JANATA MAHAVIDYALAYA, CHANDRAPUR
DEPARTMENT OF ZOOLOGY
UG ZOOLOGY DEGREE PROGRAM
Program specific outcomes (PSOs), Course outcomes (COs)

Program Specific Outcomes (PSOs)

After completion of B.Sc. with zoology students will:-

PSO1: Acquire the knowledge with clear concept, facts and safely handling of equipments in various branch of Zoology. Understand the nature and basic concept of taxonomy, Ecology, Cell Biology, Genetics, Physiology and Applied Zoology.

PSO2: Apply the knowledge of Zoology in higher studies and understand the various applications of Biochemistry and Biotechnology.

PSO3: Develop positive attitude towards sustainable development and scientific approach to defeat unfair orthodox beliefs of any unfair activity.

PSO4: Apply this knowledge for competitive subject oriented exams such as fisheries development officer, forest services, CIFA, central and state Govt. silk boards and also will be able to make career in banking, central and state Government jobs through competitive examinations.

PSO5: Apply knowledge in Sericulture, Apiculture, Vermiculture, Lac culture, Pearl culture, and aquaculture and develop employability skills.

PSO6: Utilize knowledge in analyzing various Biological data in problem solving and drawing better conclusion. Develop ability to identify and collect Etheno-Zoological unpublished data for fact findings in research and Ability to identify common fauna of surrounding area and also find out various health risk factors.

PSO7: Develop communication skill, which helps in expressing views and ideas clearly and effectively to get projects and develop respect for nature and its conservation.

Course Outcomes (COs):-

B.Sc. Semester I

Paper – I: Life and Diversity of animals (Protozoa to Annelida):-

After completion of this course students will be able to-

CO1: Distinguish Invertebrate and Protochordates.
CO2: Describe peculiar characters of Protozoa up to Annelida.
CO3: Learn about disease caused by parasites of protozoan's and helminthes.
CO4: Understand the role of various anatomical systems in invertebrate fauna.
CO5: Familiarize with the larval form and its significance.
CO6: Gain knowledge about Vermiculture and its importance.

Paper –II:

After completion of this course students will be able to-

CO1: Explain pond ecosystem and various biological interactions.
CO2: Understand the Biodiversity and recognize the importance of conservation.
CO3: Become familiar with National park and sanctuaries.
CO4: Understand basic components of the Environment.
CO5: Become familiar with physico-chemical parameters of water and its need to conserve.
CO6: Describe the rock type and its formation.
CO7: Develop awareness about sustainable utilization of energy resources.
CO8: Realize pollution is biggest challenge.
CO9: Become familiar with the types of effects, sources and control measures.

Practical – I

After completion of this course students will be able to-

CO1: Identify the invertebrate laboratory specimens and classify them up to class level.
CO2: Identify and describe the invertebrate slides.
CO3: Gain ability to perform the Environmental biology experiments.
CO4: Understand the role of zooplankton, phytoplankton and macrophytes in an aquatic eco system.

Semester II

Paper – I: Life Diversity of Animals (Arthropoda to Protochordate):-

After completion of this course students will be able to-

CO1: Describe peculiar characters and classification of Arthropoada up to protochordata.
CO2: Understand some morphology and various systems of invertebrate fauna.
CO3: Understand that some Arthropods are the disease carrying vectors.
CO4: Describe the Bioluminescence in invertebrates.
CO5: Understand shell and pearl formation technique in mollusca.
CO6: Differentiate between metamorphosis and retrogressive metamorphosis.

Paper – II: Cell Biology

After completion of this course students will be able to-

CO1: Develop deeper understanding of what life is and how it functions at cellular level.
CO2: Explain the principles of cell theory.
CO3: Differentiate between prokaryotic and eukaryotic cell.
CO4: Describe cellular membrane structure, fine structure and functions of cell organelles.
CO5: Understand the energy metabolism in mitochondria.
CO6: Recognize Giant chromosome source and explain its structure and function.
CO7: Understand cell division, and its significance.

Practical

After completion of this course students will be able to-

CO1: Identify and classify the invertebrate laboratory specimen up to class level.
CO2: Identify and describe the larval forms and the slides of invertebrate.
CO3: Perform mitotic cell division in onion root tip by squash method.

Semester III

Paper – I: Life and Diversity of Animals (Chordates)

After completion of this course students will be able to-

CO1: Describe salient features of chondrychthyes and Osteichthyes.
CO2: Understand the anatomical systems and migration in fishes.
CO3: Classify reptilian on the basis of temporal vacuities.
CO4: Describe the evolutionary history of Bird.

CO5: Explain poison apparatus, biting mechanism and snake venom.
CO6: Understand the flight adaptation, migration and its significance.
CO7: Distinguish between Ratitae and Carinitae.
CO8: Explain the general characters of Prototheria, Metatheria and Eutheria .

Paper – II: Developmental Biology

After completion of this course students will be able to-

CO1: Gain familiarity with various stages involved in the developing embryo.
CO2: Understand the events in oogenesis and spermatogenesis.
CO3: Gain familiarity with the events leads to parthenogenesis and fertilization.
CO4: Classify the mammalian placenta on morphological and histological basis.
CO5: Know about test tube baby its advantages and disadvantages.
CO6: Understand the contraceptive methods and tools.
CO7: Explain about Artificial insemination and semen Bank.

