

BARASAT GOVT COLLEGE
POST GRADUATE DEPARTMENT OF ZOOLOGY
B.Sc. Zoology (Hons) CBCS Syllabus
With effect from 2018-19

Program Specific Outcomes

- Students gain knowledge and skill in the fundamentals of animal sciences, recognizes the complex interactions among various living organisms
- Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
- Understands the physiological processes of animals and relationship of organ systems
- Gain knowledge of Agro based Small-Scale industries like sericulture, fish farming, etc.
- Understands about various concepts of genetics, molecular biology and its importance in human health; and the physiological aspects of human and other vertebrates
- Skill Enhancement Courses develop employable skills in aquarium fish keeping and vermicomposting.
- This program covers theoretical studies and practical proficiency training which may help in their placement at several pharmaceutical/ biotechnology/ microbiology/ based laboratory and/ or preparation of M.Sc. entrance examination for universities & institutes.
- The students will get a flavour of research besides improving their writing skills and making them well versed with the current trends, and enable the students to think and interpret individually due to different aspects chosen, after successful completion of this course.

BARASATGOVERNMENTCOLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. degree course
Under CBCS semester system
HONOURS COURSE IN ZOOLOGY
With effect from the session: 2018–2019

Course Name: CoreCourse-1
Course Code: ZOOACOR01T&ZOOACOR01P
Topic Name: Animal Diversity-Non-Chordates I

Course Outcome: Non-Chordate: Protozoa to Nematelminthes
Both theory and practical paper based on systematic animal diversity and evolution
After successfully completing this course, the students will be able to

- CO1. Students remember and understand the general characters of different groups of invertebrate animals including Protozoa, Porifera, Coelenterate, Platyhelminthes, and Aschelminthes and can classify them up to class. (Level 1 and 2)
- CO2. Comprehend special features, organisation, pathogenecity, life history traits. (Level 2)
- CO3. Apply the basic knowledge of classification in advanced taxonomic work. (Level 3)
- CO4. Analyze evolutionary significance of tissue to organ system grade of organization, symmetry, polymorphism and parasitic adaptation. (Level 4)
- CO5. appreciate the importance of conservation of these species and can create awareness on disease causing parasites and their mode of infection. (Level 6)
- CO6. Prepare a project report on diversity/life cycle of some invertebrates. (Level 6)

Course Name: CoreCourse-2
Course Code: ZOOACOR02T&ZOOACOR02P
Topic Name: Ecology

Course Outcome: Both theory and practical paper cover basic ecology such as study of physical factor and its interaction with the environment, population, community etc and its application such as conservation of wildlife and natural resources.
After successfully completing this course, the students will be able to

- CO1. Understand the basic concepts of ecology, biogeochemical cycles & Population Ecology. (Level 2)
- CO2. Understand the study of life history pattern, fertility rate and age structure. (Level 2)
- CO3. Understand the types and function of ecosystem, Characteristics of Community; Ecological Succession and Major Biomes of the world. (Level 2)
- CO4. Apply the knowledge in the protection and conservation of nature and natural resources. (Level 3)
- CO5. Perform various ecological sampling methods and can calculate and analyze species diversity. (Level 4)
- CO6. Evaluate different ecosystem attributes by using physico-chemical methods. (Level 5)

Course Name: CoreCourse-3
Course Code: ZOOACOR03T&ZOOACOR03P
Topic Name: Non-Chordate II

Course Outcome: The course makes a detailed comparison of the anatomy of the different taxa of non-chordates. The course thus gives an overview of the intricate life processes and adaptive radiations in non -chordates.

After successfully completing this course, the students will be able to

- CO1. Develop an understanding of the characters of coelomate non chordates and also being able to differentiate the organisms belonging to different taxa. (Level 2)
- CO2. Understand some special features like torsion of molluscs, water vascular system of Echinodermata, filter feeding of lower chordates, metamorphosis of insects and its hormonal control. (Level 2)
- CO3. Can analyze functional and structural affinities of non chordates to frame evolutionary relationship among the groups. (Level 4)
- CO4. Understand the relative position of individual organs and associated structures through dissection of the invertebrate representatives. (Level 2)
- CO5. Get a flavor of research by working on different projects besides improving their writing skills. It will further enable the students to think and interpret individually. It also builds up collaborative learning and communication skill among students. (Level 6)

Course Name: CoreCourse-4
Course Code: ZOOACOR04T&ZOOACOR04P
Topic Name: Cell Biology

