

**BIOLOGY 319/519: GENERAL ANIMAL PHYSIOLOGY
FALL 2007 COURSE SYLLABUS**

Instructor **Dr. Sheldon J. Cooper**
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Office Hours: 13:30 - 14:30 W, 0900 - 1000 R (also by appointment)

Timetable

Lecture	M W	1500 - 1630	HS 57
Discussion A01D	R	1020 - 1120	HS 367
A02D	R	1320 - 1420	HS 456
Lab A01L	T	0930 - 1230	HS 167
A02L	T	1320 - 1620	HS 167

Textbook and Materials for the Class

REQUIRED: Hill, R. W., G. A. Wyse, and M. Anderson. 2004. *Animal Physiology*. Sinauer Associates. Sunderland, MA.

REQUIRED: Cooper, S. J., and Vaughan, D.K. 2005. *Biology 319/519: General Animal Physiology Lab Manual*. UW-Oshkosh.

REQUIRED: Cooper, S. J. 2005. *Biology 319/519: General Animal Physiology Lecture Manual*. UW-Oshkosh.

REQUIRED: Cooper, S. J. 2006. *Biology 319/519: General Animal Physiology Lecture Supplemental Materials*. UW-Oshkosh.

REQUIRED: 5 x 5 quad ruled 80 page composition lab notebook sold at the UW-Oshkosh bookstore.

REQUIRED: A calculator.

RECOMMENDED: A pocket biological or medical dictionary.

Course Goals

This course is designed so that the student will achieve a general understanding of animal physiology. This objective requires a synthesis of several areas within physiology (respiration, circulation, digestion, energy metabolism, etc.) as they apply to an animal's ability to maintain homeostasis. Physiological topics will be examined from a comparative and integrative perspective rather than just studying mammalian physiological systems. The comparative nature of this course is important since students in the course are preparing for several types of future careers. For example, this course is taken by pre-med, pre-vet, pre-graduate school and graduate students. However, common functional pathways will be emphasized, thus integrating the information. The laboratory portion of this course will emphasize introductory exercises, experimental techniques, animal surgery, and data collection of physiological variables.

TENTATIVE LECTURE, LABORATORY, AND DISCUSSION SCHEDULE

The topic order is firm. However, we may go faster or slower in lecture than the schedule indicates.

Date	Lecture Topic	Text Chapter	Date	Lab Topic	Lab Quiz	Date	Discussion Topic
09-05	Introduction, Physiological Fundamentals	1, 2, 3				09-06	Discussion Introduction
09-10 09-12	Nutrition and Digestion Digestion	4 4	09-11	Histology & Rat Anatomy		09-13	Ringer's Solution Preparation
09-17 09-19	Energy Metabolism Metabolism	5 6	09-18	Intestinal Glucose Transport	1	09-20	Presentation Demo.
09-24 09-26	Energetics of Activity Thermoregulation	7 8	09-25	Experimental Principles & iWorx Tutorial	2	09-27	Q & A Session
10-01 10-03	Thermoregulation Thermoregulation	8 9	10-02	Metabolic Rate and Body Size	E.C. quiz	10-04	Exam 1
10-08 10-10	Neural/Endocrine Control Neurons	10 11	10-09	Vertebrate Thermoregulation	3	10-11	Brain Imaging
10-15 10-17	Neurons & Synapses Synapses	11, 12 12	10-16	Physiology of Excitable Cells	4	10-18	Q & A Session
10-22 10-24	Sensory Processes Sensory Processes	13 13	10-23	Cardiac Dynamics	5	10-25	Exam 2
10-29 10-31	Endocrinology Endocrinology	14 14	10-30	Presentations		11-01	Q & A Session
11-05 11-07	Muscle & Movement Muscle & Movement	17 18	11-06	Frog Skeletal Muscle	6	11-08	ADAM Interactive - Skeletal Muscle

TENTATIVE LECTURE, LABORATORY, AND DISCUSSION SCHEDULE (Continued)

The topic order is firm. However, we may go faster or slower in lecture than the schedule indicates.

