

Semester	AUG 2022
Open to semester	7,13,21
Course code	<b>BI4113/BI6163</b>
Course title	<b>Animal Physiology - II</b>
Credits	3 /3
Course Coordinator & participating faculty (if any)	Raghav Rajan*, N. Subhedar
Nature of Course	Lectures
Pre-requisites	BI3214 Animal Physiology I
Objectives (goals, type of students for whom useful, outcome etc)	<p>While the students have been given extensive training in human physiology during BI3214, this course offers insights into the physiology of sub-mammalian vertebrates and invertebrates. Special physiological adaptation displayed by the animals in diverse habitats will be discussed. Thermal relations encountered in endo- and ectothermic animals will be explained. With focus on various invertebrate model organisms, we will try to understand the selective pressures that shape physiological phenotypes across the animals. Some of the seminal research papers and reviews in the field will be discussed. The course will prepare the student for undertaking research in any area of animal physiology and also prepare the student to better understand the adjoining areas in biology.</p>
Course contents (details of topics /sections with no. of lectures for each)	<p>Section #1- (Title and no of lectures)  Physiology of sub-mammalian vertebrates (14 lectures)  Physiology of circulation, respiration, ionic balance, excretion, digestion and reproduction in terrestrial and aquatic sub-mammalian vertebrates. Sensory perception and motor responses in animals in terrestrial and aquatic media. Thermoregulation in ectothermic and endothermic animals.</p> <p>Section #2 – (Title and no of lectures)  Physiology of invertebrates (12 lectures)  Circulation, ionic balance and excretion, respiration, digestion,</p>

	<p>metamorphosis, muscle physiology, locomotion, reproduction, nervous and neuroendocrine systems, pheromones, olfaction and sound perception will be discussed with focus on different invertebrate model organisms like <i>C. elegans</i>, <i>Drosophila</i>, squid, octopus and <i>Aplysia</i>. Krogh's Principle and application of invertebrate animal models in the study of physiology.</p> <p>Special topics (4 lectures) Physiology and evolution of photoperception across different invertebrate and vertebrate phyla.</p> <p>Number of lectures: 30</p>
Evaluation /assessment	<p>End-Sem Examination-30% Mid-Sem Examination-30% Others-Quiz - 40%</p>
Suggested readings (with full list of authors, publisher, year, edn etc.)	<p>Text Book(s)</p> <ol style="list-style-type: none"> <li>1. Randall, D. et al. (2002) <i>Eckert Animal Physiology</i>, 5th Ed. Freeman.</li> <li>2. Hill, R.W. et al. (2008) <i>Animal Physiology</i>. 3rd Ed. Sinaur Associates.</li> <li>3. Evans DH et al. (2014) <i>The Physiology of Fishes</i>. 4th Ed. CRC Press.</li> <li>4. Withers, P.C. et al. (1992) <i>Comparative Animal Physiology</i>. 1st Ed., Brooks Cole</li> <li>5. Hoar and Randall (2014) <i>Fish Physiology</i>. Elsevier.</li> <li>6. Knut Schmidt-Nielsen (1997) <i>Animal Physiology:SAadaptation and Environment</i>. 5th Edn.</li> <li>7. Chapman RF et al. (2013) <i>The Insects Structure and Function</i>. 5th Ed. Cambridge University Press.</li> <li>8. Gilbert IL (2012) <i>Insect Endocrinology</i>. Academic Press.</li> </ol>