Biology 340: Animal Physiology
Spring 2013

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Office:	Frazier Jelke 142W	**Class**:	MWF 9-9:50 am in FJA
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Office Hours: I will usually be around on M/W/F 10-11 am, and T/TH 12:30-1:30 pm. However, I sometimes have meeting that pop up, so feel free to email to confirm a time if you wish to ensure that I am present. Also, feel free to contact me to make an appointment for another time. You may also stop by whenever you like, but please note that in the afternoons I may be busy with research students or advisees.

Required Text: *Animal Physiology*, 2nd Ed. (3rd Ed. is fine too), by: Hill, Wyse, Anderson. This is an in depth animal physiology text that covers the material to a good depth and breadth. However, I also supplement certain topics from medical school textbooks to provide a more clinical perspective, and from the primary literature. Hence, the exams will focus on materials covered in lecture, and you do not need to read the textbook exhaustively (stick to the topics that we cover), but the book will help you solidify your grasp of the involved concepts.

Moodle: Information such as this syllabus, lecture PowerPoint files, and laboratory protocols will be posted on Moodle and it is your responsibility to access your Moodle account regularly to check for new materials. I will post all lecture files prior to class, usually at least the night before. Both lecture and lab will be served by the lecture portion of Moodle.

Email: Course announcements will be sent to your Rhodes email accounts, and it is your responsibility to check those email accounts regularly. Email is also the easiest way of reaching me, though please note that I do not check my email as often during evenings and weekends as during school days. I'm also getting old so I don't stay up late checking emails… on the flip side, I get up early and respond to them then! ☺

Special Accommodations: If you need any sort of special accommodations in relation to this course, please bring this fact to my attention by the end of the first week of classes so that arrangements can be made.

Course Summary: This course is designed to provide students a general but in-depth understanding of various systems of animal physiology (e.g., muscular, nervous, endocrine, cardiac, digestive, respiratory, renal, etc.). An emphasis will be placed on the maintenance of **homeostasis** within these systems. Furthermore, a **comparative approach** will be taken so that you are not only memorizing how the human body functions, but also seeing how various animals have evolved similar physiological endpoints that can be compared in their structure and functional efficacy to the human body. Such an approach will allow you to understand how physiology functions, what are its constraints and specializations, what aspects of physiology are integral to sustaining life, etc.

Animal Use: Although computer simulations exist for some biological topics, we cannot model what we do not fully understand. Scientists are continually discovering new gene splices, polymorphisms, hormone and receptor proteins, molecular interactions, epigenetic effects, cognitive functions, etc. Hence, there is a lot that we still do not understand in biology! Else, all of the scientists would be out of work. But this also means that we cannot model the variations and idiosyncrasies inherent to animals, simply because we don't yet know all of the pieces that would be needed to comprise a model. Furthermore, for those of you who aspire to academic, medical, veterinary, or related careers in biology, this hands-on experience is invaluable training. By the end of this course, you will be performing surgeries on live (anesthetized) animals. Since we are using animals, you are required to treat them with respect, while alive or during dissections. Photography and video capture are absolutely forbidden.

Class Cancellation: If class is cancelled due to school closure, etc., I will send you an email message instructing you on how we will adjust the schedule. It is your responsibility to check emails and Moodle on a regular basis!

Attendance: Sorry to be strict, but this is a course where missing lectures and especially labs can be highly detrimental to the learning experience and to your final grade. I have received positive feedback from students

for this policy because it forces them to come to class and they get more out of the course in the end. Hence, I have laid out the following policy:

Lectures: You may miss 3 lectures without explanation, after which you start losing points (see below). Attendance is taken at the start of class, so if you are late, it will count as an absence. **If you come in late, it is your responsibility to see me at the end of class and ensure that I have checked you off as late and not absent!** Late entrance will only count as ½ an absence. If you are to miss class or lab due to a college-sanctioned event, or any other pre-planned activity, you must obtain permission from me in advance or it will count as an unexplained absence. If you obtain permission in advance, each absence will only count as ½ of an absence.

Labs: Because lab experiments are integral to this course, and you work as a team, and many exercises involve the use of live animals that have to be sacrificed, it is imperative to attend all labs if at all possible.

Illness: **If you are too ill to attend a lecture or lab, then you must present a note or send me an email attesting to missing lab due to illness and invoking the honor code**. In such a case, the absence will not count toward your allowed three missed lectures.

Appropriate Apparel: You will be performing dissections and surgeries in lab and so please wear appropriate clothing. Always wear closed-toed shoes, appropriate clothing, tie back long hair, and wear safety glasses.

Exams: Exams are closed book, and taken in class. **During the exam, you are not allowed to leave the classroom** or to have any notes or a phone in view.

Quizzes: Three major quizzes will be administered at the start of class throughout the semester (see class schedule). The purpose of these is both to motivate you to keep up/catch up on your studying of the materials, and also to prepare you for the exams.

Grading:	3 Major Quizzes:	5% each (15% total)
	3 Exams:	20% each (60% total)
	Attendance & Professionalism:	5%
	Laboratory*:	20% total**

*(laboratory materials may also appear on quizzes and exams)

**(5% lab report, 5% poster, 5% homework, 5% lab quizzes)

Professionalism (Grade Deductions):

-Failure to clean up you lab area: 1% each occurrence. This penalty applies to all members of the lab group, so you all share this responsibility. Check with me prior to leaving lab to be sure that all is cleaned appropriately.

