Biology 281: Animal Physiology Course Expectations and Calendar

Spring 2013

Course Expectations:

Discussions:

Periodically we will have an assigned primary research paper to read and discuss in class. For each paper we read and discuss, you should be able to answer "the four questions":

1) What was/were the authors' hypothesis/hypotheses? What previous evidence caused them to believe this would be true?
2) Briefly, what were the methods?
3) What were the major results and how did they relate to the hypothesis/hypotheses?
4) What were the authors' conclusions and do you believe them? Why or why not? What additional evidence would strengthen your belief?

Make sure that you read the assigned paper before class and think about/take notes on each of "the four questions" with regard to the paper. Your notes will be due (submitted on D2L) prior to the start of lecture and you should also bring a copy to class for discussion and note-taking purposes. Discussion is intended to clarify any confusion about the paper and foster critical thinking. Answers to "the four questions" for each paper are fair game on the exams.

Exams:

Unit Exams will focus on content covered in lecture and will not be cumulative. Reading assignments from the text are designed to provide you with a more detailed background of the subject matter, but details from the book will only be on the exams if they were talked about in lecture. Lab material will not be on the Unit Exams. The format for each Unit Exam will be multiple choice and one or two short essay questions. You will be allowed a single notebook paper-sized (8.5 X 11 inches) sheet of notes.

The Final Exam will be cumulative and integrative and will cover lectures, reading assignments *and* lab material. The format for the Final Exam will be entirely short essay. You will be allowed a single notebook paper-sized (8.5 X 11 inches) sheet of notes. Your lowest exam score will be dropped when calculating final course grades.

Study suggestions:

1) **Take notes**. I will post most Powerpoint slides on Desire2Learn prior to class, but they only serve as an aid for taking notes, not a replacement. A suggested way to use these is to print out the PDF and bring it to class. While in class, write on the slides and take a separate set of notes. Research shows that the act of taking notes alone increases retention by 50%!
2) **Convert materials into a personalized reference**. We all have our own way of thinking and we remember best when material is organized in a way that best matches our own learning style. Take your class notes, notes from the book, slide PDFs, and lab materials and integrate them into a format that resonates with you. Just making this reference will help you better learn the material. This will be easiest and most effective if you do it as you go (not the day before an exam). The bonus is that you will then have a ready-made study guide for each exam.
3) **Convert your personalized reference to a single-page sheet of notes for each exam**. A study guide of topics will be made available one week before each exam. Use this and your personalized reference to determine what to put on your sheet of notes that you will bring to the exam.

4) **Form a study group**. Study groups are a great way to assess your understanding, clarify questions, stay motivated and make friends.
5) **Put in the time**. With any learning experience (and a college course is no exception), you only get out of it what you put into it. To master this material (and to get an 'A'), you should put in from 5-6 hours of study time outside of class every week.

Research Paper (Group Project):
In lab, you will form a hypothesis based on published research papers, design an experiment to test your hypothesis, collect and analyze the data, and write up your results and interpretations in a research paper. This paper will be written for an academic audience that is assumed to be familiar with all the material presented in this course. You will be given more information on this later in the semester.

Pop-Science Article and Presentation (Individual or in Pairs):
You will write a pop-science article on a topic of your choice, either presenting primary research or an in-depth explanation of a physiological phenomenon. You will also provide accompanying pictures and/or videos and present your article to the class. This paper will be written for a broad audience, high school age and up. You will be given more information on this later in the semester.

Online publication opportunity:
If you are interested, you can submit your pop-science article to be considered for publication on *The Scorpion and the Frog* (http://the-scorpion-and-the-frog.blogspot.com/), my animal physiology and behavior blog. The top articles submitted will be provided feedback and invited to revise. Accepted revisions will be published on *The Scorpion and the Frog* as a Guest Post, with your profile as a Guest Science Writer. *This process is additional work and will not influence your grade*, but the perk is seeing your work in public and including an online publication on your résumé.

Lecture Topics, Reading Assignments, and Key Dates:

Key Dates:
Exam 1 = **February 12** (will include material presented prior to 1st exam)
Exam 2 = **March 12** (will include material presented between 1st and 2nd exams)
Exam 3 = **April 11** (will include material presented between 2nd and 3rd exams)
Exam 4 = **May 7** (will include material presented between 3rd and 4th exams)
Final Exam = **May 14** (will include *everything*)

Lecture topics and reading assignments (readings from the textbook or assigned papers)*:*

1.22 **Introduction and adaptation:** 23-27; 10-23 + pdfs
1.24 **Nutrition, feeding and digestion:** 111-138; 145-152; 154-162 + pdfs
1.29 **Thermoregulation:** 205-251 + pdfs
1.31 **Osmoregulation:** 663-678; 681-713; 715-747+ pdfs; optional background: 749-761
2.05 **Osmoregulation continued**
2.07 **Continuation of material, synthesis and review**
2.12 UNIT EXAM 1
2.14 **Respiration:** 547-579 + pdfs; optional background: 533-545
2.19 **Respiration continued**
2.21 **Circulation:** 611-640 + pdfs; optional background: 581-608
2.26 **Circulation continued**
2.28 **Aerobic and anaerobic metabolism:** 167-188 + pdfs
3.05 **The mammalian diving reflex:** 643-660 + pdfs
3.07 **Continuation of material, synthesis and review**
3.12 UNIT EXAM 2

3.14 **Nervous system:** 272-281; 285-289; 297-301; 304-313; 317-325; 371-383 + pdfs
3.19 **Sensation:** 335-369 + pdfs
3.21 **Control of movement:** 469-488; 489-511 + pdfs
3.26 SPRING BREAK
3.28 SPRING BREAK
4.02 **Migration:** 192-197; 453-466; + pdfs
4.04 **Migration continued**
4.09 **Continuation of material, synthesis and review**
4.11 UNIT EXAM 3
4.16 **Reproduction:** 425-451; + pdfs
4.18 **Reproduction continued**
4.23 **Endocrine system:** 391-418; + pdfs
4.25 **Endocrine system continued**
4.30 **Nervous system and reproduction:** pdfs
5.02 **Continuation of material, synthesis and review**
5.07 UNIT EXAM 4
5.09 **Final exam synthesis and review**
5.14 FINAL EXAM

Lab topics and assignments (readings from the lab manual)*:*

1.22/1.24 **Critical Thinking in Biology; Critical Reading and Pop-Science Writing:** pdfs
1.29/1.31 **Anatomy of the Preserved Rat:** 25-28
2.05/2.07 **Cellular Permeability:** 29-42
2.12/2.14 **Sensation:** 59-72
2.19/2.21 **Properties of Skeletal Muscle:** 73-84
2.26/2.28 **Spinal and Supraspinal Reflexes:** 43-58
3.05/3.07 **Blood:** 85-102
3.12/3.14 **Heart Anatomy and the Electrocardiogram:** 103-118
3.19/3.21 **Heart Sounds and Blood Pressure:** 119-134
3.26/3.28 NO LAB (SPRING BREAK)
4.02/4.04 **Capacities of the Respiratory System:** 135-142
4.09/4.11 **Critical Thinking in Biology; Experimental Design:** pdfs
4.16/4.18 **Critical Thinking in Biology; Statistical Analysis Preparation:** pdfs
4.23/4.25 **Data Collection and Statistical Analysis:** pdfs
4.30/5.02 **Finalize Research Papers and Pop-Science Papers:** pdfs
5.07/5.09 Pop-Science Presentations, Research Papers Due, Pop-Science Articles Due