing, haematology, histopathology, staining procedures etc. used in clinical and research laboratories will provide them opportunity to work in diagnostic or research laboratory.	
CO-4	Use the evidence of comparative biology to explain how the theory of evolution offers scientific explanation for the unity and diversity of life on earth. They will be able to use specific examples to explicate how descent with modification has shaped animal morphology, physiology, life history, and behavior.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
II	GE-II	FOOD,NUTRITION AND HEALTH	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about basic concept of nutrition:-The nutrition is define as “the science of foods,nutrients and other substances. Describe the basic of nutrition,food and nutrients. Describe balance diet and its important. Relate metabolism of macronutrients with health and comprehend the functions of micronutrients with health. Apply and incorporate the principles of Basic Nutrition in practical and acquire skills to analyse various nutrients.	
CO-2	Biochemistry combines biology and chemistry to study living matter.They includes five good nutrients like-Carbohydrates,proteins,fats,vitamins and minerals,water. Nutritional Biochemistry includes a discussion of relevant aspects of physiology,food chemistry, toxicology,pediatrics and public health. Explain Macro and micro nutrients Biochemical Functions,Digestion and Absorption. Describe metabolism of carbohydrates,proteins and lipids Demonstrate practical skills on the applications of Nutritional Biochemistry.	
CO-3	Health is the most important thing in our life.Health is a positive concept that emphasizes both social and personal resources as well as physical abilities. Describe national efforts in combating malnutrition. Describe principles of diet in various diseases Demonstrate skills to counsel recommend personalized diets for various disease condition	
CO-4	Food hygiene is the practice of handling, preparing and storiong food in a way that prevents foodborne illnesses.And hygiene refers to behaviours that can improve cleanliness and lead to good health. Identify adulterants in various classes of food samples like cereals,pulses,milk,oils,spices and condiments,sugar and jiggery.	

SEMESTER	PAPER CODE	SUBJECT	CREDITS
IV	GE-IV	CELL AND MOLECULAR BIOLOGY.	6

CO NO	CO STATEMENTS:	
	On successful completion of this course ,students will be able to -	
CO-1	Learn about Prokaryotic and Eukaryotic cells, Various models of plasma membrane; Transport across Membranes,Endoplasmic Reticulum; Golgi apparatus; Lysosomes ,mitochondria in cell.	
CO-2	Recognise Structure of nucleus; Mitosis, Meiosis, Cell cycle and its regulation in cell.	
CO-3	Understand Watson and Crick model of DNA, Structure of RNA,tRNA and Mechanism of DNA Replication in prokaryotes and eukaryotes.	
CO-4	Explain Mechanism of transcription in prokaryotes and Eukaryotes, Process of protein synthesis in prokaryotes and Eukaryotes.	