Course Outcome: The course provides a detailed insight in to basic concepts of cellular structure and function. It also gives an account of the complex regulatory mechanisms that control cell function, cancer and tumor. After successfully completing this course, the students will be able to

- CO1. Understand the functioning of nucleus and extra nuclear organelles like mitochondria, RER, Golgi bodies, cytoskeleton and comprehend the intricate cellular mechanisms involved. (Level 2)
- CO2. Acquire the detailed knowledge of different pathways related to cell signaling and apoptosis, PCD, Necrosis, thus enabling them to understand the anomalies in cancer. (Level 2)
- CO3. Can relate clinical aspects, tumor cell metabolism, cancer stem cells, metastasis and therapeutic strategies. (Level 4)
- CO4. Can apply the basic concepts of cell biology in future applied research fields such as cancer, signal transduction pathways, cell viability assays, diabetes etc. (Level 3)
- CO5. Skill enhancement in the usage of laboratory microscope and Hands-on experience of different phases of cell division. (Level 3)
- CO6. Perform the cytochemical tests for detecting various cellular components. (Level 3)

Course Name: CoreCourse-5
Course Code: ZOOACOR05T&ZOOACOR05P
Topic Name: Chordates

Course Outcome: The course is a walk for the Bachelor's entrant through the amazing diversity of living forms from simple to complex one. It also deals with the differences and similarities between organisms on the basis of their morphology and anatomy which led to their grouping into taxa and clades.

After successfully completing this course, the students will be able to:

- CO1. Develop understanding on the diversity of life with regard to chordates. (Level 2)
- CO2. Can group animals on the basis of their morphological characteristics/structures mainly Fishes, Amphibia, Reptilia, Birds and Mammals. (Level 3)
- CO3. Analyze similarities and differences in life form and functions among various groups leading to adaptive radiation and evolution. (Level 4)
- CO4. Identify and classify important vertebrate specimens that are observed in the field, and quantify changes occurring in ecosystems over time. (Level 3)
- CO5. Understand the taxidermic and chemical methods of preservation of chordates. (Level 2)

Course Name: CoreCourse-6
Course Code: ZOOACOR06T&ZOOACOR06P
Topic Name: Physiology: Controlling and Coordinating System

Course Outcome: The course offers insight into the physiology of chordates, mammals while giving an account of their anatomy. The course deals with various physiological functions in mammals. It also gives an account of the metabolic/biochemical pathways and the probable impact of environment on them.

After successfully completing this course, the students will be able to:

- CO1. Understand how cells, tissues, and organisms function at different levels. (Level 2)
- CO2. Understand the organization of nervous system and process of nerve conduction. (Level 2)
- CO3. Understand the process of muscle contraction. (Level 2)
- CO4. Explain the coordination of different body system through the action of neural and endocrine pathways. (Level 4)
- CO5. Apply the theoretical knowledge of tissue organization in identification of histological slides of mammals. (Level 3)
- CO6. Describe the histological structure of various exocrine and endocrine glands, their functions and their abnormalities. (Level 2)
- CO7. Develop skill of temporary slide preparation and permanent slide preparation of different tissues using microtome. (Level 3)

Course Name: CoreCourse-7
Course Code: ZOOACOR07T&ZOOACOR07P
Topic Name: Biochemistry

Course Outcome: The course provides an introduction to the structure of biomolecules with emphasis on the techniques used for structure determination and analysis.
After successfully completing this course, the students will be able to:

- CO1. Understand about the importance and scope of biochemistry. (Level 2)
- CO2. Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids. (Level 2)
- CO3. Comprehend the different metabolic pathways; know terminologies and disorders associated with it. (Level 2)
- CO4. Understand the concept of enzyme, its mechanism of action and regulation. (Level 2)
- CO5. Familiarize with the mechanisms involved in oxidative phosphorylation. (Level 2)
- CO6. Perform qualitative biochemical tests to identify protein, lipid and carbohydrates. (Level 3)
- CO7. Quantitative Estimation of protein by Lowrys method, separate protein by SDS-PAGE, separation of amino acid by Paper chromatography. (Level 5)
- CO8. Apply the theoretical knowledge to study enzymatic activity of Trypsin and Lipase, Acid and Alkaline Phosphatase. (Level 3)

Course Name: CoreCourse-8
Course Code: ZOOACOR08T & ZOOACOR08P
Topic Name: Comparative Anatomy

