Institute of Zoology
Faculty of Life Sciences
University of the Punjab, Lahore

Course Outline

Programme	BS Zoology	**Course Code**	**ZOOL-318**	**Credit Hours**	2
Course Title	**Physiology-II**				

Course Introduction

Physiology refers to the scientific study of regular functions in living organisms. This study focuses on how certain organisms survive, work and function. It also studies how all aspects of the body of that organism, such as biological, physical, and chemical, are interrelated and vital to the survival of that organism.

Learning Outcomes

Following the completion of this course, each student should have:

1. An understanding of critical concepts, processes, and factual information in the performance of functions and changing conditions.
2. A knowledge of resources for finding the solution for strategies to sustain diverse forms of animal life kept and in wild in normal and abnormal conditions.
3. The ability to utilize knowledge of animal physiology in critical study and for making intelligent decisions in professional life.

	Course Content	**Assignments/Readings**
Week 1	**Cardiovascular Mechanisms:** Electrical activity of heart	
	Automaticity,	
Week 2	Rhythmicity	
	Electrocardiography	
Week 3	Hemodynamics	
	Blood flow	
Week 4	Blood Pressures	
	Blood flow, pressures and resistance and their interrelationships	
Week 5	Nervous and humoral control of cardiac activity (cardiac output) and peripheral circulation.	
	Exchange of Gases: Physiologic anatomy of lungs	
Week 6	Exchange of O_2 and CO_2 between respiratory surface (the lungs) and body cells.	
	Transport of O_2 and CO_2 in blood.	
Week 7	Nervous and chemical regulation of lungs respiration	
	Excretion and Osmoregulation: Vertebrate nephron as osmoregulatory organ	
Week 8	Physiological anatomy	
	Glomerular filtration	
Week 9	Dynamics of glomerular filtration	
	Factors affecting glomerular filtration	
Week 10	Tubular re-absorption and secretion	
	Absorptive capabilities of tubular segments	

Week 11	Hypotonic urine formation	
	Hypertonic urine formation	
Week 12	Autoregulation of glomerular filtration rate	
	Nervous and hormonal regulation of glomerular filtration	
Week 13	**Nutrition:** Potentials and Movements in Gastrointestinal tract	
	Control of Motility and contractility	
Week 14	An overview of digestive secreions in various segments of gastrointestinal tract	
	Physiological anatomy of digestive tract (mammalian model)	
Week 15	Absorption of water through highly absorptive surface of small intestine	
	Absorption of ions through highly absorptive surface of small intestine	
Week 16	Absorption of nutrients through highly absorptive surface of small intestine	
	Absorption in large intestine	

Textbooks and Reading Material

Reference Books:

1. Guyton, A.C. and Hall, J.E., 2020. Textbook of Medical Physiology, 14th Ed. W.B. Saunders Company, Philadelphia.
2. Withers, P.C., 1992. Comparative Animal Physiology. Saunders College Publishing, Philadelphia.
3. Randall, D., Burggren, W., French, K. and Fernald, R., 2015. Eckert Animal Physiology: Mechanisms and Adaptations, 6th ed. W.H. Freeman and Company, New York

Teaching Learning Strategies

Learning Objectives:

At the end of the course the student will be able to:

1. Understand on the molecular and cellular mechanisms of physiological function as the basis of unity in diverse animals e.g. membrane excitability, exchange of respiratory gases, removal of nitrogenous wastes tissue, osmotic and organ physiological mechanisms underlying animal homeostasis and temperature effects.
2. Grasp the development of performing the function developed at molecular and cellular level in the complexity of the animals such as chemical & nervous integration, respiratory and excretory functions.
3. Know the strategy acquired to perform the functions in diverse environment such as in dry & aquatic and cold and hot at molecular and cellular level and regulations to achieve strategy by chemical and nervous regulation at organ levels.
4. Comprehend the concepts in homeostasis and integration in sustaining the life in constantly changing conditions.

Teaching Strategies:

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments: Types and Number with Calendar

Group Presentations:

- The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.