

## Graduate Attributes in Zoology

**1. Disciplinary knowledge and skills:** Capable of demonstrating (i) comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings in Zoology and its different subfields (animal diversity, principles of ecology, comparative anatomy and developmental biology of vertebrates, physiology and biochemistry, genetics and evolutionary biology, animal iotechnology, applied Zoology, aquatic biology, immunology, reproductive biology, and insect, vectors and diseases), and other related fields of study, including broader interdisciplinary subfields such as chemistry, physics and mathematics; (ii) ability to use modern instrumentation for advanced genomic and proteomic technology.

**2. Skilled communicator:** Ability to impart complex technical knowledge relating to Zoology in a clear and concise manner in writing and oral skills.

**3. Critical thinker and problem solver:** Ability to have critical thinking and efficient problem solving skills in the basic areas of Zoology (animal diversity, principles of ecology, comparative anatomy and developmental biology of vertebrates, physiology and biochemistry, genetics and evolutionary biology, animal iotechnology, applied Zoology, aquatic biology, immunology, reproductive biology, insect, vectors and diseases etc.).

**4. Sense of inquiry:** Capability for asking relevant/appropriate questions relating to issues and problems in the field of Zoology, and planning, executing and reporting the results of an experiment or investigation.

**5. Team player/worker:** Capable of working effectively in diverse teams in both classroom, laboratory and in industry and field-based situations.

**6. Skilled project manager:** Capable of identifying/mobilizing appropriate resources required for a project, and manage a project to completion, while observing responsible and ethical scientific conduct; and safety and chemical hygiene regulations and practices.

**7. Digitally literate:** Capable of using computers for Bioinformatics and computation and appropriate software for analysis of genomics and proteomics data, and employing modern bioinformatics search tools to locate, retrieve, and evaluate location and biological annotation genes of different species.

**8. Ethical awareness/reasoning:** Capable of conducting their work with honesty and precision thus avoiding unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, and appreciating environmental and sustainability issues. Research ethics committee expects them to declare any type of conflict of interest that may affect the research. Any plan to withhold information from researchers should be properly explained with justification in the application for ethical approval.

**8. Lifelong learners:** Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling.

## **Programme Learning Outcomes (PO) in B.Sc. (Major) Zoology**

### **A. Knowledge and Understanding**

1. Demonstrate (i) in-depth knowledge and understanding about the fundamental concepts, principles and processes underlying the academic field of Zoology and its different subfields (animal diversity, principles of ecology, comparative anatomy and developmental biology of vertebrates, physiology and biochemistry, genetics and evolutionary biology, animal biotechnology, applied Zoology, aquatic biology, immunology, reproductive biology, and insect, vectors and diseases, apiculture, aquarium fish keeping, medical diagnostics, and sericulture) (ii) procedural knowledge that creates different types of professionals in the field of Zoology and related fields such as, apiculture, aquarium fish keeping, medical diagnostics, and sericulture, etc.(iii) skills related to specialization areas within Zoology as well as within subfields of Zoology, including broader interdisciplinary subfields (Chemistry, Physics and Mathematics).

2: Over the years, Zoologists were able to find many differences within the same breed of an animal species. As a Zoology professional one can study extinct animals by specializing in Paleozoology, on the different types of birds in Ornithology; opt for studying Herpetology and Arachnology, the branches dealing with the study of snakes and spiders, respectively.

3: Appreciate the complexity of life processes, their molecular, cellular and physiological processes, their genetics, evolution and behaviour and their interrelationships with the environment.

4: Study concepts, principles and theories related with animal behaviour and welfare.

5: Understand and interpret data to reach a conclusion.

6: Design and conduct experiments to test a hypothesis.

7: Understand scientific principles underlying animal health, management and welfare.

8: Accept the legal restrictions & ethical considerations placed for animal welfare.

9: Understand fundamental aspects of animal science relating to management of animals.

