



---

## Sophia College (Autonomous)

---

### Zoology

---

**FYSBC**

**SYLLABUS - SEMESTER I**

**THEORY COURSE- SBSZ00101**

**SYSTEMATIC CLASSIFICATION OF INVERTEBRATES AND ECOLOGY**

**Unit 1 - Classification of Animal Kingdom**

**Objective:**

- To comprehend classification of Invertebrates through the general characteristics of phyla up to class level and specific characters of the respective organisms.

**Desired outcome:**

- The learners will be familiarized with invertebrate classification and will also be able to understand the evolution of invertebrates from phylogenic aspect.

**Unit 2- Ecosystem**

**Objective:**

- To impart knowledge of different components of ecosystem and educate about essentials of coexistence of human beings with all other living organisms.

**Desired Outcome:**

- Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment.
- It would lead to better understanding about implications of loss of fauna specifically on human beings, erupting a spur of desire for conservation of all flora and fauna.



## **Sophia College (Autonomous)**

### **Unit 3 – Population Ecology**

#### **Objective:**

To facilitate the learning of population ecology, its dynamics and regulatory factors important for its sustenance.

#### **Desired Outcome:**

- This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life forms.

## **SEMESTER II**

### **THEORY COURSE SBSZOO201**

### **BIODIVERSITY, EVOLUTION AND ETHOLOGY**

#### **Unit 1- National Parks and Sanctuaries**

#### **Objective:**

- To enlighten learners about the current status of wild life conservation in India in the light of guidelines from different relevant governing agencies vis-à-vis with adversity of poaching and biopiracy.

#### **Desired Outcome:**

- Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism

#### **Unit 2 – Evolution**

#### **Objective:**

- To enlighten learners about how life started on earth and then evolved into the myriad species seen today.

#### **Desired Outcome:**



## Sophia College (Autonomous)

- The learners will gain the insight into process of evolution through various theories and evidences.

### Unit 3- Ethology

#### Objective:

- To acquaint the learners about the aspects of animal behavior.
- To make the concepts of animal learning understandable considering various aspects.

#### Desired outcome:

- Learners will be able to understand the characteristics of animal behavior.
- Learners will be able to appreciate the animal learning and its different aspects.
- Learners may be enthused to take up field studies to observe such behaviors and learning mechanisms of animals in their natural habitat.

### THEORY COURSE SBSZOO202

### GENETICS AND BIOCHEMISTRY

### Unit 1- Genetics

#### Objective:

- To introduce the learner to the basic terms and concepts of genetics.
- To study Mendelian and other types of inheritance.
- To understand application of genetic studies.

#### Desired outcome:

- Learners will understand and apply the principles of inheritance for various case studies.
- Learners would be able to realize the importance of genetic studies.



---

## Sophia College (Autonomous)

---

### Unit 2 - Biochemistry

#### Objective:

- To give learners insights about the structure and function of the biomolecules.

#### Desired outcome:

- Learner will be well versed with the foundations of biochemistry.
- Learners will realize the biological role and clinical significance of the biomolecules.

### Unit 3- Nutrition and Public Health

#### Objective:

- To make learners understand the importance of balanced diet and essential nutrients of food at different stages of life.

#### Desired Outcome:

- Awareness about healthy dietary habits and importance of a healthy life style would be created among the learners.
- Learners will also appreciate various health initiatives taken at national level.

**SYBSC**

**SEMESTER III**

**SBSZ00301**

**CLASSIFICATION OF CHORDATES AND DEVELOPMENTAL BIOLOGY**

**Unit: 1 Chordate Classification**

#### Objectives:

- To introduce the concepts of classification of chordates and developmental biology.

#### Desired outcome:

- Learner would understand the increasing complexity of chordates in the evolutionary hierarchy.



---

---

## Sophia College (Autonomous)

---

### Unit: 2 Human Reproduction

#### Objectives:

- To introduce the concepts of human reproductive system and its hormonal control

#### Desired outcome:

- Learner would understand the complexity of the human reproductive system and its hormonal control 5
- Learner would understand the various methods of birth control, causes of infertility and assisted reproductive techniques

### Unit: 3 Developmental Biology

#### Objectives:

- To introduce the concepts of developmental biology

#### Desired outcome:

- Learner would understand how embryological development takes place in animals

**SBSZ00302**

### CELL BIOLOGY AND GENETICS

### Unit: 1 Cell Biology

#### Objectives:

- To introduce the concepts of cell biology and the role played by cell organelles in a cell

#### Desired outcome:

- Learner would understand the interdependence between the various cell organelles.



---

## Sophia College (Autonomous)

---

### Unit: 2 Genetics

#### Objectives:

- To introduce the concepts of sex determination, sex linkage, and multiple alleles

#### Desired outcome:

- Learner would understand how genetics determines and influences the sex of an organism
- Learner would understand the concept of multiple alleles and linkages.

