BIOL 305 Comparative Animal Physiology

Why are we here?

Course Objectives: The purpose of this course is to help you:

- Understand the basic **concepts** and **processes** of physiological regulation, from cellular to organ to organismal
- Get a feel for how different groups of animals have different **physiological adaptations** appropriate to their environments
- Improve your level of confidence, skill and comfort with **primary scientific literature**
- Appreciate the **gorgeous diversity** of animal life and physiological possibilities that animals have developed through natural selection

How will we do all that?

Course Activities:

- To understand **concepts, processes, and adaptations**, you will read the excellent text we're using
- In class we will work though/ play with many of these **concepts** and **processes** in teams, with me guiding, goading, and explaining some things
- To see how the above is going, we will have tests and homework to evaluate your assimilation of these concepts and adaptations
- To learn about the **primary scientific literature**, we will read and work through four primary research papers in groups in class
- Ideally, all of the above will contribute to your appreciation of the amazing **physiological diversity** in the animal world!

The Details

2014 Summer Session 2: Tuesday, Wednesday and Thursday 10 am- 12 noon

Instructor: Sarah Leupen
Office #: BIOL 467
Office hours: Tuesday and Thursday 12-1. I know these are minimal, but it's just because people don't tend to use office hours in the summer; if you want to meet, just tell me and we'll find a good time that works for both of us.
Phone #: 455-2249 (but email is a better way to contact me)
Email: leupen@umbc.edu
Text: Animal Physiology, by Hill, Wyse & Anderson, 3rd edition. Sinauer & Associates, 2012.

Evaluation:

40% 2 Tests
25% Final Exam
25% Homework (Best 6 of 7)
10% Peer review of team performance

Grades are assigned on a straight 90/80/70/60 basis with no curving, so your grade is dependent on YOUR understanding of the material, not other people's!

Teams: The evidence is overwhelming that people learn best by working through problems in teams; class tends to alternate between me explaining stuff and team questions. To encourage you to take teamwork seriously, you will provide peer evaluations of how prepared, productive and helpful your teammates were in class.

Homework: Seven homework assignments are due throughout the course, mostly due 2 hours before class. These assignments are located on the Blackboard site, and must be submitted there. The homework stimulates you to assimilate material we've just discussed, and motivates you to prepare for class; overall, it should raise the level of understanding of physiology you can achieve in 6 weeks. The assignments are due early so I can look at them before class and see which ones people are having trouble with, so I know what needs to be reviewed or emphasized in that day's class. The lowest homework assignment is dropped from the grade calculation.

Papers: On four days during the course, we'll work through scientific papers in class. This will help you understand how physiologists approach the questions we'll be discussing in class, and give you some skills and confidence in dealing with scientific papers that will help you in your 400-level classes, and in evaluating evidence no matter what your future career.

Late work policy: You are strongly encouraged to show up for all class meetings. If you miss a test for a good reason and have documentation of that reason, I'll give you a

make-up test, but only if you notify me in advance. Late homework is 50% off per day late (~5% off per hour late, up to 50%/day).

If you require accommodation for any physical or learning disability, please see me.

***Approximate* class schedule (test days will not change)**

Date	Topic	Chapter
Tues 7/8	Introductions, Syllabus, Key Concepts	1
	The Magic of Diffusion/Active Transport	5
Wed 7/9	Feeding & Assimilating Energy	6
Thurs 7/10	Energy and Metabolism	7
	Making & Breaking Energy: ATP	8
	Homework #1 due, 8 am	
Sunday 7/13	***Homework #2 due, 8 pm***	
Tues 7/15	***Paper 1***	
	Thermoregulation	10
Wed 7/16	**Test 1**	
Thurs 7/17	Thermoregulation, continued	10
Tues 7/22	How Neurons Work	12
	Homework #3 due, 8 am	
Wed 7/23	***Paper 2***	
	How Neurons Talk to Each Other	13
Thurs 7/24	The Senses	14
	Homework #4 due, 8 am	
Tues 7/29	More Senses	14
	Brains and Clocks	15
	Homework #5 due, 8 am	
Wed 7/30	Reproduction	17
Thurs 7/31	**Test 2**	
Tues 8/5	***Paper 3***	
	Gas exchange	22

Wed 8/6	Breathing	23
	Gas transport	24
	Homework #6 due, 8 am	
Thurs 8/7	***Paper 4***	
	Circulatory Systems	25
Tues 8/12	Osmoregulatory mechanisms	27
	Osmoregulatory diversity	28
	Homework #7 due, 8 am	
Wed 8/13	Catch Up or Review	
Thurs 8/14	***Final Exam***	