10: Assess problems and identify constraints in management of livestock.

### **B. Subject Specific Intellectual and Practical Skills**

The students will be able to

PO-1. Understand how organisms are classified and full and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding

PO-4. Learn basic laboratory and analytical skills

- PO-5. Use effective methods for modifying animal behaviour
- PO-6. Participate in animal management programmes in an effective manner
- PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.
- PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical
- PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

In course learning outcomes, the student will attain subject knowledge in terms of individual course as well as holistically. There are Core Courses (CC) and Skill Enhancement Courses (SEC). The example related to the courses and their outcomes are given below.

**Course Outcome (CO) : CCF (Major)**  
**Course Code: CC1 Cell Biology**

- CO-1. Students get the knowledge about cell structure and function to understand the life sustaining process.
- CO-2. Students understand the normal and abnormal conditions of cell functioning, get basic knowledge about cancer.
- CO-3. Student get familiar with different tools and techniques in cell biology like microscopy, cell culture, cell fractionation, freeze fracture replication, freeze etching etc.
- CO-4. Students learn the technics of cell measurement, cell staining and study cell viability.

**PO-CO Mapping- CC1-Cell Biology**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	√	√	X	X	√	X	X	X	X
CO2	√	√	X	√	√	√	√	√	√
CO3	√	√	X	√	√	√	√	√	√
CO4	√	√	X	√	√	√	√	√	√

**Course Outcome (CO) : CCF (Major)**  
**Course Code: SEC-1 Applied Entomology**

- CO-1. Students are introduce with different bugs and their harmful effect and control measure.
- CO-2. Students are demonstrated about different insect vectors and pests through photographs.
- CO-3. Students learn about the morphology of different castes of bees and their social behaviour. Students understand the culture methods of honey bees and introduced with different modern instruments.
- CO-4. Students gain idea about disease of honey bees and control measures.

- CO-5. Students understand about the Apiary products and their uses.  
 CO-6. Students come to know about the modern methods introduced to improve bee industry.  
 CO-7. Students learn about the types of silk moths, their geographical distribution, life cycle and host plants.  
 CO-8. Students become familiar with the process of silk-worm rearing, their disease management and silk production.  
 CO-9. Students understand general perception and status of Forensic Entomology, its applications and limitations.  
 CO-10. Students learn to collect and preserve economically important insects.  
 CO-11. Students learn to prepare project report.

**PO-CO Mapping: CCF (Major) Course: SECI**

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	-	-	-	-	-	√	-	-	-
CO 2	-	√	-	-	-	-	-	-	-
CO 3	√	-	√	-	-	-	-	-	-
CO 4	√	√	-	√	-	√	-	-	√
CO 5	√	-	-	-	-	√	-	-	√
CO 6	√	-	-	-	-	√	-	-	-
CO 7	-	-	-	-	-	-	-	√	-
CO 8	√	-	-	-	-	-	-	-	-
CO 9	√	-	-	-	-	-	√	-	√
CO 10	√	√	-	-	-	-	-	-	-
CO 11	√	-	-	-	-	√	-	-	-

**Course Outcome (CO) : CCF (Major))**  
**Course Code: CC-2 Biochemistry**

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

- CO-1: Understand about the importance and scope of biochemistry.  
 CO-2: Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids.  
 CO-3: Understand the structure and function of immunoglobulins.  
 CO-4: Understand the concept of enzyme, its mechanism of action and regulation.  
 CO-5: Understand the process of metabolism of carbohydrate, protein, lipid and nucleic acids.  
 CO-6: Develop the concept of free radicals and antioxidants.

