II SEMESTER
HARD CORECOURSES
BSH501ANIMAL PHYSIOLOGY

52hrs

Course Outcomes:

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

CO 1. Gain in-depth understanding of gastrointestinal system, associateddisorders, digestive processes and mechanism of absorption of nutrients.
CO 2. Comprehend ultrastructure and functioning ofnervesand muscles.
CO 3. Understand the importance of various endocrine glands, associated disorders,hormonesand 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 nervoussystem.

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.

References:

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5. Guyton, A.C. & Hall, J.E. (1996). Text Book of Medical Physiology. 9th Ed. W.B. Saunders Company, Philadelphia.
6. Jenson, D. (1976). Principles of Physiology, Appleton CenturyCrafts.
7. Gorbman, A & Bern, H.A. (1974). A text book of Comparative Endocrinology. Wiley Eastern.
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