-Failure to attend lectures (after reaching 3-lecture allowance), or failure to attend labs: lose 1% of overall grade for each occurrence

-Any missed tests or assignments, or those turned in late, will automatically receive a grade of zero if arrangements were not made in advance.

-College is training you to be professionals and communication is no exception. Hence, all emails sent to me must be written in a professional manner, which includes a subject topic, a salutation, a body composed of grammatically correct sentences, and a signature. Do not use texting acronyms. Shortened responses without the salutation and signature are acceptable for subsequent extended exchanges. Failure to follow this format will first result in a reminder, and then deductions of 1% per occurrence.

Academic Dishonesty: All work in this course is pledged and violations will be reported to the honor council. I also reserve the right to assign my own penalties including zero on the involved assignment(s). Be especially careful when it comes to plagiarism: always cite other people's ideas in your work, and always write your own assignments unless specifically told to write a joint assignment as a group. Furthermore, never examine other people's assignments or data unless specifically told to do so. Finally, in this course you will be asked to help evaluate some work of your class peers, and you are required to do so in an honest and impartial manner.

Tentative Schedule*:

DATE	CHAPTER	TOPIC	DUE
Jan 9 (W)	1	Syllabus, Introduction	
Jan 11 (F)	2 & 4	Internal/External Environments of Cells	
Jan 14 (M)	13, bit of 18	Sensing the Environment	
Jan 14 (M)		**Instrumentation Lab**	**lab quiz**
Jan 16 (W)		Sensing the Environment	
Jan 18 (F)		Sensing the Environment	
Jan 21 (M)		MLK Jr. Day – no class	
Jan 21 (M)		**MLK Jr. Day – no class**	
Jan 23 (W)		Sensing the Environment	
Jan 25 (F)	11-15	Nervous Systems	
Jan 28 (M)		**Quiz 1,** Nervous Systems	
Jan 28 (M)		**Frog Sciatic Nerve Lab**	**lab quiz; Instrumentation Lab Homework**
Jan 30 (W)		Nervous Systems	
Feb 1 (F)		Nervous Systems	
Feb 4 (M)		Skeletal Muscle Systems	
Feb 4 (M)		**Comparative Skeletal Muscle Lab**	**lab quiz; Sciatic Nerve Lab Homework**
Feb 6 (W)	19, 7	Skeletal Muscle Systems	
Feb 8 (F)		Catch-Up/Review Session	
Feb 11 (M)		**Exam 1**	
Feb 11 (M)		**Skeletal Muscle Biochemistry Lab**	**lab quiz; Skeletal Muscle Homework**
Feb 13 (W)	19, 5	Smooth Muscle / Nutrients	
Feb 15 (F)	5, 7	Nutrients & Digestive System	
Feb 18 (M)		Nutrients & Digestive System	
Feb 18 (M)		**Statistics Lab**	
Feb 20 (W)		Nutrients & Digestive System	
Feb 22 (F)		Nutrients & Digestive System	
Feb 25 (M)	6, 7, 9	Metabolism & Temperature Regulation	
Feb 25 (M)		**Rat Surgery Demonstration Lab**	**lab quiz;**
Feb 27 (W)		Metabolism & Temperature Regulation	
Mar 1 (F)		Metabolism & Temperature Regulation	
Mar 4 (M)	21, 22, 25	**Quiz 2,** Respiratory System	
Mar 4 (M)		**Respiratory Surgery Lab**	**lab quiz, may perhaps need to stay late**
Mar 6 (W)		Respiratory System, Extreme Pressures	
Mar 8 (F)		Respiratory System, Extreme Pressures	**Amphibian Reports due by 5 pm**
Mar 11 (M)		No Class - Spring Break	
Mar 11 (M)		**No Class - Spring Break**	
Mar 13 (W)		No Class - Spring Break	
Mar 15 (F)		No Class - Spring Break	
Mar 18 (M)		Respiratory System, Extreme Pressures	
Mar 18 (M)		**Group project proposal development**	
Mar 20 (W)		Catch-Up/Review Session	
Mar 22 (F)		**Exam 2**	
Mar 25 (M)	23, 24	Cardiovascular System	**group project proposals due 9 am**
Mar 25 (M)		**Blood Pressure Surgery Lab**	**lab quiz, arrange to stay late**
Mar 27 (W)		Cardiovascular System	
Mar 29 (F)		No Class – Easter Break	

Apr 1 (M)		Renal Physiology – Regulating BP	
Apr 1 (M)		**Renal Function Surgery Lab**	**lab quiz, may perhaps need to stay late**
Apr 3 (W)		Cardiovascular System	
Apr 5 (F)		Cardiovascular System	
Apr 8 (M)		Cardiovascular System	
Apr 8 (M)		**Group Projects – Conduct Experiments**	**arrange to stay late**
Apr 10 (W)		Cardiovascular System	
Apr 12 (F)	27, 28, 29	Renal Physiology	
Apr 15 (M)		**Quiz 3,** Renal Physiology	
Apr 15 (M)		**GPs –Finish Experiments/ Prep Posters**	
Apr 17 (W)		Renal Physiology/ Extreme Salinities	
Apr 19 (F)	16, 15	Reproductive Systems	**poster files due at noon**
Apr 22 (M)		Reproductive Systems	
Apr 22 (M)		**Poster Presentations**	
Apr 24 (W)		Catch-Up/Review Session	
Apr 26 (F)		No Class - URCAS	
April 30 (T)	**5:30 PM**	**Exam 3**	**not "cumulative", but as you'll see, the materials build upon each other throughout the course**

*I reserve the right to make changes to the lecture and laboratory schedule.