**PO-CO Mapping: CCF (Major) Course: CC-2**

	PO-1	PO-2	PO-3	PO-4	Po-5	Po-6	PO-7	PO-8	PO-9
CO-1	-	√	√	√	-	-	-	√	√
CO-2	-	√	√	√	-	-	√	√	√
CO-3	-	√	√	√	-	-	-	√	√
CO-4	-	√	-	√	-	-	√	√	-
CO-5	-	√	√	√	-	-	√	√	√
CO-6	-	-	-	-	-	-	√	√	√

**Course Outcome (CO) : CCF (Major)**

**Course Code: SEC-2 Aquaculture**

CO-1 : Students Learn about different types of cultivable fishes.

CO-2 : Understand different aspects of sustainable Aquaculture systems.

CO-3 : Become familiar with recent advancement of Aquaculture, Aquarium fishery, fish nutrition, capture fishery and fish biotechnology.

CO-4 : Learn about different types of fish diseases and their pathogens.

CO-5 : Learn about different fish breeding technique and pearl culture technique.

	PO-1	PO-2	PO-3	PO-4	Po-5	Po-6	PO-7	PO-8	PO-9
CO-1	√	-	-	-	-	-	-	-	
CO-2	-	√	√	√	-	√	-	-	√
CO-3	-	√	√	√	-	√	-	√	√
CO-4	-	√	√	√	-	√	√	-	√
CO-5	-	√	√	√	√	√	√	√	√

**Course Outcome (CO) : CCF (IDC) Zoology**

**Course Code: IDC-1 &2 Animal Biology**

CO-1 : Students understand animal diversity with their taxonomic positions.

CO-2 : Understand basic principles of Genetic and sex determination.

CO-3 : Learn about Biodiversity types, measurement of Biodiversity and its conservation.

CO-4 : Develop concept of vectors and disease cycle.

CO-5 : Learn basic principle of laboratory techniques like Karyotype analysis, Microscopy, Colorimetry and Ultracentrifugation.

	PO-1	PO-2	PO-3	PO-4	Po-5	Po-6	PO-7	PO-8	PO-9
CO-1	√	-	-	√	-	-	-	-	-
CO-2	-	√	√	√	-	-	√	-	-
CO-3	-	√	√	-	-	-	√	√	√
CO-4	-	-	-	-	√	-	√	-	-
CO-5	-	-	-	-	-	-	√	√	-

## PART II: SEMESTER-III ; CCF: 4 yr ZOOLOGY MAJOR

### Course Outcome (CO) : CCF (Major) Zoology Course Code: CC- 3 (Genetics)

The students will be able to

- PO-1. Understand how organisms are classified and full and identified
- PO-2. Demonstrate knowledge of basic zoological principles
- PO-3. Use appropriate information with a critical understanding
- PO-4. Learn basic laboratory and analytical skills
- PO-5. Use effective methods for modifying animal behaviour
- PO-6. Participate in animal management programmes in an effective manner
- PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.
- PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical
- PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

CO 1: Apply the principles of Mendelian inheritance.

CO 2: Understand the cause and effect of alterations in chromosome number and structure.

CO 3: Relate the conventional and molecular methods for gene manipulation in other biological systems.

CO 4: Discuss and analyse the epigenetic modifications and imprinting and its role in diseases.

CO 5: Get new avenues of joining research in related areas such as genetic engineering of cells, cloning, genetic disorders, human fertility programme, genotoxicity, etc

### Mapping

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9
CO-1	-	-	√	√	-	-	-	-	-
CO-2	-	-	-	√	-	-	-	√	-
CO-3	-	√	-	-	-	√	-	-	-
CO-4	-	-	-	√	-	-	-	-	-
CO-5	-	-	-	-	-	-	-	√	-

### Course Outcome (CO) : CCF (Major) Zoology Course Code: CC-4 (Cell and tissue structure)

The students will be able to

- PO-1. Understand how organisms are classified and full and identified
- PO-2. Demonstrate knowledge of basic zoological principles
- PO-3. Use appropriate information with a critical understanding
- PO-4. Learn basic laboratory and analytical skills
- PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner  
 PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.  
 PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical  
 PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

