



## Department of Zoology

Suren Das College, Hajo, Kamrup, Assam

Program Outcome, Program Specific Outcome & Course Outcome

***CBCS Generic-Course under Gauhati University***

### **B. Sc. Zoology (Generic)**

#### ***PROGRAM OUTCOMES (POS)***

<b>Department of Zoology</b>	After successfully completion of three years degree program in Zoology under, a student should be able to
<b>Program Outcomes (POs)</b>	<p><b>POs-1.</b> Students enrolled in B.Sc. (General) CBCS degree program in Zoology will study and acquire complete knowledge of disciplinary as well as allied biological sciences. At the end of graduation, they should possess expertise which will provide them competitive advantage in pursuing higher studies from India or abroad; and seek jobs in academia, research or industries.</p> <p><b>POs-2.</b> To impart basic knowledge of various disciplines of Zoology and General biology meant for a graduate and make them understand the unity of life with the rich diversity of organisms and their ecological significances.</p> <p><b>POs-3.</b> To inculcate interest in nature and its living creatures, enable them to describe economic, ecological and medical significance of various animals in human life and impart awareness for the conservation of the biosphere</p> <p><b>POs-4.</b> To acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation.</p> <p><b>POs-5.</b> To inculcate the scientific temperament in the students and outside the scientific community.</p> <p><b>POs-6.</b> Inculcate a holistic approach towards amalgamating and applying the acquired knowledge, ideas and views towards formulating a model that would not only encourage financial stability of the person concerned but also generate employability and strengthen the socioeconomic aspect of a region or locality as a whole.</p>

## ***COURSE CONTENT (GENERIC-CBCS)***

### ***Semester-I***

ZOO-RC-1016: Animal Diversity (Credits: Theory-04, Lab-02)

### ***Semester-II***

ZOO-RC-2016: Comparative Anatomy And Developmental Biology Of Vertebrates (Credits: Theory-04, Lab-02)

### ***Semester-III***

ZOO-RC-3016: Physiology And Biochemistry (Credits: Theory-04, Lab-02)

ZOO-SE-3014: Ornamental Fish & Fisheries (Credit-04)

### ***Semester-IV***

ZOO-RC-4016: Genetics And Evolutionary Biology (Credits: Theory-04, Lab-02)

ZOO-SE-4014: Apiculture (Credit-04)

### ***Semester-V***

ZOO-RE-5016: Animal Biotechnology (Credits: Theory-04, Lab-02)

ZOO-SE-5014: Non-Mulberry Sericulture (Credit-04)

### ***Semester-VI***

ZOO-RE-6016: Applied Zoology (Credits: Theory-04, Lab-02)

ZOO-SE-6014: Wildlife Photography and Ecotourism (Credit-04)

## ***PROGRAMME SPECIFIC OUTCOMES***

<b>Programme Specific Outcomes (PSOs)</b>	<b>PSOs-1.</b> To explain physiological and biochemical activities and its impact on human bodies <b>PSOs-2.</b> To provide a platform for classical genetics in order to understand distribution or inheritance of different traits and diseases among populations, their ethnicity and correlate with contemporary and modern
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	<p>techniques like genomics, metagenomics, genome editing and molecular diagnostic tools</p> <p><b>PSOs-3.</b> To identify and understand vertebrate as well as invertebrate.</p> <p><b>PSOs-4.</b> Make aware and handle the sophisticated instruments/equipment's.</p> <p><b>PSOs-5.</b> To increase in-depth Knowledge of the Core Areas and about the complexity of life systems.</p> <p><b>PSOs-6.</b> To obtain knowledge in wildlife, specifically recognize the existing conservation issues with regards to both animal and environment and develop strategies to address these issues through ecologically sustainable methods.</p> <p><b>PSOs-7.</b> To apply and analyse the various research techniques through minor dissertation projects, thus inculcating the fundamentals for future scientific studies.</p> <p><b>PSOs-8.</b> To 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.</p>
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***COURSE OUTCOMES (ZOOLOGY REGULAR CBCS)***

<b><i>Semester-I</i></b>	
<b>Course</b>	<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-RC-1016: NON CHORDATES 1 : Animal Diversity	<p><b>CO-1.</b> The students will develop understanding on the diversity of life with regard to protists, from the unicellular organisms to the multicellular organisms to chordates.</p> <p><b>CO-2.</b> The students will be enable to group animals on the basis of their morphological characteristics.</p> <p><b>CO-3.</b> Develop a critical understanding that how animals changed from a primitive cell or a unicellular beings to a collection of simple cells to form a complex body plan .</p> <p><b>CO-4.</b> Understand how morphological change due to change in environment helps drive evolution over a long period of time.</p>

	<p><b>CO-5.</b> The practicals will also give them a idea of classification of the animals and the basis on which they are classified into groups or taxa.</p> <p><b>CO-6.</b> The students will understand the distinctive characters of each phylum of animals and identify the animals on that basis.</p>
<b><i>Semester-II</i></b>	
<b>Course</b>	<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-RC-2016: Comparative anatomy and Developmental Biology of Vertebrates	<p><b>CO-1.</b> Develop an understanding of the evolution of vertebrates thus integrating structure, function and development.</p> <p><b>CO-2.</b> They will develop an understanding on the different structure , function and evolutionary changes in the different systems of vertebrates.</p> <p><b>CO-3.</b> Have an overview of the evolutionary concepts including homology and homoplasy, and detailed discussions of major organ systems.</p> <p><b>CO-4.</b> The students will develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis.</p> <p><b>CO-5.</b> The students will develop an idea on the early embryonic, late embryonic and post embryonic development.</p> <p><b>CO-6.</b> They will have an insight on the practical applications of developmental biology in present day world.</p>
<b><i>Semester-III</i></b>	
<b>Course</b>	<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-RC-3016: Physiology and Biochemistry	<p><b>CO-1.</b>Students will gain knowledge on the various life sustaining processes in mammalian body.</p> <p><b>CO-2.</b> Students will gain knowledge on the physiological processes of digestion, respiration, excretion, circulation and their regulation</p> <p><b>CO-3.</b> They will also have knowledge on the endocrine glands and the hormones secreted by them.</p>