### Unit: 3 Nucleic Acids and Chromosomes

#### Objectives:

- To introduce the learner to the classical experiments proving DNA as the genetic material.
- To introduce the learner the structure of nucleic acids.

#### Desired outcome:

- Learner will understand the importance of nucleic acids as genetic material.
- Learner would acquire the knowledge about the structure and types of chromosomes.



---

## Sophia College (Autonomous)

---

**SBSZ00303**

**RESEARCH METHODOLOGY AND APPLIED ZOOLOGY- I**

**Unit: 1 Research Methodology**

**Objectives:**

- To introduce the concepts of research methodology.

**Desired outcome:**

- Learner would be able to the process of science and scientific writing.
- Learner would gain knowledge of science ethics and plagiarism.

**Unit: 2 Parasitology**

**Objectives:**

- To introduce the concepts of parasitology
- To introduce the learner to life cycle, pathogenicity, control measures and treatment of different parasites

**Desired outcome:**

- Learner would understand the concept of host-parasite relationship and host specificity
- Learner would be familiarized with different parasites and their effect on human beings

**UNIT3: Pollution and its effect on organisms**

**Objective:**

- To provide a panoramic view of impact of human activities leading to pollution and it's on birds, animals etc.

**Desired Outcome:**

- The learners will be sensitized about the adverse effects of pollution and the impact on biodiversity and measures to control it.



---

## Sophia College (Autonomous)

---

**SEMESTER IV**

**SBSZ00401**

**LIFE PROCESSES**

**Unit 1: Nutrition, Excretion and Osmoregulation**

**Objectives:**

- To introduce the concepts of physiology of nutrition, excretion and osmoregulation.
- To expose the learner to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms.

**Desired outcome:**

- Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.
- Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.

**Unit: 2 Respiration and Circulation**

**Objectives:**

- To introduce the concepts of physiology of respiration and circulation
- To expose the learner to various respiratory and circulatory organs in different classes of organisms.

**Desired outcome:**

- Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.
- Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs.





## **Sophia College (Autonomous)**

### **Unit: 3 Locomotion, Control and Coordination**

#### **Objectives:**

- To expose the learner to various locomotory structures of different classes of organisms.
- To introduce the concepts of control and coordination mechanism seen in invertebrates and vertebrates.

#### **Desired outcome:**

- Learner would be acquainted with various locomotory structures found in the animal kingdom.
- Learner would understand the process of control and coordination by nervous and endocrine regulation.

**SBSZ00402**

### **BIOCHEMISTRY& HISTOLOGY**

#### **Unit 1: Enzymology**

#### **Objectives:**

- To introduce to the learner the fundamental concepts of enzyme biochemistry
- To enable the learner, realize applications of enzymes in basic and applied sciences.

#### **Desired outcome:**

- Learner would understand fundamentals of enzyme classification and structure
- Learners would be able to comprehend the mechanism of enzyme action and its kinetics.

#### **Unit 2 : Molecular Biology**

#### **Objectives:**

- To introduce the learner to the concept of central dogma of molecular biology.
- To familiarize the learner with the concept of gene expression and regulation.
- Learner will understand the molecular processes involved at gene level
- Learner would comprehend and appreciate the regulation of gene expressions.



---

## Sophia College (Autonomous)

---

### Unit 3: Histology

#### Objective:

- To introduce the learner to histological structure of some of the endocrine and exocrine glands

#### Desired outcome:

- Learner would understand the normal histology of some of the important glands
- Learner would be able to interpret changes cellular architecture in research studies like toxicology.

SBSZOO403

### APPLIED ZOOLOGY-II

#### Unit1: Economic Entomology

#### Objectives:

- To introduce the economic importance of Zoology

#### Desired outcome:

- Learner would understand the how the study of Zoology impacts the economic world.

### UNIT 2: Fisheries

#### Objectives:

- To orient learners towards various types of Indian fisheries
- To impart knowledge regarding the scope of fishery as a resource in India.

#### Desired Outcome:

- Learner shall appreciate the scope of fishery in India, especially because Mumbai is a coastal region.
- Learner will gain information regarding various aspects of fishery industry and may explore this as a future entrepreneurial prospect.



---

## **Sophia College (Autonomous)**

---

### **UNIT 3: DAIRY SCIENCE**

#### **Objectives:**

- To comprehend the functioning of various aspects of dairy industry.
- To study different indigenous cattle breeds including buffalo breeds of India.
- To develop an understanding of the different aspects of dairy processing and dairy product.

#### **Desired Outcome:**

- Learner would gain knowledge on the functioning of various aspects of dairy industry, indigenous cattle and buffalo breeds in India.
- Learner will gain information regarding various aspects of dairy industry and may explore this as a future entrepreneurial prospect.