CO-1: Come to know about different types of tissues in the body of living organisms  
 CO-2: Learn about abnormalities in the structure and functioning of tissues  
 CO-3: Understand tissue repair process and its control mechanism  
 CO-4: Learn the processes of tissue staining to understand histology

### Mapping

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9
CO-1	-	-		√	-	√	√	-	-
CO-2	-	-	√	√	-	-	-	√	-
CO-3	-	√	-	-	-	√	-	-	-
CO-4	-	-	-	√	-	-	-	-	-

### Course Outcome (CO) : CCF (Major) Zoology

**Course Code: SEC-3 (POULTRY FARMING AND ANIMAL HUSBANDRY)**

PO 1. Core Competency - In-depth knowledge and understanding about the fundamental concepts, principles and processes underlying the academic field of Zoology  
 PO 2. Critical Thinking - Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats  
 PO 3. Analytical Reasoning - Use appropriate information with a critical understanding  
 PO 4. Research Skills - Design and conduct experiments to test a hypothesis, Understand and interpret data to reach a conclusion  
 PO 5. Teamwork  
 PO 6. Problem solving  
 PO 7. Moral and Ethical Awareness - Accept the legal restrictions & ethical considerations placed for animal welfare.  
 PO 8. Demonstrate competence in handling and statistical analysis of data gained from practical.

CO1: Understand the principles of poultry housing and feed management in different stages of poultry bird.

CO2: Understand the role of milk and egg production.

CO3: Illustrate different breeds of dairy animals and buffaloes.

CO4: Illustrate different breeds of Poultry birds.

CO5: Understand how the application of modern animal production technologies and management practices impact their production.

#### MAPPING

PROGRAM ME OUTCOME	CO1	CO2	CO3	CO4	CO5
PO 1	√	√	√	√	√
PO 2	√	×	×	×	√
PO 3	√	√	√	√	√
PO 4	√	√	√	√	√
PO 5	√	×	×	×	√
PO 6	√	×	×	×	√
PO 7	√	√	√	√	√
PO 8	√	×	×	×	√

#### **PART II: SEMESTER-III ; CCF: 4 yr ZOOLOGY MINOR**

**Course Outcome (CO) : CCF (Minor)**

**Course Code: ZOOMN CC-1/MN-3 (Cell Biology)**

CO-1. Students get the knowledge about cell structure and function to understand the life sustaining process.

CO-2. Students understand the normal and abnormal conditions of cell functioning, get basic knowledge about cancer.

CO-3. Student get familiar with different tools and techniques in cell biology like microscopy, cell culture, cell fractionation, freeze fracture replication, freeze etching etc.

CO-4. Students learn the technics of cell measurement, cell staining and study cell viability.

### PO-CO Mapping- CC1-Cell Biology

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	√	√	X	X	√	X	X	X	X
CO2	√	√	X	√	√	√	√	√	√
CO3	√	√	X	√	√	√	√	√	√
CO4	√	√	X	√	√	√	√	√	√

### **PART II: SEMESTER-III ; CCF: 4 yr ZOOLOGY IDC**

#### **Course Outcome (CO) : CCF: (IDC) Zoology**

#### **Course Code: IDC- 3 (Animal Biology)**

The students will be able to

PO-1. Understand how organisms are classified and full and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding

PO-4. Learn basic laboratory and analytical skills

PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner

PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.

PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical

PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

CO-1 : Students understand animal diversity with their taxonomic positions.

CO-2 : Understand basic principles of Genetic and sex determination.

CO-3 : Learn about Biodiversity types, measurement of Biodiversity and its conservation.

CO-4 : Develop concept of vectors and disease cycle.

CO-5 : Learn basic principle of laboratory techniques like Karyotype analysis, Microscopy, Colorimetry and Ultracentrifugation.