Course Outcome: After successfully completing this course, the students will be able to:

- CO1. Gain knowledge about Integumentary, skeletal, digestive, respiratory, circulatory, urogenital, nervous system and sense organ in different vertebrate classes. (Level 2)
- CO2. Can compare anatomy of the organs, their development and how they become modified according to their mode of life. (Level 4)
- CO3. Can relate and analyze the similarities and dissimilarities of various skeletons, scales and organs from actual samples and specimens and apply the knowledge for inferring proof of evolution. (Level 4 and level 3)

Course Name: CoreCourse-9
Course Code: ZOOACOR09T&ZOOACOR09P
Topic Name: Physiology-Life Sustaining System

Course Outcome: After successfully completing this course student will be able to:

- CO1. Gain fundamental knowledge of digestion, circulation and respiration, osmoregulation in different vertebrate life forms. (Level 1 and Level 2)
- CO2. Understand the role of each system in sustaining life. (Level 2)
- CO3. Develop the skills to perform haematological experiments like determination of blood group, enumeration of blood cells using haemocytometer, haemoglobin estimation. (Level 3)
- CO4. Apply the theoretical knowledge for recording different physiological parameters like blood pressure. (Level 3)
- CO5. Apply the practical knowledge of physiology for career development in higher education and research and other applied field. (Level 3 and 6)

Course Name: CoreCourse-10
Course Code: ZOOACOR10T&ZOOACOR10P
Topic Name: Immunology

Course Outcome: After successfully completing this course student will be able to

- CO1. Understand functioning of the immune system (Molecules, cells and tissue involved in host defence mechanism) and create awareness as how to boost their immune system for good health. (Level 1 & 2)
- CO2. Understand the Basic structure, classes and function of Antibodies, Types of immunity (Innate and Adaptive, Humoral and Cellular), Antigen-Antibody interaction, Complements and MHC. (Level 1 & 2)
- CO3. Understand the types of hypersensitivity reactions and autoimmune diseases. (Level 2)
- CO4. Understand the basic immune mechanisms in disease control. (Level 2)
- CO5. Educate common people about the importance of vaccines in public health. (Level 3)
- CO6. Perform simple laboratory experiments related to immunology like ABO blood group determination, blood film preparation and cell identification, ELISA etc. (Level 2)
- CO7. Apply the concept to pursue research in the field of immunology. (Level 4 & 5)

Course Name: CoreCourse-11
Course Code: ZOOACOR11T&ZOOACOR11P
Topic Name: Molecular Biology

Course Outcome: After successfully completing this course student will be able to:

- CO1. Develop an understanding of concepts, mechanisms and relevance of molecular biology in the current scenario. (Level 2)
- CO2. Describe and explain the basic mechanism of replication, transcription and translation. (Level 2)
- CO3. Explain DNA repair mechanisms, describe post transcriptional modification. (Level 2)
- CO4. Demonstrate polytene Chromosome from *Drosophila* /Chironomid larvae, Isolation of genomic DNA. (Level 3)
- CO5. Understanding techniques like PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing, cDNA technology. (Level 3)
- CO6. Apply their knowledge in problem solving and future course of their career development in higher education and research. (Level 3)
- CO7. Provide new avenues of joining research in related areas such as therapeutic strategies or related opportunities in industry. (Level 5 & 6)

Course Name: CoreCourse-12
Course Code: ZOOACOR12T&ZOOACOR12P
Topic Name: Genetics

Course Outcome: After successfully completing this course student will be able to:

- CO1. Understand the mechanism how DNA encodes genetic information and the function of mRNA and tRNA. (Level 2)
- CO2. Apply the principles of Mendelian inheritance. (Level 3)
- CO3. Understand the cause and effect of alterations in chromosome number and structure. (Level 2)
- CO4. Relate the conventional and molecular methods for gene manipulation in other biological systems. (Level 3)
- CO5. Discuss and analyse the epigenetic modifications and imprinting and its role in diseases. (Level 4)
- CO6. Provide new avenues of joining research in related areas such as genetic engineering of cells, cloning, genetic disorders, human fertility program, genotoxicity. (Level 5 &6)
- CO7. Apply the gained knowledge to construct genetic map and pedigree from supplied data. (Level 3)
- CO8. Perform simple statistical analysis of data and decision making. (Level 4 & 5)
- CO9. Identify chromosomal aberration from from prepared slide or pictures. (Level 3)

