| **LS427A** | **Animal Physiology** | **2 Credits** |
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| Name of the Faculty: Sushil Jha* and Amal C. Mondal* | | |
| **S.No.** | **Topic** | **Faculty Name/ Contact Hours** |
| 1. | Tissue system and their functions: Epithelial tissue, Connective tissue, Muscular tissue, and Nervous tissue. | 2 |
| 2. | Digestive system: Acquisition of Energy: Types of feeding, Digestion, Gastric secretions and motility, Absorption and metabolism, Physiology of gastrointestinal system (mammals) including neural and hormonal regulatory mechanisms. | 4 |
| 3. | Muscle and animal movement: Electrophysiology and biochemistry of contraction in skeletal, cardiac and smooth muscles. | 3 |
| 4. | Nervous system: Communication between neurons, the brain, and its different parts, Neurotransmitters, and their functions. | 1 |
| 5. | Thermoregulation: Temperature dependence of metabolic rate, determinants of body heat and temperature, thermal biology of Ectotherms, heterotherms, and endotherms. Tolerance to high temperature, cold and freezing, Physiology of hibernation and aestivation. | 2 |
| 6. | Endocrine system: Glands and Hormones: Secretory mechanisms, Endocrine and Neuro-endocrine systems. Cellular mechanism of hormone action. Physiological effects of hormones. | 3 |
| 7. | Reproductive system: Asexual and sexual reproductive system, Gonads, gametes, Gametogenesis and hormonal control, Fertilization, Capacitation. | 2 |
| 8. | Circulatory systems: general plan, electrical and mechanical properties of myogenic and neurogenic hearts. Heart cycle including electrocardiogram, Hemodynamics. Cardiovascular response to extreme conditions like exercise, diving, and hemorrhage. Neural control of the cardiovascular system. Immune responses. | 5 |
| 9. | Respiratory system: respiratory pigments, transport of gases in the blood, regulation of body pH, respiratory response to extreme conditions like hypoxia, diving and exercise. Physiology of respiration (mammals) and neural control of breathing. | 4 |
| 10. | Excretory system: Anatomy and physiology of mammalian kidneys. Structure and functions of the mammalian kidney, nephron, urine formation, and micturition. Secretion and reabsorption of different ions and water. | 5 |
| 11. | Osmoregulation: Conformers, obligatory exchanges of ions and water. Osmoregulation in water and terrestrial environment. Acid-base balance, body buffer system. | 2 |

**Suggested reading:**


1. Animal Physiology by Hill, Wyse & Anderson (2004)
2. Eckert Animal physiology by Randall Burggren & French (2005)
3. Guyton-text book of Medical Physiology