	PO-1	PO-2	PO-3	PO-4	Po-5	Po-6	PO-7	PO-8	PO-9
CO-1	√	-	-	√	-	-	-	-	-
CO-2	-	√	√	√	-	-	√	-	-
CO-3	-	√	√	-	-	-	√	√	√
CO-4	-	-	-	-	√	-	√	-	-
CO-5	-	-	-	-	-	-	√	√	-

## **PART II: SEMESTER-IV; CCF: 4 yr ZOOLOGY MAJOR**

**Course Outcome (CO) : CCF: Zoology Major**

**Course Code: CC-5 (Non-chordate structure and function)**

The students will be able to

PO-1. Understand how organisms are classified and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding PO-4. Learn basic laboratory and analytical

PO-4. Learn basic laboratory and analytical skills

PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner

PO-7. Work safely and effectively in the field, in laboratories and in animal

facilities. PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical

PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

CO-1: Develop understanding on the diversity of life with regard to protists, non- chordates and chordates.

CO-2: Group animals on the basis of their morphological characteristics/ structures.

CO\_3: Develop critical understanding how animals changed from a primitive cell to a collection of simple cells to form a complex body plan.

CO-4: Understand how morphological change due to change in environment helps drive evolution over a long period of time.

CO-5: Develop understanding on the diversity of life with regard to non chordates

CO-6: Group animals on the basis of their morphological characteristics/ structures.

CO-7: Develop critical understanding how animals changed from a primitive cell to collection of simple cells to form a complex body plan.

CO-8: Examine the diversity and evolutionary history of a taxon

CO-9: Understand how morphological change due to change in environment helps drive.

## Mapping

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9
CO-1	√	√	√	√	<u>X</u>	√	√	<u>X</u>	<u>X</u>
CO-2	√	√	√	√	<u>X</u>	√	√	<u>X</u>	<u>X</u>
CO-3	√	√	√	√	<u>X</u>	√	√	<u>X</u>	<u>X</u>
CO4	√	√	<u>X</u>	√	<u>X</u>	√	√	<u>X</u>	<u>X</u>
CO-5	√	√	<u>X</u>	√	<u>X</u>	<u>X</u>	√	<u>X</u>	<u>X</u>
CO-6	√	√	√	√	<u>X</u>	<u>X</u>	√	<u>X</u>	<u>X</u>
CO-7	√	√	<u>X</u>	√	√	√	√	<u>X</u>	<u>X</u>
CO-8	√	√	<u>X</u>	√	√	√	√	<u>X</u>	<u>X</u>
CO-9	√	√	<u>X</u>	√	√	√	√	<u>X</u>	<u>X</u>

### **Course Outcome (CO) : CCF: Zoology Major** **Course Code: CC-6 (Parasitology)**

#### Programme Outcome:

- PO 1. Core Competency - In-depth knowledge and understanding about the fundamental concepts, principles and processes underlying the academic field of Zoology
- PO 2. Critical Thinking - Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats
- PO 3. Analytical Reasoning - Use appropriate information with a critical understanding
- PO 4. Research Skills - Design and conduct experiments to test a hypothesis, Understand and interpret data to reach a conclusion
- PO 5. Teamwork
- PO 6. Problem solving
- PO 7. Moral and Ethical Awareness - Accept the legal restrictions & ethical considerations placed for animal welfare.
- PO 8. Demonstrate competence in handling and statistical analysis of data gained from practical.

#### COs:

- CO1: Describe the mechanism for transmission, virulence and pathogenicity in pathogenic microorganisms.
- CO2: Diagnose the causative agents, describe pathogenesis and treatment for important diseases like malaria, Leishmaniasis, trypanosomiasis.
- CO3: Access the importance of incidence, prevalence and epidemiology in microbiological diagnostic activities.

CO4: Develop awareness about the causative agents and control measures of many commonly occurring diseases.

