

Course Code	Course Name	Credits
26ZY003	FUNDAMENTALS OF ANIMAL PHYSIOLOGY	04

### Course Objectives

- To provide knowledge of the structure and functions of major organ systems in animals.
- To understand the physiological mechanisms involved in digestion, circulation, respiration, excretion, and reproduction.
- To explain the role of muscles, nerves, and endocrine glands in body coordination and regulation.
- To study homeostasis and physiological adaptations in animals.
- To develop an understanding of the integration of different organ systems in maintaining life processes.

### Learning Outcomes

- Explain the structure and functions of major physiological systems in animals.
- Understand the mechanisms of digestion, circulation, respiration, excretion, and reproduction.
- Describe the role of muscles, neurons, hormones, and endocrine glands in body functions.
- Differentiate various physiological processes such as thermoregulation, osmoregulation, and reflex actions.
- Apply physiological concepts to understand the maintenance of homeostasis in animals.

### Unit 1 – Digestive System (12 Hrs.)

Overview of digestive system, functional anatomy of digestive system: mouth, pharynx, oesophagus, the stomach the small and large intestine. Digestive glands; Physiology of digestion; Absorption of carbohydrates, proteins, lipids. various types of digestive enzymes (Carbohydrates, proteinases, lipases).

### Unit 2 – Cardiovascular system (12 Hrs.)

Blood: Comparative account of circulatory system (Open and Closed), Composition of Blood, Lymph, tissue fluid, aortic arches. Homeostasis, Heart- structure and function, Origin and conduction of the cardiac impulse, heart beat cardiac cycle, blood pressure, ECG.

### Unit 3 - Respiration and Excretion (12 Hrs.)

Exchange of gases, Transportation of oxygen and carbon dioxide in blood. Respiratory pigments. Osmoregulation in fishes, Thermoregulation in poikilotherms, homeotherms and heterotherms. Aestivation and Hibernation. of Kidney & Nephron- Structure and function, Types of nitrogenous excretory products, mechanism of urine formation.

### Unit 4 – Muscle and Nervous System (12 Hrs.)

Types of muscle; Ultra structure of skeletal muscle; Muscle contraction; Muscle twitch; Motor unit. Structure of neuron, resting membrane potential, Action potential and its propagation across nerve fibers; Types of synapses, Synaptic transmission and Neuromuscular junction; Reflex action and its types - reflex arc; Physiology of hearing and vision.

### Unit 5 - Reproduction and Endocrine System (12 Hrs.)

Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female. Structure of endocrine glands - pineal, pituitary, thyroid, pancreas, adrenal and their hormones.

### Reference Books:

1. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Herculat Asia PTE Ltd. W.B. Saunders Company.
2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons,
3. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
4. Vander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills
5. Geetha N. (2014). Textbook of Medical Physiology. Paras Medical Publisher.

### Websites and eLearning Sources:

<https://openstax.org/details/books/anatomy-and-physiology>  
<https://www.easybiologyclass.com/category/animal-physiology/>  
<https://biologydiscussion.com/physiology>