

COURSE TITLE:

ENVIRONMENTAL PHYSIOLOGY

COURSE DESCRIPTION:

- I. Introduction Interaction of organisms with their environment (role of physiology), homeostatic processes for thermoregulation, fever
- II. Muscle and Movement: Muscle structure and function, energetics of locomotion, exercise physiology, cost of transport (swimming, flying, running), control of voluntary movements
- III. Gas exchange and physiology of ventilation: Respiratory organs, ventilation in aquatic environments, ventilation in amphibians, reptiles, and birds and mammals, regulation of breathing
- IV. Anatomy and physiology of the circulatory system: Fish, amphibians, reptiles, birds, and mammals, hemodynamics, regulatory processes
- V. Blood components function in exchange, transport and defense. Innate and adaptive immunity, recognition and response
- VI. Food, nutrition, digestion. Adaptations of digestive systems to diet, energy metabolism (aerobic and anaerobic), regulation of digestion and energy storage
- VII. Water and Electrolyte Balance. Osmoregulation: aquatic and terrestrial animals, nitrogen excretion and kidney function amphibians, reptiles, birds and mammals, hormonal control of kidney function
- VII. Endocrine and neuroendocrine physiology, Endocrine tissues and organs, response to stress
- VIII. Reproduction, Hormonal control of reproductive systems, gametogenesis, fertilization, embryonic development and birth
- IX. Higher functions of the nervous system: Biological clocks, physiology of sleep, navigation and seasonality, behavior and learning, communication
- X. Processing of the information from the environment. Sensory systems, touch, taste, smell, sound and vision, Sensation and perception

LITERATURE:

Campbell Biology by Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson Pearson Education, Inc. ISBN-13: 978-0321775658
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