#### MAPPING

PROGRAMME OUTCOME	CO1	CO2	CO3	CO4
PO 1	√	√	√	√
PO 2	√	√	√	√
PO 3	√	√	√	√
PO 4	√	√	√	√
PO 5	X	X	X	√
PO 6	√	√	√	√
PO 7	X	X	X	X
PO 8	X	X	X	X

**Course Outcome (CO) : CCF (Major) Zoology**  
**Course Code: CC- 7 (Molecular Biology)**

The students will be able to

PO-1. Understand how organisms are classified and full and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding

PO-4. Learn basic laboratory and analytical skills

PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner

PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.

PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical

PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

CO 1: Develop an understanding of concepts, mechanisms and evolutionary significance and relevance of molecular biology in the current scenario.

CO 2: Get well versed in recombinant DNA technology which holds application in biomedical & genomic science, agriculture, environment management, etc. Therefore, a fundamental understanding of Molecular Biology will help in career building in all these fields.

CO 3: Apply their knowledge in problem solving and future course of their career development in higher education and research.

CO 4: Get new avenues of joining research in related areas such as therapeutic strategies or related opportunities in industry.

### Mapping

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9
CO-1	√	-	√	-	-	-	-	-	√
CO-2	-	√	-	√	-	-	-	√	-
CO-3	-	-	-	-	-	-	√	-	-
CO-4	-	-	-	-	-	√	√	√	√

### Course Outcome (CO) : CCF (Major) Zoology

#### Course Code: CC-8 (Ecology)

The students will be able to

PO-1. Understand how organisms are classified and full and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding

PO-4. Learn basic laboratory and analytical skills

PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner

PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.

PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical

PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

#### Course Outcome:

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

CO 1 . Know the evolutionary and functional basis of animal ecology.

CO 2. Understand what makes the scientific study of animal ecology a crucial and exciting endeavour.

CO 3. Engage in field-based research activities to understand well the theoretical aspects

taught besides learning techniques for gathering data in the field.

CO 4. Analyse a biological problem, derive testable hypotheses and then design experiments and put the tests into practice.

CO 5. Solve the environmental problems involving interaction of human and natural systems at local or global level.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	√	-	-	-	-	-	√	-	-
CO 2	-	√	-	-	-	-	-	-	-
CO 3	-	-	-	√	√	-	√	√	-
CO 4	-	√	√	√		√	-	√	√
CO 5	-	-	-	√	√	√	-	√	√

## **PART II: SEMESTER-IV; CCF: 4 yr ZOOLOGY MINOR**

### **Course Outcome (CO) : CCF: Zoology Minor**

#### **Course Code: ZOOMN-4 (Biochemistry)**

The students will be able to

PO-1. Understand how organisms are classified and full and identified

PO-2. Demonstrate knowledge of basic zoological principles

PO-3. Use appropriate information with a critical understanding

PO-4. Learn basic laboratory and analytical skills

PO-5. Use effective methods for modifying animal behaviour

PO-6. Participate in animal management programmes in an effective manner

PO-7. Work safely and effectively in the field, in laboratories and in animal facilities.

PO-8. Demonstrate competence in handling and statistical analysis of data gained from practical

PO-9. Learn communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats

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

CO-1: Understand about the importance and scope of biochemistry.

CO-2: Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids.

CO-3: Understand the structure and function of immunoglobulins.

CO-4: Understand the concept of enzyme, its mechanism of action and regulation.

CO-5: Understand the process of metabolism of carbohydrate, protein, lipid and nucleic acids.

CO-6: Develop the concept of free radicals and antioxidants.

## Mapping

	PO-1	PO-2	PO-3	PO-4	Po-5	Po-6	PO-7	PO-8	PO-9
CO-1	-	√	√	√	-	-	-	√	√
CO-2	-	√	√	√	-	-	√	√	√
CO-3	-	√	√	√	-	-	-	√	√
CO-4	-	√	-	√	-	-	√	√	-
CO-5	-	√	√	√	-	-	√	√	√
CO-6	-	-	-	-	-	-	√	√	√