



Programme outcomes (POs) of B.Sc.

(As per UGC Guidelines)

- P01. Disciplinary knowledge:** Students will possess a breadth and depth of disciplinary knowledge in the field of Science.
- P02. Scientific Judgment, Critical Thinking & Research:** Students will be able to analyze information objectively and make a reasoned judgment by observation, understanding and evaluation of sources, such as data, facts and link research findings to innovation and entrepreneurship.
- P03. Problem solving & Analytical Skills:** Students will be able to think logically, analyze situations and solve problems skillfully.
- P04. Environment and sustainability:** Ability to understand the issues related to environmental contexts and sustainable development
- P05. Effective Communication:** Students will be able to present ideas clearly and confidently with skills to convey with others. They will be able to evaluate primary literature, in oral and written form during seminar delivery and subsequently articulate the information.
- P06. Digital Literacy:** Acquire ability to use ICT, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.
- P07. Leadership & Team work:** Ability to work as a leader as well as in a team for group projects, field work and group activities and participate actively, in a healthy spirit
- P08. Ethical & Moral values:** Students will bear the core characters of honesty, integrity and commitment and imbibe qualities of empathy for fellow human beings.
- P09. Effective Citizenship and Social Interaction:** Students will develop tolerance and harmony towards cultural, regional, linguistic, communal, socioeconomic and other diversities and respect for national symbols of pride

Programme Specific Outcomes (PSOs)

Programme Specific Outcomes for Programmes in Life Sciences

Programmes in Life Sciences:

1. B. Sc. with Chemistry, Botany, Zoology (CBZ)
2. B. Sc. with Chemistry, Botany, Microbiology (CBMb)
3. B. Sc. with Chemistry, Zoology, Geology (CZG)
4. B. Sc. with Chemistry, Geology, Physics (CGP)

Programme Specific outcomes (PSOs)

PSO1. RECOLLECTION: Students will be able to identify the major groups flora and fauna and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics, micromolecular structures of biomolecules at cellular and molecular level.

PSO2. UNDERSTANDING: Students will be able to associate the theoretical concepts with the practical observations and draw inferences for better comprehension

PSO3. APPLICATION: Students will be able to apply the domain knowledge and present their ideas in order to extrapolate science to everyday life. Students will be able to integrate classroom knowledge with field work to develop entrepreneurial skills like Apiculture, Diagnostics etc.

PSO4. ANALYSIS: Students will gain analytical skills and research ability. This will be facilitated by making observations, collecting data in laboratory and in the field. They will be trained to analyze these results, derive conclusions and report their findings.

PSO5. EVALUATION: Students will be equipped to judge, support or critique the scientific information like global warming, forest fires, vaccine drives, oil spills etc.

PSO6. CREATION: Students will be able to design, author and present scientific ideas as presentations, popular science articles, scientific write ups and graduate research projects.

PSO7. Students will be able to use instruments independently pertaining to their domain knowledge and understand the principles of instrumentation and their application

Course Outcomes (COs) of Subject Zoology

SEMESTER-I

Paper-I, ANIMAL DIVERSITY OF NON-CHORDATE (PROTOZOA TO ANNELIDA)

COURSE CODE-(USCZOT01)

CO1: Understand the general taxonomic rules on animal classification, the principles and methods of taxonomy and the general characters of phylum Protozoa and understand the protozoan's parasites of human.

CO2: Classify the phylum Porifera & Coelenterata using examples, Understand the canal system of sponges and Polymorphism in Coelenterates.

CO3: Phylum helminthes & Annelida with taxonomic keys, and a basic idea of metamerism in Annelids and parasitic adaptations of helminthes.

Paper II- CELLBIOLOGY

COURSE CODE- (USCZOT02)

CO1: Gain knowledge on origin of cell, their structure and its functions.

CO2: Understand the molecular structure of cell with ultrastructure.

CO3: Learn about various models of plasma membrane with Fluidmosaic model and its functions.

CO4: Know about structure and functional role of various cell organelles.

CO5: Hypothesize Chromosomes Structure and functions

CO6: Understand the mechanisms of cell division and control of Cancer mechanisms.