Course Name: Core Course-13
Course Code: ZOOACOR13T & ZOOACOR13P
Topic Name: Developmental Biology

Course Outcome: After successful completion of this course students will be able to:

- CO1. Develop critical understanding how a single celled fertilized egg transforms into an embryo and then a fully formed adult by complex processes of cell division, cell differentiation and morphogenesis. (Level 1 &2)
- CO2. Understand the initial developmental procedures involved in frog and chick. (Level 2)
- CO3. Appreciate the mechanisms that support growth and development and process of gene function. (Level 2)
- CO4. Learn interesting and unique postembryonic development that happens in vertebrates. (Level 2)
- CO5. Learn implication of developmental biology in medicine or its role in development of diseases. (Level 3)
- CO6. Identify whole mounts of developmental stages of chick embryo growth and differentiation in different hours of incubation through permanent slides. (Level 3)
- CO6. Gain a basic knowledge on the lifecycle of the model organism *Drosophila* and its developmental stages. (Level 2)
- CO7. Acquire knowledge on the different sections of placenta and their histogenesis through micrograph or slides. (Level 3)
- CO8. They can analyse variations at different stages of embryonic development and distinguish between healthy and pathological tissues in specimens. (Level 4)
- CO9. Illustrate the techniques of *Drosophila* culture and chick embryo development through short term project. (Level 5 and 6)

Course Name: CoreCourse-14
Course Code: ZOOACOR14T & ZOOACOR14P
Topic Name: Evolutionary Biology

Course Outcome: After successful completion of this course students will be able to:

- CO1. Understand the origin and evolution of universe and earliest life. (Level 2)
- CO2. Develop the historical concept of the process and theories in evolutionary biology and the role of evidences in support of evolution. (Level 2)
- CO3. Develop knowledge about sources of variation and concept of population genetics and can apply them in relevant experimentation. (Level 2)
- CO4. Understand species concept, extinction and molecular phylogeny and able to apply it in their lives and community analysis. (Level 3)
- CO5. Examine the evolutionary changes in different taxa based on statistical analysis. (Level 5)
- CO6. Learn how to study a fossil from model or photograph and analyze homology and analogy of structures from suitable specimens. They can observe and interpret about the events that took place in geologic past. (Level 4)
- CO7. Think critically and logically to make relationship between evidence and explanations. (Level 3)
- CO8. Verify Hardy-Weinberg equilibrium in a population by learning the chi- square calculation method and other statistical analysis from collected data. (Level 4 & 5)

Course Name: Discipline Specific Elective-1
Course Code: ZOADSE01T & ZOADSE01P
Topic Name: Animal Behaviour and Chronobiology

Course Outcome: After successful completion of this course students will be able to:

- CO1. Remember and understand a wide range of theoretical and practical techniques used to study animal behaviour. (Level 1 & 2)
- CO2. Develop skills, concepts and experience to understand all aspects of animal behaviour. (Level 3)
- CO3. Objectively understand information about biological rhythm and their type in synchronization of activity of animals. (Level 2)
- CO4. Understand and objectively evaluate the role of behavior in the protection and conservation of animals in the wild. (Level 2 & 5)
- CO5. Consider and evaluate behavior of all animals, including humans, in the complex ecological world, including the urban environment. (Level 5)
- CO6. Perform field study and laboratory test on behavioural biology of animals. (Level 3)

Course Name: Discipline Specific Elective-2
Course Code: ZOADSE02T & ZOADSE02P
Topic Name: Entomology (Insects and their Biology)

Course Outcome: After successful completion of this course students will be able to:

- CO1. Know the evolutionary and functional basis of animal ecology. (Level 1 & 2)
- CO2. Understand what makes the scientific study of animal ecology a crucial and exciting endeavour. (Level 2)
- CO3. Engage in field-based research activities to understand well the theoretical aspects taught besides learning techniques for gathering data in the field. (Level 3)
- CO4. Analyze a biological problem, derive testable hypotheses and then design experiments and put the tests into practice. (Level 4)
- CO5. Solve the environmental problems involving interaction of humans and natural systems at local or global level. (Level 5 and 6)

Course Name: Discipline Specific Elective-3
Course Code: ZOADSE03T & ZOADSE03P
Topic Name: Endocrinology

Course Outcome: After successful completion of this course students will be able to:

