

Course Code	Course Name	Credits
26ZY505	ANIMAL PHYSIOLOGY	04

Course Objectives

- To understand the basic principles and mechanisms of animal physiological processes.
- To study the functions of major organ systems in animals.
- To acquire knowledge on metabolism, respiration, circulation and excretion.
- To understand hormonal and neural regulation of body functions.
- To develop awareness of physiological adaptations and homeostasis in animals.

Learning Outcomes

- Explain the fundamental concepts and processes of animal physiology.
- Describe the structure and functions of different organ systems in animals.
- Discuss physiological mechanisms involved in digestion, respiration, circulation and excretion.
- Analyze the role of endocrine and nervous systems in regulating body activities.
- Apply physiological principles to understand adaptation, health and environmental responses in animals.

Unit 1 – Digestive and Respiratory Physiology (12 Hrs.)

Physiology of digestion; structure and functions of digestive glands; digestion and absorption of carbohydrates, proteins and lipids; nutrition and metabolism; respiratory organs in animals; mechanism of respiration; transport of respiratory gases; respiratory pigments and regulation of respiration.

Unit 2 – Circulatory and Excretory Physiology (12 Hrs.)

Composition and functions of blood; blood groups and coagulation; structure and function of heart; cardiac cycle and blood circulation; blood pressure and regulation; excretory organs and excretory products in vertebrates; structure and function of Kidney and nephron; urine formation and excretion.

Unit 3 - Osmoregulation and Thermoregulation (12 Hrs.)

Concept of homeostasis; osmoregulation in freshwater, marine and terrestrial animals; osmoregulatory organs and mechanisms; water and electrolyte balance; thermoregulation in ectotherms and endotherms; mechanisms of heat production and heat loss; physiological adaptations to extreme environments; stress physiology and environmental adaptation.

Unit 4 – Nervous and Muscular Physiology (12 Hrs.)

Organization of nervous system; structure and physiology of neuron; nerve impulse transmission; synapse and neurotransmitters; central and autonomic nervous systems; sensory receptors; structure and physiology of muscles; mechanism of muscle contraction and neuromuscular coordination.

Unit 5 - Endocrine and Reproductive Physiology (12 Hrs.)

Endocrine glands and hormones; mechanism of hormone action; physiological roles of pituitary, thyroid, parathyroid, adrenal and pancreatic hormones; reproductive physiology in males and females; menstrual and estrous cycles; pregnancy and lactation.

Reference Books:

1. Guyton, A.C. and Hall, J.E. (2016). Textbook of Medical Physiology. Elsevier Publishers.
2. Hoar, W.S. (1983). General and Comparative Physiology. Prentice Hall Publications.
3. Prosser, C.L. and Brown, F.A. (1991). Comparative Animal Physiology. Wiley-Liss Publishers.
4. Eckert, R. and Randall, D. (1988). Animal Physiology: Mechanisms and Adaptations. W.H. Freeman and Company.
5. Arumugam, N., Murugan, T. and Johnson Rajeshwar (2010). Animal Physiology. Saras Publication.

Websites and eLearning Sources:

<https://open.oregonstate.edu/aandp/>
<https://www.biologydiscussion.com/animal-physiology>
<https://www.easybiologyclass.com/category/animal-physiology/>