

Bio 75 – Comparative Physiology - Fall 2011

Instructor: Harry Bernheim

Office Hours: Tuesdays & Thursdays 10:00-11:00 a.m. and by appointment, Barnum 105, x73187

Text: *Animal Physiology* by Hill, Wyse and Anderson- 2nd Edition

Class Meets: Block G+: Monday and Wednesday, 1:30-2:45 P.M., Barnum 104

Hourly Exams – Monday Oct 17; Wednesday Nov 16: Final Exam - Friday December 16th 12-2 Barnum 104 (Exams 1 & 2 = 100 points each; Final = 100 points)

Core Competencies Covered in Bio 75

Be able to interpret data presented in figures and tables, and to evaluate conclusions based on the data presented

Be able to understand techniques and methods from original literature described in lecture

Be able to understand how to pursue scientific inquiry through formulating hypotheses, designing controlled experiments or studies and analyzing and evaluating results

Be able to make connections between concepts in biology and the foundations of physical sciences and computational methods

Be mindful of ethical considerations and societal outcomes in research and in technological advancement

Knowledge Base Competencies Covered in Bio 75

An understanding of the major paradigms in biology, including evolution, cell theory, genetic inheritance, the central dogma and integration of living systems

Appreciation of the morphological and physiological diversity of life, and the importance of that diversity

Recognition that biological processes are based on chemical and physical principles, and that biology informs medicine and community health

Subject Specific Competencies Covered in Bio 75

Understanding of homeostatic principles amongst animals in the various classes of vertebrates

Application of feedback analysis via proportional control systems to the respiration, cardiovascular and renal systems in animals from the various classes of vertebrates

Date	Subject	Readings (Chapters) + (Pages)	
9/7	Introduction/ Vertebrate Evolution		
9/12	Physiological Principles	1,4	29-39
9/14	Energy Systems	6	177-188
9/19	Energy Systems;	6,8	177-188
9/21	Temperature Regulation	9,10	
9/26	Temperature Regulation-Ectotherms	9,10	
9/28	Temperature Regulation- Ectotherms	9,10	
10/3	Temperature Regulation- Ecotherms/Endotherms	9,10	
10/5	Temperature Regulation-Endotherms	9/10	
10/10	No Class Columbus Day		
10/12	Endotherms	9,10	
10/17	First Exam		
10/19	Intro to Respiration	21, 22	
10/24	Respiration cycles/Carrying of Oxygen and Carbon Dioxide	22, 23	
10/26	Resp/Carrying of O ₂ and CO ₂	22, 23	
10/31	Carrying of O ₂ and CO ₂	23	
11/2	Physics of Blood Flow	24	
11/7	Mechanics of Heart Contraction		490-502
11/9	Heart Cycles	24	
11/14	Heart Cycles	24	
11/16	Second Exam		
11/21	Electrophysiology of the heart	24	277-299
11/23	No Class- Thanksgiving Recess		
11/28	Electrophysiology/Diving Mammals	25	277-299
11/30	Water Balance –Introduction + Nitrogenous Wastes	26	744-747
12/5	Aquatic Vertebrates + Terrestrial Vertebrates	27, 29	
12/7	Terrestrial Vertebrates + Osmoregulatory Organs	27, 28, 29	
12/12	Osmoregulatory Organs	28	