

LIFS 3040: ANIMAL PHYSIOLOGY

COURSE SCHEDULE: SPRING TERM 2023

COURSE INSTRUCTORS
Prof. Andrew L. Miller (ALM)*
Prof. Pingbo Huang (PBH)
 *Course Director

Time: Monday 3:00 pm – 4:20 pm and Friday 10:30 – 11:50.
Location: LTJ

Recommended Text: "Animal Physiology - Mechanisms and Adaptations" 5th Edition by Eckert, Randall, Burggren and French. W.H. Freeman & Co. ISBN 0-7167-3863-5

Week	Date	Lecturer	Subject
1	3/2 (Fri)	ALM	An Introduction to Animal Physiology.
Module I: Muscle and Movement (Chapter 10)			
1	6/2 (Mon)	ALM	a. Structural basis of contraction. b. Sliding filament theory. c. Cross-bridge function and the generation of force.
1	10/2 (Fri)	ALM	d. Role of Ca ²⁺ in contraction. e. Electromechanical coupling. f. Mechanical properties of contracting muscle.
2	13/2 (Mon)	ALM	g. Neural control of contraction. h. Modulation of muscle contraction. i. Cardiac muscle. j. Smooth muscle. k. Sources of energy.
End of Module I			
Module II: The Heart & Circulation of the Blood (Chapter 12)			
2	17/2 (Fri)	ALM	a. Introduction to the cardiovascular system (CVS). b. General plan of the circulatory system.
3	20/2 (Mon)	ALM	c. Functional morphology of the mammalian heart. d. Electrical activities of the heart. e. The ECG and impulse conduction.
3	24/2 (Fri)	ALM	f. Excitation and contraction coupling in cardiac muscle. g. Neural control of the heart. h. Cardiac cycles – the heart as a pump.
End of Module II			

Week	Date	Lecturer	Subject
Module III: The Lungs and Exchange of Gases (Chapter 13)			
4	27/2 (Mon)	ALM	a. Structure of the respiratory tract. b. The mechanics of breathing.
4	3/3 (Fri)	ALM	c. Surface tension, surfactant, and lung compliance. d. Lung volumes and ventilation.
End of Module III			

Module IV: The Kidney: Osmoregulation and Excretion (Chapter 14)			
5	6/3 (Mon)	ALM	a. Introduction to homeostasis. b. Gross structure of the kidney. c. Fine structure of the kidney: the nephron.
5	10/3 (Fri)	ALM	d. Function of the nephron. e. Filtration: the renal corpuscle. f. Reabsorption and secretion.
6	13/3 (Mon)	ALM	g. Counter current mechanisms of the medulla. h. The loop of Henle. i. The vasa recta.
End of Module IV			

Week	Date	
6	17/3 (Fri)	MID-TERM EXAM (Only examined on Modules I to IV). Format: MC and Fill in the Blanks.

Week	Date	Lecturer	Subject
Module V: The Endocrine System (Chapter 9)			
7	20/3 (Mon)	PBH	a. General concepts of the endocrine system. b. The chemistry of hormones. c. Mechanisms of hormone actions.
7	24/3 (Fri)	PBH	d. Neuroendocrine system.
8	27/3 (Mon)	PBH	e. Metabolic and developmental hormones.
8	31/3 (Fri)	PBH	f. Hormones regulating water/electrolyte balance.
9	3/4 (Mon)	PBH	g. Reproductive hormones

Week	Date	Lecturer	Subject
Module VI: Digestion and Absorption (Chapter 15)			
9	14/4 (Fri)	PBH	a. Overview of the digestive system.
10	17/4 (Mon)	PBH	b. Digestion (Part I).
10	21/4 (Fri)	PBH	c. Digestion (Part II).
11	24/4 (Mon)	PBH	d. Absorption.

Module VII: Physiology of the Nervous and Sensory Systems (Chapters 5, 6 & 7)			
11	28/4 (Fri)	PBH	a. Structure and function of nerve cells and nervous systems (Part I).
12	5/5 (Fri)	PBH	b. Structure and function of nerve cells and nervous systems (Part II).
13	8/5 (Mon)	PBH	b. Properties of sensory systems.

STUDY BREAK from 10th to 15th May 2023

EXAM PERIOD from 16th to 29th May 2023

(LIFS 3040 END OF TERM EXAM DATE to be announced)

END of TERM Exam will ONLY cover Modules V to VII.