

**Comparative Animal Physiology**  
Fall 2016  
**BIOLOGY 5600/6600**

**Instructor**

Dr. Lori A. Neuman-Lee  
Email: lorin215@gmail.com  
Office: BNR 026  
Office hours: Tues. 12:00-1:00pm  
OR by appointment (usually best)  
**Website:** Canvas

**Class**

**Time:** 10:30 – 11:45 am  
**Days:** Tuesdays and Thursdays  
**Room:** Eccles Business Bldg., Rm. 216

**Objectives:**

- Learn basic principles in physiology.
- Understand how the environment shapes an animal's physiology.
- Appreciate the diversity of physiological adaptations.
- Gain experience reading and analyzing scientific literature.
- Practice writing and working with collaborators on group projects.

**Text:**

**Recommended:** Hill, Wyse, and Anderson. **Animal Physiology. 4th edition**, © 2016. Sinauer Publishing. (Older editions acceptable)

- The above text is recommended and will serve as your primary reference for this course, along with lecture notes. It is recommended that you read the assigned chapters **BEFORE** coming to class, along with any supplemental online material posted on blackboard.
- The text will be helpful to verify and improve your understanding of lecture information and the primary literature you will use in your Design an Animal project.
- Exam questions will be taken from oral class discussions and lecture notes. If something is not discussed in lecture, it will not be tested directly.

I will also post scientific papers that will need to be read before class. These will be used for in class discussion, so come to class prepared to present on paper and discuss findings (see below for details).

**Canvas:**

This course is taught primarily in a classroom and offers online learning resources and activities. There is a class schedule in the syllabus for what to do in terms of class lectures, readings, assignments, projects, and exams. In addition, there are online pre-practice quizzes and discussion you will want to perform as well. When you log in to the Canvas course, you will find the weekly assignments, power point lecture files, and practice quizzes listed by week under "Course Content". All handouts and the course syllabus are posted under the "Syllabus &

Handouts” link. You will want to perform any required readings. The practice quizzes will not be counted as part of your course grade but will contain questions that may be included in exams. You can take the practice quizzes as many times as you would like for review and practice.

**Help:**

Ask for help early, the week before finals is too late.

**Grading:**

Undergraduate (5600)

Exam I	100 points
Exam II	100 points
Exam III	100 points
Exam IV	100 points
<i>*Drop your lowest exam score.</i>	
Literature Reviews (5 @ 10 pts each)	50 points
Design an Animal Project	150 points
<b>Total</b>	<b>500 points</b>

Graduate (6600)

Identical requirements as 5600	500 points
Class Research Presentation	100 points
<b>Total</b>	<b>600 points</b>

Grading scale:

Your grade will be based on the number of points you earn divided by the total points for the course. Your final grade will be percentage based. There is no extra credit and no curving of grades. Grade appeals can only be made on the basis of miscalculation of your average and must be made to Dr. Neuman-Lee in person within at least one week of grades being posted.

Percentage	Letter Grade
93-100%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
64-66%	D
Below 64%	F

Literature Reading:

One of the most important aspects of science is the ability to comprehend current scientific findings published in peer-reviewed journal. This takes a great deal of practice. You will have a paper assigned highlighting current research in the topic in which we are studying. Either as a group or as an individual, you will be required to answer 1-4 questions about the paper. The questions are designed to be answered in approximately 10 minutes, provided you have read the paper. You will have a total of 5 papers to read throughout the semester. *You will not have test questions directly from the papers, but I highly recommend that you use these papers as references in your “Design an Animal” project.*

### Design An Animal (DAA) Project:

This is your opportunity to **DO** physiology in a group setting. The project will be given in a series of about six stages in which you will add physiological systems to your animal.

- First, you will be given a general environment. You will research your given environment then design an animal, building it system by system, so that it can function well in the given environment.
- After the first two steps, students will peer review each other's work, making suggestions for improvement or asking for clarification. After the second two steps, I will review your project to provide further guidance.
- Each group will give a 20 min powerpoint presentation on their animal (You will likely not have time to cover everything, so provide an overview) the last week and a half of class. Each student will have to fill out a short review of another group's presentation as a final evaluation during the presentation.
- Everyone will fill out a peer evaluation form to evaluate the performance and effort of their group members. Individual final project grades may be adjusted based on this evaluation.
- This is a creative project. DO NOT research an existing animal and describe how it functions. I want you to use your understanding of comparative physiology to CREATE an original design of an animal body.

### Project Points

150 points total for this project will be broken down as follows:

- Assignment (1-5): 15 points each = 75 points (Group score)
- Final Powerpoint Presentation: 40 points (Group score)
- Physical Representation: 10 points (Group score)
- Peer review: 15 points (Individual score)
- Peer review (Final): 10 points (Individual score)

\*More details on the DAA project will be given in an accompanying handout.\*

### 6600 Student Project:

You will complete give an ~20 minute oral presentation (using Powerpoint) to the class on a physiology topic during the semester. You can choose your topic, but it must be stated in writing (email) and approved by me by September 15th. I have a list of suggested topics. See me the first week of class.

### **Late assignments:**

Do not turn in any portion (peer review, sections, final project) of your project late. Due dates are listed on Canvas. **All** group members will be docked 5 points every 24 hrs the assignment is late. Assignments are due at the start of the class period already printed out and stapled.

