

**Programme:** M. Sc. (Zoology)

**Course Code:** ZOC-202

**Title of the Course:** Comparative Physiology of Animals

**Number of Credits:** 3

**Effective from AY:** 2018-19

<b><u>Prerequisites for the course:</u></b>	Elementary knowledge on animal anatomy, Physiology taxonomy and systematics.	
<b><u>Objective:</u></b>	This course provides knowledge of animal body system functions across levels of organization, from sub cellular through organismal, in order to reveal physiological homologies, patterns of physiological adaptation to various environments and general physiological principles in a wide range of organisms to understand how organisms evolved their functional characteristics and how they stay alive in the face of constantly changing internal and external environments.	
<b><u>Content:</u></b>	<b>Module 1:</b> Digestion: Principle of digestion, Gastric phases of digestion and its regulation Absorption of digestive nutrients; egestion of undigested food, Metagenome of gut. Excretion and Osmoregulation: Role of gills in excretion; Role of kidney in excretion, Osmoregulation, Volume regulation.	12 hours
	<b>Module2:</b> Circulation: Physical principle of circulation, systems of circulation; Ventilation –perfusion ratio; Pumping activity of heart; Action potential – Pace maker and Myocardiac; Electrical-mechanical relationship; Cardiac cycle, sure, Electrical Changes; Regulation of heart beat, cardiac output and blood pressure.	12 hours
	<b>Module 3:</b> Muscle physiology: Muscle contraction, Neuro-muscular Junction, Physiology of electric organ. Neurophysiology: neuron and glia; neurotransmitters and their physiological functions; learning and memory; posture; Photoreception, Thermo reception, Chemoreception; Pheromones and other similar chemicals as means of communication among the animals.	12 hours
<b><u>Pedagogy</u></b>	Lectures/ tutorials/assignments/self-study	
<b><u>References/Readings</u></b>	1. Kenney WL, Wilmore J and Costill D, Physiology of Sport and Exercise, Amazon, UK. 2. Moyces C and Schulte P, Principles of Animal Physiology, Pearson International Edition, USA. 3. Prosser CL, Comparative Animal Physiology (vol 1 and 2), Willey Publication, Oxford. 4. Randall D, Burggren W and French K, Eckert Animal Physiology, WH Freeman and Co, New York. 5. Withers P, Comparative Animal Physiology, Saunders College Publications,	
<b><u>Learning Outcomes</u></b>	1. Understanding of the basic concepts and processes of physiological regulation, from cellular to organ to	

	<p>organismal.</p> <ol style="list-style-type: none"> <li>2. Understanding of how different groups of animals have different physiological adaptations appropriate to carry out the required function to the fullest.</li> <li>3. Appreciation of the gorgeous diversity of physiological possibilities that animals have developed through natural selection.</li> </ol>	
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