- CO1. Understand neurohormones and neurosecretions. (Level 1 & 2)
- CO2. Learn about hypothalamo and hypophysialaxis. (Level 1 & 2)
- CO3. Understand about different endocrine glands and their disorders. (Level 1 & 2)
- CO4. Understand the mechanism of hormone action. (Level 2)
- CO5. Distinguish various endocrine glands and mechanism of action of steroidal & non-steroidal hormone. (Level 4)

Course Name: Discipline Specific Elective-5
Course Code: ZOADSE05T & ZOADSE05P
Topic Name: Parasitology

Course Outcome: After successful completion of this course students will be able to:

- CO1. Understand parasitism, diversity of symbiotic associations and the biology behind host-parasite interactions. (Level 1 & 2)
- CO2. Learn about epidemiological concepts of parasitic infections of global importance. (Level 2)
- CO3. Gain knowledge of numerous diseases which have significant impact on human health. (Level 2)
- CO4. Diagnose, identify and detect some important protozoan, helminth and arthropod parasites of human and livestock. (Level 3)
- CO5. Analyze challenges in diagnosis, treatment and control of parasitic infections in humans and in veterinary context. Also learn pathological changes associated with parasite infections. (Level 4)
- CO6. Identify, describe and contrast different protozoan, helminth and arthropod parasites responsible for causing various human and veterinary diseases through permanent slides or microphotographs. (Level 3)
- CO7. Prepare and observe live parasitic specimens from fish gills and intestine of poultry birds. This gives them an idea of size, shape, colour pattern and unique morphological features and location of important external and internal pathogens and parasites from different phyla. (Level 3)
- CO8. Learn the techniques to identify plant parasitic root knot nematodes from soil samples which will be beneficial for further advance knowledge generation. (Level 3)
- CO9. Develop the skill to isolate, identify and fixation and preservation of different parasites from animal body in laboratory using microscopes. (Level 3)

Course Name: Discipline Specific Elective-6
Course Code: ZOOADSE06T & ZOOADSE06P
Topic Name: Wild life and Conservation

Course Outcome: After successful completion of this course students will be able to:

- CO1. Develop an understanding of general principles of ecology and how animals interact with each other and their natural environment. (Level 2)
- CO2. Apply knowledge to solve problems related to wildlife conservation and management. (Level 3)
- CO3. To identify common local flora and fauna and how they related to terrestrial and /or aquatic plant and animal conservation and management. (Level 3 & 4)
- CO4. Critically evaluate current events and public information related to man animal conflict and other wildlife conservation issues. (Level 5)
- CO5. Understand conservation ethics and acts practice in India. (Level 2)
- CO6. Develop skills for field study and biodiversity analysis. (Level 3)
- CO7. Identify common local flora and fauna like mammalian, avian and herpeto fauna and their normal habitat. (Level 3)
- CO8. Acquainted with the basic equipments and their uses for wildlife study. (Level 3)
- CO9. Develop the skill for estimation of flora and fauna diversity and relative abundance through various ecological tools and field techniques. (Level 3)

Course Name: Skill Enhancement Course-1
Course Code: ZOOSSEC01M
Topic Name: Aquarium Fish Keeping

Course Outcome: Knowledge on the followings:

- CO1. Learn the scientific method of setting an aquarium. (Level 1 &2)
- CO2. Learn the culture, breeding and marketing techniques of common indigenous ornamental fishes. (Level 3)

Course Name: Skill Enhancement Course-2
Course Code: ZOOSSEC02M
Topic Name: Vermicompost Production

Course Outcome:

- CO1. Understand the role of worm farming in Modern Farming. (Level 1 &2)
- CO2. Understand the potential of vermicompost as an alternative to chemical fertilizers. (Level 2)
- CO3. Understand the role of vermiculture in maintaining the health of soil. (Level 3)
- CO4. Learn the economic importance of vermiculture. (Level 3)
- CO5. Understand the role of Vermiculture in protecting the environment and managing the waste. (Level 4)

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GENERAL COURSE IN ZOOLOGY
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Course Name: Generic Elective/Department Specific Core Course-1
Course Code: ZOOHGEC01T & ZOOHGEC01P/ZOOGCOR01T & ZOOGCOR01P
Topic Name: Animal Diversity
Course Outcome: Knowledge on the followings:

- CO1. Develop understanding on the diversity of life with regard to protists, non-chordates and chordates. (Level 1 & 2)
- CO2. Group animals on the basis of their morphological characteristics/structure. (Level 3)
- CO3. Develop critical understanding how animals changed from a primitive cell to a collection of simple cells to form a complex body plan. (Level 4)
- CO4. Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic /cladistics tree. (Level 5)
- CO5. Understand how morphological change due to change in environment helps drive evolution over a long period of time. (Level 4)
- CO6. The project assignment will also give them a flavor of research to find the process involved in studying biodiversity and taxonomy besides improving their writing skills. (Level 6)

Course Name: Generic Elective/Department Specific Core Course-2
Course Code: ZOOHGEC02T & ZOOHGEC02P/ZOOGCOR02T & ZOOGCOR02P
Topic Name: Human Physiology & Biochemistry

Course Outcome: Knowledge on the followings:

- CO1. Understand the process of digestion and its control. (Level 2)
- CO2. Develop understanding in muscle structure and contraction mechanism. (Level 2)
- CO3. Learn the process of respiration and transport of gases. (Level 2)
- CO4. Understand kidney structure and regulation of urine formation. (Level 2)
- CO5. Understand heart structure and functioning. (Level 2)
- CO6. Understand function of endocrine glands and formation of gametes. (Level 2)
- CO7. Understand about the importance and scope of biochemistry. (Level 3)

Course Name: Generic Elective/Department Specific Core Course-3
Course Code: ZOOHGEC03T & ZOOHGEC03P/ZOOGCOR03T & ZOOGCOR03P
Topic Name: Insect Vectors and Diseases

Course Outcome: Knowledge on the followings:

- CO1. To learn understand the general features of insects and gain knowledge about their distribution and success on Planet Earth and to learn Insect's taxonomy, general morphology and physiology. (Level 2)
- CO2. Learn about vector and vector borne diseases. (Level 2)
- CO3. Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms. (Level 2)
- CO4. Diagnose the causative agents, describe pathogenesis and treatment for important diseases like malaria, leishmaniasis, Dengue, Chikungunya, Viral encephalitis, Filariasis. (Level 3)
- CO5. Explain how the infectious disease can transmit to human. (Level 4)
- CO6. Properly understand the prevention and control mechanism of infectious diseases. (Level 4)
- CO7. Develop education, communication programme and learn how to maintain proper WHO guidelines about infectious diseases. (Level 5)

Course Name: Generic Elective/Department Specific Core Course-4
Course Code: ZOOHGEC04T & ZOOHGEC04P/ZOOGCOR04T&ZOOGCOR04P
Topic Name: Environment and Public Health

Course Outcome: Knowledge on the followings

- CO1. Understand different causes of environmental pollution and their remedies. (Level 2)
- CO2. Learn about the depletion and contamination of natural resources. (Level 2)
- CO3. To learn waste management technologies and its applications. (Level 3)
- CO4. Develop awareness about the causative agents and control measures of many commonly occurring diseases. (Level 3 & 4)

Course Name: Department Specific Elective-1
Course Code: ZOOGDSE01T & ZOOGDSE01P
Topic Name: Applied Zoology

Course Outcome: Knowledge on the followings
CO1. Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms. (Level 2)
CO2. Diagnose the causative agents; describe pathogenesis and treatment for important diseases like Tuberculosis, Typhoid, *Entamoeba histolytica*, *Plasmodium vivax* and *Trypanosoma gambiense*, *Ancylostoma duodenale* and *Wuchereria bancrofti* etc. (Level 2)
CO3. Develop an understanding of the classification of fishes and integrating structure, function and physiology. (Level 2)
CO4. Gain an overview of the fishery and aquaculture industry. (Level 3)
CO5. Express the importance of aquaculture. (Level 3)
CO6. To understand the techniques involved in aquaculture practices. (Level 3)

Course Name: Department Specific Elective-2
Course Code: ZOOGDSE03T & ZOOGDSE03P
Topic Name: Aquatic Biology

Course Outcome: Knowledge on the followings:
CO1. Understand and apply relevant scientific principles in the area of aquatic biology. (Level 2)
CO2. Employ scientific methodologies such as experimentation and data analysis in the area of aquatic biology. (Level 4)
CO3. Critically analyze, interpret and evaluate information relevant to aquatic biology. (Level 4 and 5)
CO4. Appreciate the multidisciplinary nature of the study of aquatic biology and engage positively with people and ideas beyond their own discipline. (Level 3)
CO5. Explore some of the unique environmental problems dealing with aquatic environments. (Level 6)
CO6. Develop employable skills in freshwater biological water quality analysis. (Level 3)