Date	Lecture Topic	Text Chapter	Date	Lab Topic	Lab Quiz	Date	Discussion Topic
11-12	Respiration	20	11-13	Respiratory System	7	11-15	Exam 3
11-14	Respiration	21		Capacities & Control			
11-19	Respiration	22	11-20	Hematology	8	11-22	No Discussion - Thanksgiving
11-21	No Lecture - Thanksgiving						
11-26	Circulation	23	11-27	Blood Pressure, Heart	9	11-29	Immune Function
11-28	Circulation	23, 24		Rate, & Pig Plucks			
12-03	Osmoregulation	25	12-04	Urinalysis & Blood	10	12-06	Q & A
12-05	Osmoregulation	26		Typing			
12-10	Osmoregulation	27, 28	12-11	No Lab		12-13	Exam 4
12-12	Lab Quiz 11, Final Q & A						

About Lecture

During lecture hours, your Instructor will talk about the topics shown in the Schedule of Activities above. Please feel free to stop your instructor to ask questions. Lectures will cover material in the text, but will also include outside material. Your lecture notes are of vital importance. Anything said in lecture could appear on an exam. If you miss a lecture, you should arrange to borrow another student's notes.

During lecture, your Instructor will show diagrams from the text and from outside materials. Thus, most students find it helpful to bring their text to lecture. The diagrams from outside materials are in the lecture manual or will be given out in class. In order to do well in this course, expect to spend 2-3 study hours per 1 lecture hour as you would in all of your college courses.

There will be 7 pop quizzes worth 5 points each given in lecture. These pop quizzes will cover lecture material and may consist of multiple choice, fill-in-the-blank, or short answer questions. Pop quizzes will not be given during exam weeks. These pop quizzes are meant to encourage students to keep up on their studying of the lecture material.

About Discussion

During discussion, your Instructor will make important announcements and provide time to answer student questions over lecture and lab material. In addition, some supplemental lecture and lab material will be presented during discussion by the Instructor. Some discussion time will be spent preparing materials for upcoming lab experiments. Lastly, all exams will be held in Discussion.

About Lab

You should plan on lab taking the full 3 hours each week. Do not register for this course if you have a class or work conflict with the lab. Small numbers of animals will be used in this course. All government-imposed humane procedures will be followed. If you object to animal use in experiments, you may not enjoy the work required to pass this class. Lab exercises have been designed to supplement and/or reinforce concepts taught in lecture and reviewed in discussion. In addition, the lab will provide students the opportunity to present information from published research in physiology. Lab presentation information will be given in class.

Lab Notebooks

A portion of your grade will depend upon a laboratory notebook, which is a running record of your work in the lab. The notebook does not need to contain all the procedures performed in the lab since the procedures are already written in the lab manual. However, the notebook does need to contain enough information to identify the portion of the lab to which the data recorded pertain. When appropriate, include computer generated data graphs or worksheet data and paste the data directly into your lab notebook. If questions are asked in the text of the lab, be sure to write down answers in your lab notebook. More specific instructions will be given in lab.

Lab Notebooks (continued)

Keeping good lab notebooks is not just another way to grade students. Lab notebooks are now a legal necessity in the world of research. With the freedom of information act passed by Congress, your lab data can now be “borrowed” by other scientists interested in your research. Recently, lack of notebook support for published research data has lead to career ending charges of data fraud for several scientific researchers.

Journal Article Summaries

Students will be required to summarize 2 journal articles published within the last 2 years. One summary must be turned in by **09/27/07** and the second must be turned in by **12/06/07**. Summaries must not exceed 150 words and must include a full citation using the following form:

Author’s last name, Author’s first initial(s). Year published. Title of article. Title of journal. Journal volume: journal page numbers. An example is given below.

Cooper, S. J., and S. Sonsthagen. 2007. Heat production from foraging activity contributes to thermoregulation in black-capped chickadees. *Condor* 109:466-451.

All summaries must be typed double-spaced and must include a copy of the first page of the article summarized. DO NOT turn in anything printed out in HTML format. If you are using BioOne or some other program, make sure to print out the PDF version of the article.

