

**II
SEMESTER
HARD
CORE COURSES
BSC501ANIMAL
PHYSIOLOGY**

52hrs

After successful completion of the course, students will be able to :

- CO 1. Gain in-depth understanding of **gastrointestinal system, associated disorders**, digestive processes and mechanism of absorption of nutrients.
- CO 2. Comprehend ultrastructure and functioning of nerves and muscles.
- CO 3. Understand the importance of various **endocrine glands, associated disorders**, hormones and their mode of action
- CO 4. Understand osmoregulation and excretion mechanisms and modes across organisms.
- CO 5. Comprehend the concept of thermoregulation and adaptive features.
- CO 6. Develop in-depth understanding of sensory receptors

Unit I (13 hours)

Gastrointestinal System: Digestive processes and mechanisms of absorption of dietary carbohydrates, proteins and lipids; coordination of digestive and absorptive activities; **gastrointestinal disorders**.

Nervous system: Neuron and nerve impulse conduction synapses, synaptic transmission and neurotransmitters; reflex mechanisms; functions of the sensory and motor areas of the CNS; autonomic nervous system.

Unit II (13 hours)

Endocrine system: Hypothalamus. Endocrine glands - pituitary, thyroid, parathyroid, adrenals, pancreas, ovary, testis, pineal, GI tract and placenta: hormones - release, transport, mechanism of action and biological action; Neurohormones of the hypothalamus; **endocrine disorders**, Neuroendocrine system in Insecta and Crustacea.

Muscular system: Contraction of skeletal muscle; molecular basis of muscle contraction; energetics of muscular contraction; neuromuscular transmission and excitation contraction coupling; muscle atrophy and dystrophy.

Unit III (13 hours)

Osmoregulation and excretion: Biological significance of water; Osmoregulation in aquatic and terrestrial vertebrates; regulatory mechanisms; Major functions of excretory system; Organs of excretion- Basic processes responsible for the formation of the excreted fluid; Functional types- Generalized excretory organs and Specialized excretory organs; Classification of excretory organs and their distribution in the animal Kingdom; General patterns of nitrogen and non-protein nitrogen excretion; physiology of urine formation in mammals; renal diseases.

Unit IV (13 hours)

Thermoregulation: Thermoregulation-a phenomenon of homeostasis; Thermoregulatory adaptations-Physiological, Physical and Behavioral adaptations; Thermoregulation in aquatic and terrestrial invertebrates; Thermoregulation in Vertebrates-Fishes, Amphibians, Reptiles, Birds and Mammals.

Receptor system: Sensory receptors-classification and properties; Receptor Mechanisms: Chemoreceptors- gustatory receptors and olfactory receptors, Mechanoreceptors- Touch or pressure receptors, Pain receptors, Receptors concerned with equilibrium, gravity,

acceleration and vibration, Phonoreceptors; Electromagnetic receptors- Photoreceptors



Thermoreceptors; Special Senses- Neurophysiology of Vision, Hearing and Chemicalsenses.

