B.Sc. ZOOLOGY

Programme Specific Outcomes

PSO 1 To understand various disciplines of zoology and general biology.

PSO 2 Understand the rich diversity of organisms, their ecological and evolutionary significance and conservation strategies.

PSO 3 To acquire basic skills in the observation and study of nature , biological techniques , experimental skills and scientific investigation.

PSO 4 Acquire basic knowledge and skills in certain applied branches for self employment.

SEMESTER 1. ZY1CRT0I. CORE COURSE 1. GENERAL PERSPECTIVES IN SCIENCE & PROTISTAN DIVERSITY 36 Hrs, 2 Credits

At the end of this course the students will be able to:

CO 1 Understand the basic philosophy of science, concepts and scope.
CO 2 Understand the different levels of biological diversity through the systematic classification
CO 3 Do taxa level identification of animals
CO 4 Appreciate protistan diversity
CO 5 Understand the parasitic forms of lower invertebrates

CORE COURSE PAPER 1 PERSPECTIVES IN SCIENCE & PROTISTAN DIVERSITY (PRACTICAL) 36 Hrs 2 Credits

At the end of this course the students will be able to:

CO 1 Identify the parts of birds & butterflies using taxa identification techniques.
CO 2 Identify the order/family of insects, fishes & snakes using taxonomic keys.
CO 3 Identify protistans by their generic name and know their general characters.
CO 4 Identify protistans in a pond water sample.

SEMESTER I. ZY1CMT01.COMPLEMENTARY COURSE 1 NON CHORDATE DIVERSITY 36 Hrs, 2 Credits

CO 1 To learn the physiological and anatomical peculiarities of some invertebrate phyla through type study

CO 2 To study the distinguishing characters of non-chordates.

CO 3 Understand the economic importance of Molluscs.

CO 4 Understand the evolutionary history of Non chordates and learn the unity of life with rich diversity of organisms

CO 5 To study and understand the concepts-Metamorphosis, regeneration and autotomy

CO 6 To develop an aptitude for understanding nature and its rich bio-diversity.

SEMESTER I COMPLEMENTARY COURSE 1 - PRACTCAL NON CHORDATE DIVERSITY 36 Hrs, 1 Credit

At the end of this course the students will be able to:
CO 1 Identify the invertebrate fauna
CO 2 Differentiate the physiological and anatomical peculiarities of some invertebrate fauna through practical experiences.
CO 3 Appreciate the biota living around them.

SEMESTER 11. ZY2CRT02 CORE COURSE 11: ANIMAL DIVERSITY - NON CHORDATA 36 Hrs, 2 Credits

At the end of this course the students will be able to:

CO 1 Appreciate the diversity of life on earth
CO 2 Understand different levels of biological diversity through the systematic classification of invertebrate fauna
CO 3 Do taxa level identification of animals
CO 4 Understand the evolutionary significance of invertebrate fauna
CO 5 Have curiosity on invertebrate around us
CO 6 Understand the parasitic forms of lower invertebrates

PRACTICAL ANIMAL DIVERSITY- NON CHORDATA 36 Hrs 1 Credit

At the end of this course the students will be able to:

CO 1 Make scientific drawings of locally available invertebrate specimens belonging to different phyla.
CO 2 Identify the cross sections of hydra and fasciola.
CO 3 Dissect out the nervous systems of cockroach and prawn.
CO 4 Mount the appendages of prawn and mouth parts of different insects.
CO 5 Identify some animals of different phyla by their scientific names.
CO 6 Identify some parasitic organisms and larval forms.

SEMESTER II. ZY2CMTO2.COMPLEMENTARY COURSE 2 CHORDATE DIVERSITY 36 Hrs, 2 Credits

CO 1 Understand the basic concepts about chordates.

CO 2 Study and understand the various systems, adaptation and dentition in Mammals

CO 3 To study and understand the Scales, Fins, Arial adaptation and Dental formula.