Summaries will be evaluated on the basis of 1) relevance of the article to animal physiology, 2) the format of the citation and inclusion of the first page of the article, and 3) the accuracy and completeness of the summary. Each summary will be worth 15 points.

Lecture Exam/Lab Quiz Policy

The exams will be comprehensive. For each of the 100 point exams, 5 - 10 points may be from previous exam material. The exams may include multiple choice, fill-in-the-blank, definitions, short answer, and essay questions. Lab quizzes will include fill-in-the-blank and short answer questions. Lecture exams and lab quizzes will be given only at the scheduled times in the scheduled rooms. Make up of exams or quizzes will be given only when an acceptable written excuse is presented. For exams, if you wish to debate the correctness of an answer, it must be done within one week of when the exams are returned. In addition, it must be done in writing, documenting the correctness of your answer. Discussions concerning your request will be made in my office. I will not debate the correctness of your answer in the classroom. You may see me during office hours or make an appointment.

Students With Disabilities

Students with disabilities are welcome in this course. Please contact me during the first week of class so that we may arrange all possible accommodations.

Academic Honesty policies are clearly defined at this institution and all of them will be followed. Penalties for violations may be severe. Cheating on an exam (including looking at someone else's paper) leads to an "F" on that exam.

Due to privacy concerns, I will NOT (1) post grades, (2) give grades out over the phone, or (3) reveal grades in phone messages.

I WILL (1) mail your grade using a stamped, self-addressed envelope that you give to me ahead of time, or (2) reply to an e-mail inquiry that is from your published CAMPUS listing.

Cell Phone, Pagers, and MP3 Players

All cell phones, pagers and MP3 players need to be turned off and put away (in a backpack or some other bag) before coming to class and need to stay turned off during class.

For Graduate Students Taking this as Biology 519

Graduate students will have an additional essay question on each exam that is designed to test their ability to synthesize information from lecture and apply it to a more complex problem than is expected from undergraduates. Therefore, the point total will be slightly higher, but the grades will be based on the same percentage system as shown below.

Point Allocation in the Course

Assignment	Points
Exam 1	100
Exam 2	100
Exam 3	100
Exam 4	100
Lecture (pop) quizzes	35
Lab Quizzes (15 points each)	165
Lab Notebook	100
Paper Presentation	30
Journal Article Summaries (15 points each)	30
Total Points = 760	

Grading

Total Points	Percentage	Grade
696 - 760	92 - 100	A
658 - 695	87 - 91	AB
620 - 657	82 - 86	B
582 - 619	77 - 81	BC
544 - 581	72 - 76	C
506 - 543	67 - 71	CD
453 - 505	60 - 66	D
< 453	< 60	F

Biology 319/519 General Animal Physiology Study and Exam Tips

- In order to do well in this course, expect to spend 2-3 hours studying per 1 lecture hour as you would in all of your college courses.
- Bring your textbook to class so that you can look at the figures while they are being projected. Your textbook has cartoon type blurbs for many of the figures. These blurbs help explain the figure. The instructor's figures lack these blurbs. Even if a figure lacks a blurb, writing down information on the figure or in the margins is a useful way to have the instructor's explanation of the figure directly attached to the figure material.
- Use written rehearsal to study. A good way to do this is to first look over one section or day of notes and then put them away and write down what you remember. Start out by writing main themes and terms in outline or flowchart format. Then go back to your notes and see what you did not remember. Then go back and write more detail into your outline or flowchart until you have gotten down the material.
- Study for 20 minutes and then take a 5 minute break. After the 5 minute break continue this 20/5 minute pattern.
- Be prepared to ask questions in class and in discussion. If you have questions over the material that you have studied, bring them to class and ask them.
- Take your time on exams. Slow down and read each question carefully.
- If you don't know the answer to a question, skip the question until the end of the test.
- On multiple choice questions, cover the possible answers with your hand and read the question. Give yourself time to come up with an answer. Look for an answer that matches your idea from the possible choices listed.
- Short-answer or essay questions generally require definition of terms, explanation of terms, and/or examples that illustrate your knowledge of the subject in regards to the question.