	<p><b>CO-4.</b> Students will also understand some very important topics such as carbohydrate metabolism, protein metabolism and lipid metabolism.</p> <p><b>CO-5.</b> The students will be able to understand the mechanism of enzyme action, functioning of enzymes, Michelis-Menten equation, plotting of different curves for the enzyme kinetics.</p> <p><b>CO-6.</b> The practical course will enable the students to understand the concepts of physiology and biochemistry in a lucid way.</p>
ZOO-SE-3014: Ornamental Fish and Fisheries	<p><b>CO-1.</b> The students will have an idea on the ornamental fish diversity of NE India.</p> <p><b>CO-2.</b> The students will gain knowledge on the maintenance of an aquarium, natural fish feed for aquarium.</p> <p><b>CO-3.</b> They will understand the strategies for natural breeding of ornamental fish, maintenance of their colour and preparation of their artificial feed.</p> <p><b>CO-4.</b> They will also learn about the culture of planktons and development of biological filtration for aquarium.</p> <p><b>CO-5.</b> They will also have practical knowledge on the identification of indigenous ornamental fishes and plankton culture.</p>
<b><i>Semester-IV</i></b>	
<b>Course</b>	<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-RC-4016: Genetics and Evolutionary Biology	<p><b>CO-1.</b> The course helps in introducing the students to the main concepts of genes and heredity.</p> <p><b>CO-2.</b> Understand how DNA encodes genetic information and the function of mRNA and tRNA and the principles of Mendelian genetics.</p> <p><b>CO-3.</b> The students will have an idea on mutation, linkage and crossing over.</p> <p><b>CO-4.</b> Students will learn about the theories of origin of life</p> <p><b>CO-5.</b> They will learn about the theories of evolution.</p>

	<b>CO-6.</b> Students will gain knowledge on the evidences of evolution and the processes of evolutionary changes.
ZOO-HE-4014: Apiculture	<p><b>CO-1.</b>The students will gain knowledge on the social organization of a beehive colony and the behaviour associated with it.</p> <p><b>CO-2.</b> Students will have an idea on the artificial rearing of bees and the various tools and methods required for the same.</p> <p><b>CO-3.</b> Students will also develop an insight on the various potential risk and enemies that are to be taken care of while rearing.</p> <p><b>CO-4.</b> They will also have an idea on the usage and application of various honeybee products and that students can develop entrepreneurship skills using apiculture.</p>
<b><i>Semester-V</i></b>	
<b>Course</b>	<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-SE-5014: Non mulberry sericulture	<p><b>CO-1.</b> The students will gain knowledge on the varieties of silk and the indigenous sericigenous insects found in NE India.</p> <p><b>CO-2.</b> They will also learn about the life cycle of non-mulberry silk worms, nature of the silk and their silk glands.</p> <p><b>CO-3.</b> The students will develop insight on the methods of rearing silkworms, equipments associated with it , pests and diseases in sericulture and the ways to control it.</p> <p><b>CO-4.</b> This course will enable the students to develop sericulture as an income earning source and develop entrepreneurship abilities.</p>
ZOO-RE-5016: Applied Zoology	<p><b>CO-1.</b> The students will be introduced to the host-parasite relationship, epidemiology of diseases.</p> <p><b>CO-2.</b> Students will also learn about the various diseases caused by parasites.</p> <p><b>CO-3.</b> Students will also have knowledge on the insects of economical and medical importance.</p> <p><b>CO-4.</b> They will also gain knowledge on the animal husbandry, poultry farming techniques, fish breeding technologies.</p>

		<b>CO-5.</b> Students will develop practical knowledge on the different types of parasites and vectors that causes diseases, identifying economic insects etc.
<b><i>Semester-VI</i></b>		
<b>Course</b>		<b>Outcome</b> (After completion of these courses students should be able to)
ZOO-SE-6014: Wildlife photography and ecotourism		<p><b>CO-1.</b> The students will be introduced to still and video photography.</p> <p><b>CO-2.</b> They will have knowledge on photography at different seasons at different periods through visit to field trips.</p> <p><b>CO-3.</b> They will be introduced to eco-tourism with special reference to NE India.</p> <p><b>CO-4.</b> They will have idea on ecotourism and hospitality and restoration ideas for development of these industry.</p>
ZOO-RE-6016: Aquatic Biology		<p><b>CO-1.</b> The students will gain knowledge on the different aquatic biomes occurring on different parts of the world.</p> <p><b>CO-2.</b> They will also acquire knowledge on fresh water and marine biology.</p> <p><b>CO-3.</b> They will also get an idea on the restoration and management of aquatic resources.</p> <p><b>CO-4.</b> They will also gain practical knowledge on different types of aquatic plants and planktons.</p> <p><b>CO-5.</b> They will gain hands on knowledge on assessment of water quality from nearby lake or water body.</p>