CO 4 Understand the Classification of various classes of phylum Chordate i.e. Pisces, Amphibians Reptiles, and Aves

CO 5 Understand and study the various systems in Frog and Rabbit and learn the physiological and anatomical peculiarities through type study

CO 6 To stimulate the students' curiosity in vertebrates living associated with them.

SEMESTER II COMPLEMENTARY COURSE 2- PRACTICAL CHORDATE DIVERSITY 36 Hrs, 1 Credit

At the end of this course the students will be able to:

CO 1 Identify the vertebrate fauna
CO 2 Differentiate the poisonous and non-poisonous snakes.
CO 3 Appreciate the biota living around them

SEMESTER 111. ZY3CRT03 CORE COURSE 111: ANIMAL DIVERSITY – CHORDATA
54 Hrs, 3 Credits

CO 1 To acquire in depth knowledge on the diversity of chordates and their systematic position.
CO 2 To make them aware of the economic importance of some classes.
CO 3 To understand the evolutionary importance of selected chordate groups

III SEM ZOOLOGY CORE COURSE 111: ANIMAL DIVERSITY –CHORDATA (PRACTICAL) 1 CREDIT

CO 1 Understand the various systems of frog

CO 2 Understand the Classification various classes of phylum Chordate.

CO 3 To learn to identify different fishes and snakes.

CO 4 To learn to make scientific sketch of chordate specimens

CO 5 Study and understand the different types of scales in fishes.

SEMESTER III. ZY3CMT03. COMPLEMENTARY COURSE -3 PHYSIOLOGY AND IMMUNOLOGY 54 hrs, 3 Credits

CO 1: To appreciate the correlation between structure and function of organisms

CO 2: To get an overview of health related problems, their origin and treatment

CO 3: To understand the significance and efficiency of immune system

CO 4: To acquire knowledge about the prevention of common diseases

SEMESTER III COMPLEMENTARY COURSE - 3 PRACTICAL PHYSIOLOGY AND IMMUNOLOGY 36Hrs, 1Credit

At the end of this course the students will be able to:

CO 1 Appreciate the correlation between structure and function of organisms

CO 2 Understand health related problems, their origin and treatment.

CO 3 Understand how efficiently our immune system work in our body.

CO 4 Know how to prevent common diseases rather than curing.

SEMESTER IV. ZY4CRT04 CORE COURSE IV RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS 54 Hrs, 3 Credits

CO 1 To familiarise the learner the basic concept of scientific method in research process.
CO 2 To gain knowledge on various research designs.
CO 3 To develop skill in research communication and scientific documentation.
CO 4 To create awareness about the laws and ethical values in biology.
CO 5 To equip the students with the basic techniques of animal rearing collection and preservation and to apply statistical methods in biological studies.

IV SEM ZOOLOGY CORE COURSE IV - RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS (PRACTICAL)

2 CREDITS

CO 1 Understand the measures of central tendency and dispersion like Computation of arithmetic mean, mode and median.
CO 2 To learn Graphical representation of data. Construction of bar diagrams, Histograms, Pie diagram and Line graphs (MS Excel)

CO 3 Understand the Principle, parts, and its application of Microscopic techniques

CO 4 Understand the principle of analytical instruments

CO 5 Understand the working and principle of Fluorimeter pH Meter, Colorimeter/ Spectrophotometer, Centrifuge

SEMESTER IV. ZY4CMT04. COMPLEMENTARY COURSE - 4 APPLIED ZOOLOGY 54 hrs, 3 Credits

CO 1: To acquire basic knowledge and skills in applied branches of Zoology

CO 2: To understand the technology for utilizing eco-friendly organisms for beneficial purpose

CO 3: To be able to start self employment ventures with scientific knowledge to perform profitably and confidently

SEMESTER IV COMPLEMENTARY COURSE - 4 PRACTCAL APPLIED ZOOLOGY 36 Hrs, 1 Credit

At the end of this course the students will be able to:

CO 1 Acquire basic practical knowledge and skills in applied branches of zoology.
CO 2 Understand the technology for utilising eco-friendly organisms around them for beneficial purpose.
CO 3 Get self-employment opportunities with scientific knowledge to perform profitably & confidently.