**Attendance Policy:**

Coming to class is up to you. However, please note that significant discussions that occur in class that do not appear on the lecture notes may still appear on exams. Additionally, you are not eligible for literature review points if you do not attend class. Some of the most enlightening and exciting information will come out of discussion in class, and these are fair game for tests!

**Absences:**

If you miss an exam or reading assignment without prior notification, you will not be able to make it up. For your exam, it will count as your lowest exam score and be dropped. If you miss more than one exam you will lose exam points, unless you notify me **ahead of time** that you will not be in class due to an official university function, or you are at a medical/dental/professional interview.

Missing class due to illness or family emergency will be handled on a case by case basis. I do not give extra credit or do make-up exams. All issues must be resolved prior to the scheduled event. I am understanding to many situations, however if you do not contact me, I cannot work with you. So please contact me before situations arrive.

**Electronic devices:**

Cell phones and pagers must be **OFF** during all lecture and test periods. Laptops may be used to take notes. However, if you are caught, web browsing, instant messaging, checking email, facebook, or working on an assignment for another class, you will not be allowed to continue using your computer during class. Not only is the use of electronics detrimental to your learning, but they are distracting to other students and to me—and it is quite rude to be using electronics during lectures. Trust me, very few instances warrant you texting/checking facebook during the 90 minute class period.

**Students with Disabilities:**

Students with ADA-documented physical, sensory, emotional, or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444 voice, (435)797-0740 TTY, (435)797-2444 VP, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, or digital) are available with advance notice. I do not receive notification of disabilities, so please talk with me as early as possible if you need accommodations.

**Requests for an incomplete ("I") grade:**

- Must be made in person no later than the last day of finals.
- Requires “Incomplete Grade Documentation Form” that must be filled out with me.
- Will be honored only if the student is passing the class at the time the request is made.
- Must comply with USU regulations as stated in the catalog.

**Academic misconduct:**

Any academic misconduct will be handled in accordance with USU policies. The USU student code states "Plagiarism: representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials." Plagiarism will not be tolerated in this class. All work must represent the individual student's effort. Do not copy (or cut/paste) from websites, books, journals, or any published material. Properly document all sources and references used (see details in design an animal section). Internet references are not allowed as cited references for any projects.

**Finally:** Have fun!!! Physiology is awesome!

**Tentative schedule**  
**(Dates are subject to change)**

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
<b>August</b>		
30	1: Intro & Fundamentals of Physiology	Ch. 1
<b>September</b>		
1	2: Energy Acquisition & Allocation: Food & digestion	Ch. 6
6	3: Energy Acquisition & Allocation: Metabolism	Ch. 7
8 †	4: Energy Acquisition & Allocation: Metabolism	Ch. 8-9
13	5: Energy Acquisition & Allocation: Thermal relations	Ch. 10
15	6: Energy Acquisition & Allocation: Extreme environments	Ch. 11
	<b>(Approval of 6600 presentation topic due)</b>	
<b>19</b>	<b><i>Last day to drop without notation on transcript</i></b>	
20 †	7: Immunity	
22	8: Integrating systems: Nervous system & sensory processes	Ch. 15 & 14
<b>27</b>	<b>Exam I (Lectures 1-7)</b>	
29	9: Integrating systems: Neurons	Ch. 12
<b>October</b>		
4	10: Integrating systems: Synapses	Ch. 13
	<b>Assignments 1 &amp; 2 due</b>	
6 †	11: Integrating systems: Biological clocks	Ch. 15
11	12: Integrating systems: Endocrine & neuroendocrine	Ch. 16
13	13: Integrating systems: Endocrine & neuroendocrine	Ch. 16-17
	<b>Peer Reviews Due</b>	

18	†	14: Integrating systems: Reproduction	Ch. 17
<b>20</b>		<b>No Class (Friday class schedule)</b>	
25		15: Integrating systems: Reproduction	Ch. 17
27		16: Internal Transport: O <sub>2</sub> , CO <sub>2</sub> , & respiration	Ch. 22-23
<b>31</b>		<b><i>Last Day to drop with "W" on transcript</i></b>	
<b>November</b>			
<b>1</b>		<b>Exam II (Lectures 8-15)</b>	
3		17: Internal Transport: O <sub>2</sub> , CO <sub>2</sub> transport & acid-base physiology	Ch. 24
		<b>Assignments 3 &amp; 4 due</b>	
8		18: Internal Transport: Circulation	Ch. 25
10	†	19: Internal Transport: Extreme environments	Ch. 26
15		20: Water Balance & Excretion: Intro & mechanisms	Ch. 27
17		21: Water Balance & Excretion: Kidneys	Ch. 29
22		22: Water Balance & Excretion: Environments & Extreme environments	Ch. 28 & 30
		<b>Thanksgiving Break (November 23-25 No Class)!!!!</b>	
<b>29</b>		<b>Exam III (Lectures 16-22)</b>	
<b>December</b>			
1		Student Presentations	
6		Student Presentations	
8		Student Presentations	
		<b>Assignment 5 due</b>	
<b>13</b>		<b>Exam IV (Cumulative) – (11:30am - 1:20pm)</b>	

† Literature reading assignment