



Birla Institute of Technology and Science, Pilani

Hyderabad Campus

FIRST SEMESTER 2022-2023

Course Handout

Dated: 29th August, 2022

Course No : BIO F313
Course Title : Animal Physiology
Instructor-In charge : Dr. PRAGYA KOMAL
SKV Manjari

1. Course Description:

Fundamentals underlying the working of tissues and organ systems in animals with emphasis on mammalian systems and integration of organ systems at the level of the whole organism. Important physiological systems will be taught such as respiratory, circulatory, nervous, endocrine, excretory, muscles, skeletal and reproductive systems.

2. Scope & Objective:

This course attempts to bring the awareness to the students regarding major features of physiological system in animals with focus on human physiology. Emphasis will be given to the function and adaptations as related to the survival of organisms in their ecosystem.

Text Book:

Sherwood, L., Klandorf, H. and Yancey, P.H., Animal Physiology: From Genes to Organisms, 2005, Brook/Cole Cengage Learning, Singapore

Reference books:

- 1.Sherwood L: Principles of Human Physiology. Brook/Cole Cengage Learning, Indian edition
- 2.Christopher D. Moyes and Patricia M. Schulte, Principles of Animal Physiology. 2nd edition Pearson Education, 2016

Course plan:

Lect.	Learning objective	Topics to be covered	Chapter in the Text Book
1-2	Homeostasis and Membrane Physiology	Introduction to Physiology and Homeostasis; Size and Scale among Organisms; Homeostasis is essential for proper cell function, and most cells, as part of an organized system, contribute to homeostasis; animals vary in their	TB: Chap 1 &3 RB1: Chap 1

		homeostatic abilities; Negative feedback is the main regulatory mechanism for homeostasis; Membrane Potential and Intercellular Communication and Signal Transduction	
3-7	Neuronal Physiology	How are electric signals generated and transmitted ? ; Introduction; graded and action potential; Chemical and electrical synapse; Neuromuscular synapse	TB: Chap 4 Review/research articles
8-12	The Vertebrate Nervous System: Overview and Peripheral System	Organization, parts and functions of Brain, and the spinal cord; cerebral cortex, memory, Learning, memory and sleep	TB: Chap 5 RB2: Chap 7
13-17	How do we sense a stimulus?	Sensory Physiology; Different types of receptors and perception of external and internal environment; mechanoreceptors; photoreceptors; chemoreceptors; Thermoreceptors; nociception	TB: Chap 6
17-21	Support and movement of the body;	Muscles Physiology; Types of muscles and functions; Molecular Basis of Skeletal Muscle Contraction	TB: Chap 8
22-27	Hormones and their function; How the Endocrine System Contributes to the Body as a Whole	Endocrine system; Vertebrate Endocrinology: Central Endocrine Glands; Cross talk between pituitary and hypothalamus	TB: Chap 7 Review articles
27-31	Self-maintenance and exchange of metabolites	Circulatory system; Circulatory vessels and Circulatory Pumps: Heart Electrical Activity (EEG); Integrated Cardiovascular Function	TB: Chap 9 Review/research articles
31-34	Breathing and exchange of gases; Gas Demands:	Respiration system;	TB: Chap 11

	General Problems	Breathing: Respiratory Mechanics in Mammals; Gas Exchange at Vertebrate Respiratory Organs and Body Tissues	
34-38	Organ system and glands involved in food processing	Digestive system; General Aspects of Digestion; Digestive Accessory Organs: Pancreas, Liver, Gallbladder, Fat Body; Overview of the Gastrointestinal Hormones; Liver and Small intestine	TB: Chap 14
38-42	Regulating the internal environment and removing the waste	Excretory system; Mammalian Urinary System: Overview and Glomerular Filtration; Mammalian Kidneys: Tubular Reabsorption; Mammalian Kidneys: Osmoconcentration; Osmotic and Volume Balance: Overview and Osmoconformers	TB: Chap 12 Research articles

Evaluation scheme:

Component	Duration	Weightage % (Total marks-200)	Date & Time	Venue	Nature of Component
Mid Semester Test	1.5 hrs.	30 (60M)	03/11 11.00 - 12.30PM		CB
Multiple Quizzes	Variable	30 (60M)	Announced in class		CB
Comprehensive	3 hrs.	20 (40M) 20 (40M)	24/12 AN		CB OB

OB- Open Book

Chamber consultation hour: To be announced in lecture class hour on 17th August 2020.

Notices:

All notices/ announcements regarding this course shall be displayed in Course Management System

Grading policy: Award of grades will be guided in general by the histogram of marks. Decisions on borderline cases will be taken based on the individual's sincerity, student's regularity in attending classes, and the instructor's assessment of the student.

Make-up policy:

Make-ups will be granted for mid-semester examination or comprehensive examination only if the candidate is found seriously sick. **A request letter for the same must be provided by the student with the parent's signature on it, supplemented with a doctor's prescription. No make-up will be granted for quizzes under any circumstances.**

Academic Honesty and Integrity Policy:

Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor-in- charge
BIO F313