SEMESTER V. ZY5CRT07 CORE COURSE - V11: EVOLUTION, ETHOLOGY & ZOOGEOGRAPHY 54 Hrs, 3 Credits 3

CO 1 To understand the evolution and distribution of organisms

CO 2 To identify the different zoogeographical realms.

CO 3 To analyse the homology and analogy in animals

CO 4 To explain phototaxis and chemotaxis

CO 5 To compare the different types of animal behaviours

CO 6 To study the features and importance of connecting links.

SEMESTER V. ZY5CRT08 CORE COURSE VIII HUMAN PHYSIOLOGY, BIOCHEMISTRY, AND ENDOCRINOLOGY 54 Hrs, 3 Credits

CO 1 To provide a deep knowledge in biochemistry, physiology and endocrinology.

CO 2 Defining and explaining the basic principles of biochemistry useful for biological studies for illustrating different kinds of food, their structure, function and metabolism.

CO 3 Explaining various aspects of physiological activities of animals with special reference to humans.

CO 4 To acquire a broad understanding of the hormonal regulation of physiological processes in invertebrates and vertebrates.

PRACTICAL HUMAN PHYSIOLOGY, BIOCHEMISTRY, AND ENDOCRINOLOGY 36 Hrs, 1 Credit

CO 1 Make them familiar with hormonal regulation of physiological systems in several invertebrate and vertebrate systems.
CO 2 Provide a basic understanding of the experimental methods and designs that can be used for further study and research.

CO 3 Make the students able to perform qualitative analysis of Protein glucose,starch and lipids.

CO 4 Help to analyse the structure and amount of different blood cells ,haemoglobin etc and perform various activities related to physiology using different instruments.

SEMESTER V. ZY5CRT05 CORE COURSE V ENVIRONMENTAL BIOLOGY AND HUMAN RIGHTS 54 Hrs, 3 Credits

At the end of this course the students will be able to:

CO 1 Explain the basic concepts of environmental sciences, ecosystems, natural resources, population environment and society.
CO 2 Aware of natural resources, their protection, conservation, the factors polluting the environment, their impacts and control measures.
CO 3 Explain the basic concepts of toxicology, their impacts on human health and remedial measures.
CO 4 Have a consciousness regarding biodiversity, environmental issues and conservation strategies.
CO 5 Have the real sense of Human rights – its concepts & manifestations

PRACTICAL ENVIRONMENTAL BIOLOGY & TOXICOLOGY 36 HRS, 1 CREDIT

At the end of this course the students will be able to:

CO 1 Estimate dissolved oxygen, carbon dioxide and soli organic carbon

CO 2 Identify the marine and fresh planktons

CO 3 Identify the different equipments like Secchi disc, plankton net and sandy shore fauna and rocky shore fauna.

SEMESTER V. ZY5CRT06 CORE COURSE VI CELL BIOLOGY AND GENETICS 54 Hrs, 3 Credits

At the end of this course the students will be able to:

CO 1 Understand the structure and function of the cell and thus the functioning of all living organisms.
CO 2 Describe the different cell organelles, their structure and role in living organisms.
CO 3 Have critical thinking, skill and research aptitudes in basic and applied biology
CO 4 Describe the central role of genes and their inheritance in the life of all organisms

SEMESTER V CORE COURSE VI CELL BIOLOGY AND GENETICS (PRACTICAL) 36 Hrs 2 Credits

At the end of this course the students will be able to:

CO 1 To do squash and smear preparations of onion root tip and human blood and to identify different mitotic stages and leucocytes respectively.
CO 2 To identify the permanent stained preparations of different tissues.
CO 3 To prepare temporary and permanent whole mounts.
CO 4 To do genetic problems on Monohybrid, Dihybrid Crosses and Blood group inheritance.