Practical – I

After completion of this course students will be able to-

CO1: Identify and classify the laboratory vertebrate Specimen up to class level.
CO2: Draw and describe the loose bones of fowl.
CO3: Identify and describe the Vertebrate slides.
CO4: Familiarize with single staining procedure.

Semester IV

Paper – I: Animal Behavior and Evolution

After completion of this course students will be able to-

CO1: Understand types, nature and reflexes in animal behavior.
CO2: Understand Biochemical origin of life.
CO3: Understand Adaptive radiation in Mammals.
CO4: Understand Natural selection and types of Evolution.
CO5: Solve the problems on Population Genetics.

Paper – II: Genetics and Genetic Engineering

After completion of this course students will be able to-

CO1: Appreciate the contribution of great Scientist in Genetics and Genetic Engineering.
CO2: Become familiar with molecular structure of DNA and Types of RNA.
CO3: Become familiar with the role of Gene code in protein synthesis.
CO4: Understand the Lac-Operon concept.
CO5: Know about inheritance other than nucleus.
CO6: Become familiar with the tools and techniques used in Genetic Engineering.
CO7: Explain the role of cloning vectors in rDNA Technology.
CO8: Become familiar with the application of G.E.

Practical – II

After completion of this course students will be able to-

CO1: Learn clinical procedure of blood analysis, normal and pathological condition.
CO2: Diagnose Chromosomal abnormality related syndrome by analyzing human Karyotype picture.
CO3: Perform the Genetics Experiments by using beads.
CO4: Prepare the Genetics and molecular based models.
CO5: Perform the Experiments to know the Genetics based disorders in various samples.

Semester V

Paper – I: General Mammalian Physiology I
After completion of this course students will be able to-

CO1: Become familiar with enzymes and its activity.
CO2: Understand physiology of digestion and absorption.
CO3: Apply the knowledge of vitamins to lead healthy life.
CO4: Explain the role of respiratory pigments in respiration.
CO5: Learn about transport of O_2 and CO_2 during respiration.
CO6: Understand the role of intercostals muscle in breathing mechanism.
CO7: Gain the knowledge of respiratory disorders and how smoking can affect health.
CO8: Become familiar with composition and function of blood.
CO9: Understand how different factors play an important role in blood coagulation.
CO10: Know about ECG and blood pressure.

Paper – II: Aquaculture and Economic Entomology

After completion of this course students will be able to-

CO1: Learn about fisheries management, preservation, products and biproducts.

CO2: Acquire the knowledge of fish pathology.
CO3: Understand about prawn and pearl culture.
CO4: Acquire & apply the knowledge of vitamins to lead healthy life.
CO5: Explain the life processes and morphology of useful insects.
CO6: Understand the nature of damage done and methods used to control the various insects pest.
CO7: Know how to handle different pesticides at different situations.

Practical – I: General Mammalian Physiology, Aquaculture and Economic Entomology

After completion of this course students will be able to-

CO1: Learn clinical procedure of blood analysis.
CO2: Understand physiology of digestion experimentally.
CO3: Perform the experiment for detection of carbohydrate, protein and fat in given sample.
CO4: Acquire the knowledge to classify and describe freshwater and aquarium fishes.
CO5: Explain about useful, harmful insects and insect pest.
CO6: Become familiar with single staining procedure.

Semester VI

Paper – I: General Mammalian Physiology II
After completion of this course students will be able to-

CO1: Understand E.M. structure and function of neuron.
CO2: Recognize the types of neuron.
CO3: Explain about sliding theory and properties of muscle.
CO4: Describe the uriniferous tubule, counter – current mechanism and urine formation.
CO5: Know about Endocrine gland its normal and abnormal functions.
CO6: Know about menstrual and oestrous cycle.
CO7: Understand various contraceptives procedure in vitro fertilization.

Paper – II: Applied Zoology, Biotechniques, Microtechnique, Immunology, Bioinformatics and Biostatistics.
After completion of this course students will be able to-

CO1: Acquire the knowledge of handling the tool and techniques for sterilization and separation of biomolecules.
CO2: Understand tissue processing and the process of micro technique.
CO3: Learn about Hostochemical staining technique.
CO4: Distinguish between Innate and Acquired Immunity.

CO5: Understand the importance of Immune System.
CO6: Learn about Autoimmune diseases and their treatment in AIDS and other Immune-deficiencies.
CO7: Recognize the importance of various databases.
CO8: Develop skill in analyzing various Biological data.

Practical – II: General Mammalian Physiology, Biotechniques, Microtechnique, Immunology, Bioinformatics and Biostatistics.

After completion of this course students will be able to-

CO1: Assess the urine sample through clinical procedure.
CO2: Count the sperm from any domestics animals.
CO3: To prepare histological slides either for study, research or investigation purpose.
CO4: Learn various applications of Bioinformatics.
CO5: Retrieve of specific literature of given information.
CO6: Analyze the given Biostatical Data.