SEMESTER-II

Paper I LIFE AND DIVERSITY OF ANIMALS–NONCHORDATES (Arthropoda to Hemichordata)

COURSE CODE-(USCZOT03)

CO1: Understand the general taxonomic rules on animal classification, the principles and methods of taxonomy and the general characters of phylum Arthropoda to Hemichordata and understand the evolutionary changes in Hemichordata

CO2: Know about various physiological systems and their function of animals from phylum Arthropoda to Hemichordata

CO3: Learn knowledge about Pearl formation and various Affinities of Balanoglossus.

PAPER-II-GENETICS AND EVOLUTION

COURSE CODE- (USCZOT04)

CO1: To know the Structural and functional aspects of Genes and Chromosomes and different Laws of Genetics

CO2: Understand Mendelian Principles and dominance and also Interaction of genes, Sex linked inheritance, extra-chromosomal inheritance

CO3: To understand concepts behind genetic disorder, gene mutations and various causes associated with inborn errors of metabolism Linkage, Crossing Over, Syndrome and Mutation.

- C04:**To know the events in History of Life with various experiments
C05:Understand the new Evolutionary Theories against Mendelism
C06:Gain the knowledge about Types of fossils and Evolution of horse
C07:Learn the Processes of Evolutionary Change and causes of extinction

SEMESTER-III

Paper I-ANIMAL DIVERSITY (CHORDATES) AND COMPARATIVE ANATOMY

COURSE CODE-(USCZOT05)

- C01:** Understand the general taxonomic rules on animal classification, the principles and methods of taxonomy and the general characters of up to order of Urochordata to Mammals
- C02:** Understand external morphology and digestive system of Urochordata, Cephalochordata, Cyclostomata.
- C03:** Gain knowledge about osmoregulation & Accessory respiratory organs in Fishes.
- C04:** Impaired the knowledge on ecological adaptations and some special features like parental care in Amphibians.
- C05:** Know about the important group of Reptiles and their anatomical and physiological features and popularized with harmful and harmless eco-friendly Reptiles.
- C06:** Make students to understand the basic information about Ornithology, Anatomical features, and special adaptations of Aves, which may be useful for developed students' career as wildlife photographers.
- C07:** Understand the basic information about mammals with special reference to its Anatomical features and significance of and maintenance of domestic Mammals.

Paper-II:PHYSIOLOGY AND BIOCHEMISTRY-I

COURSE CODE- (USCZOT06)

- C01:** Student should know about Metabolism of Carbohydrates, Protein and Lipid
- C02:** Student impart knowledge about Enzyme
- C03:** Students gain fundamental knowledge of digestive glands and their physiological role
- C04:** Student should know about need for vitamins and deficiency causes of the same and Gastro-intestinal hormones
- C05:** Understand the mechanism of digestion and absorption of proteins, carbohydrates and lipids.
- C06:** Student should understand the mechanism of respiration, exchange of gases, mechanism of Inspiration and exhalation.
- C07:** Student should compare various respiratory pigments and its role effects of smoking.
- C08:** Understand various effects of smoking and make awareness in society.

SEMESTER-IV

Paper-I:DEVELOPMENTAL BIOLOGY

COURSE CODE-(USCZOT07)

C01:Student should learn aboutclassification and Chemicalcomposition ofyolk.

C02:Illustrate cleavage, blastulation and gastrulation

C03:StudyofMorphogeneticmovementsintheearlydevelopmentofFrog.

C04: Gain the knowledge about development of Chickup to theformationof
primitivestreak andextraembryonicmembranes

C05:Understand reproductive organs, gametogenesis, fertilization and gametes

C06:Understand the process of ImplantationandPlacentation.

C07:Study the mechanismandsignificanceofapoptosis

C08:Gain knowledge about
Vitrofertilization,Semenbank,ArtificialinseminationsandContraceptives.

Paper-II:PHYSIOLOGY AND BIOCHEMISTRY-II

COURSE CODE-(USCZOT08)

C01: Understand the structure and functions of uriniferoustubule

C02: Student analyse the constituentsof urine.

C03: Gain knowledge about the structure and functionsof some endocrine glands.

C04:Understand Oestrousand menstrualcycle.