CO 5 To distinguish between normal and abnormal human karyotypes
CO 6 To do drosophila sexing
CO 7 To do a squash preparation to demonstrate the presence of barr body in human buccal epithelium.

SEMESTER V. OPEN COURSE ZY5OPT01 VOCATIONAL ZOOLOGY
72 Hrs 4 Hrs/Week 3 Credits

At the end of this course the students will be able to:
CO 1 Have critical thinking skill and research aptitude by getting introduced to the frontier areas of the biological science.
CO 2 To emphasize the central role that biological sciences plays in the life of all organisms.
CO 3 To have an idea about some of the present and future applications of bio-sciences
CO 4 To have basic knowledge and skills in aquarium management, Quail farming, vermicomposting and apiculture for self-employment
CO 5 To understand the different resources available and to have an attitude towards sustainability
CO 6 Give awareness to society about the need for waste management and organic farming

SEMESTER VI. ZY6CRT09 CORE COURSE IX DEVELOPMENTAL BIOLOGY

54 Hrs, 3 Credits

CO 1 To achieve a basic understanding of the experimental methods and designs that can be used for future studies and research.

CO 2 To provide the students with the periodic class discussions of current events in science which will benefit them in their future studies in the biological/physiological sciences and health-related fields

CO 3 To contribute to critical societal goal of a scientifically literate citizenry.

PRACTICAL DEVELOPMENTAL BIOLOGY 36 Hrs, 1Credit

CO 1 To aquire deeper knowledge about the developmental stages of frog and chick.

CO 2 To familier with different technologies like cloning, amnioscentesis, embryotransfer technology etc.

SEMESTER VI. ZY6CRT11 CORE COURSE XI. BIOTECHNOLOGY, BIOINFORMATICS AND MOLECULAR BIOLOGY

At the end of this course the students will be able to:

CO 1 Understand the scope, importance and basic concepts of biotechnology, bioinformatics and molecular biology.
CO 2 Understand the tools and techniques in biotechnology and molecular biology.
CO 3 Understand the methods and procedure of animal cell culture and organismal cloning.
CO 4 Understand the applications and potential hazards of Biotechnology
CO 5 Use different biological databases and to use Rasmol for molecular visualisation.
CO 6 Explain gene expression and gene regulation.

PRACTICAL. BIOTECHNOLOGY, BIOINFORMATICS & MOLECULAR BIOLOGY

At the end of this course the students will be able to:

CO 1 Identify the different blotting techniques.

CO 2 To retrieve and evaluate the characteristic features of genome and protein sequences from biological databases.

CO 3 To visualize a macromolecule using a bioinformatics tool.

CO 4 To identify and comment on any tissue / Cell organelles/ DNA, DNA replication, RNA different types using models or diagrams

VI SEM

MICROBIOLOGY AND IMMUNOLOGY (PRACTICAL)

Credits 2

CO 1 To determine the different blood groups

CO 2 To understand the principle and use of instruments used in microbiology

CO 3 Prepare different media of microbial cultures

CO 4 To compare the different culture methods

CO 5 To analyse the role of different organs of the immune system

CO 6To differentiate bacterial strains

ELECTIVE COURSE. ZY6CBT04. NUTRITION, HEALTH AND LIFESTYLE MANAGEMENT 72 Hrs. 3 Credits

At the end of this course the students will be able to:

CO 1 Have a general concept of health and the parameters that define health and wellness.

CO 2 Understand the principles of nutrition and its role in health.

CO 3 To have an idea on food safety, food laws & regulations.

CO 4 Know and understand life style diseases.

CO 5 To promote an understanding of the value of good life style practices, physical fitness and healthy food habits for life style disease management.