C05: Student should understand theneuron ultrastructure and their types

C06:Student should understand theUltra-structureandPropertiesof muscle

C07:Student should understand how blood circulates

SEMESTER-V

DISCIPLINE SPECIFIC ELECTIVES (DSE)CORE PAPER-XI

PAPER-III-INSECT VECTORANDDISEASES

COURSE CODE- (USCZOT11)

C01:Study the generalFeatures and morphology of insects.

C02:Study the different types of vector with host-vector relationship, causes, transmission
and adaptation

C03:Understand the general taxonomic rules on insect classification, the principles and
methods of taxonomy and the general characters of insects.

C04:Understand thedipteransasimportantinsectvectors

C05: Understand themosquito-bornediseases, their breeding and control mechanism

DISCIPLINESPECIFIC ELECTIVES (DSE) CORE PAPER - XII

PAPER - IV - AQUATIC BIOLOGY

COURSE CODE - (USCZOT12)

C01: Understand the history of Parasitology and Host-Parasite Relationship

C02: Student impart the knowledge about the life cycle of parasitic protozoan and its Pathogenicity.

C03: Student impart the knowledge about the life cycle of helminthes and Nematode parasites

C04: Understand the ultrastructure of body wall of parasite, Respiration and excretion of helminthes

C05: Explain Parasitic adaptations, Morphology of Arthropod parasite and Causes and treatment of Arthropod parasite.

C06: Describe Structure, Pathogenicity and treatment of bacterial and fungal diseases in Fishes.

C07: Student gain knowledge about Pathogenicity and treatment of bacterial diseases

C08: Student gain knowledge about Zoonotic diseases and pathogenicity

C09: Student gain knowledge about Vectors born disease and their transmitters

SKILL ENHANCEMENT COURSE (SEC) PAPER I - APICULTURE

C01: Describe history of beekeeping: Definition, Beekeeping in worldwide and India

C02: Describe traditional and Modern beekeeping, Urban or backyard beekeeping.

C03: Describe types of honey bees, Lifecycle - Queen, Drone, Worker

C04: Explain basic requirements of Tools for starting beekeeping.

C05: Describe beekeeping equipment - introduction to types of beehives.

C06: Explain economic importance of honey and processing of honey

SEMESTER-VI

DISCIPLINE SPECIFIC ELECTIVES(DSE) CORE PAPER XIII

Paper I-IMMUNOLOGY

COURSE CODE- (USCZOT13)

C01:Provides basics knowledge about immune system and types of immunity

C02:Types of antigens and their properties. T cell, B cell and its proliferation

C03:Provides basics knowledge about antibodies and their properties.

C04:Understanding of types of hypersensitivity reactions

C05: Understand the antibodies and monoclonal antibodies

C06:Describe B and T cell epitopes and monoclonal antibodies

C07:Complement system, MHC's and immune responses

C08:Student impart knowledge about autoimmunity.

C09:Understanding the types of grafts, vaccines and auto immune diseases

PAPER-II ANIMAL BIOTECHNOLOGY CORE PAPER XIV

COURSE CODE- (USCZOT14)

C01:Learn the scope and concepts of Biotechnology. Know the importance of enzymes in rDNA technology

C02:Understand the principles and significance of gene therapy

C03:Knowledge about the instrumentation and techniques involved in biotechnology

C04:Gain knowledge in fermentation technology

C05:Understand the principles and applications of these technologies

C06:Understand the sterilization techniques

C07:Student imparts the knowledge about tissue culture and their use.

C08: Student develop skill in isolation methodology of DNA, RNA and proteins

C09:Provide basic knowledge about hybridoma technology for formation of monoclonal Ab.

C010:Student acquire knowledge and develop skill about artificial insemination.

SKILL ENHANCEMENT COURSE (SEC)

PAPER- II-PUBLIC HEALTH AND HYGIENE

C01:Understand the Science of Public Health and hygiene

C02:Acquire knowledge about Public Health and hygiene and its problems.

C03:Gain knowledge about the sanitary measures taken during various situations

C04:Gives knowledge about communicable diseases and the importance of house hygiene

C05:Knows the importance of hygiene and sanitation. Understands the importance of personal hygiene.