

Biology 4120 – Comparative Physiology, Winter 2019

Instructor: Professor Marianna Sadagurski

6135 Woodward, IBio (Integrative Biosciences Center)

Tel: 313-577-8637

Class Hours: Monday, Wednesday, 2:30 pm – 3:45 pm; 0426 State Hall

Office Hours: Tuesday, 12:00 – 2:00 pm (or by appointment in IBio only)

Text: Principles of Animal Physiology, Moyes and Schulte (3rd Edition). **Recommended but not obligatory.**

Course website: www.canvas.wayne.edu

Labs: Monday 11:30 pm – 2:20 pm; 4 pm-06:50 pm; 0309 Shapero Hall

Thursday 9:00 am – 11:50 pm; 0309 Shapero Hall

Friday 11:30 am – 2:20 pm; 0309 Shapero Hall

The **objectives** of the course are to expand your knowledge of the principles of basic physiology and endocrine system. To meet these objectives you will attend lectures, read the textbook, scientific papers, perform labs and write an independent literature research project. Students' success at meeting the objectives will be evaluated by exams, and lab assignments. **Main topics of the semester will be signal transduction, endocrine regulation, metabolism and neurophysiology.**

Content Learning Objectives

Students will be able to:

1. Describe how an organism's physiology contributes to its fitness
2. Describe major physiologic processes controlled by hormones
3. Describe how physiological control systems sense and process information to regulate physiology.
4. Describe interplay between signaling pathways and transcription factors
5. Describe how complex systems are essential for physiology and metabolism.

Skill Learning Objectives

Students will be able to:

1. Clearly describe principles of physiology and metabolism.
2. Interpret data from the primary physiology literature, including describing the hypothesis, approach, results and conclusions of a set of experiments.
3. Evaluate physiology experiments from the primary literature, including identifying control experiments, and whether the results support the authors' conclusions.
4. Design a physiological experiment, and describe the hypothesis, approach to test the hypothesis and the results that would support or refute the hypothesis

Writing Intensive: This course meets the writing intensive requirement for biology majors. The writing component is an integral part of the course for all students, including non-biology majors, students who already have a degree and biology majors who have already met their writing intensive requirement. You cannot take this course without the writing intensive component. **To use this course as your writing intensive you must earn a C or better (not C- or below).**

Prerequisites: Completing Bio 3070 and 3200 with grades of C-minus or above are prerequisites for this course. We will especially build upon the knowledge and skills in Bio 3200. In addition, because this is the advanced writing intensive for majors, it is strongly recommend that you successfully complete your elementary and intermediate writing requirements before taking this course, and think about how you can apply what you have learned in those classes to the work you do in this course. This course does not focus on basic or intermediate writing skills, but these skills are required to successfully complete this course. If you have trouble with sentence and paragraph structure or other writing skills, the University provides the writing center as a resource. For more information, call (313) 577-2544 or go to <http://www.clas.wayne.edu/writing/>

Tentative Lecture Schedule

Date	Topic
Jan 7	Introduction
Jan 9-14	Signal transduction pathways I
Jan 16/ Jan 23	Signal transduction pathways II
Jan 28	Cell-to-cell communication and diabetes
Jan 30	Exam 1 (covers material 1/7 – 1/28)
Feb 4-6	Endocrine systems and central regulation I
Feb 11-13	Endocrine systems and central regulation II
Feb 18-20	Endocrine systems and central regulation III
Feb 25	Exam 2 (covers material 2/4 – 2/20)
Feb 27	Metabolic syndrome and animal models
Mar 4-6	Metabolism and Longevity I
Mar 11-13	Spring break
Mar 18-20	Metabolism and Longevity II
Mar 25	Exam 3 (covers material 2/27 – 3/20)
Mar 27-Apr 1	Neural signaling and function I
Apr 3-8	Neural signaling and function II
Apr 10	Animal models and neurodegeneration
Apr 15	Exam 4 (covers material 3/27 – 4/10)
Apr 17	Review
Apr 24	Final Exam, 2:45 – 4:45 pm

Note about Lecture Schedule: The lecture schedule is tentative. It is possible that not all topics on the syllabus will be covered. Exams will be held on the days indicated in the syllabus. *If lectures fall behind, you will only be tested on the topics covered in classes, labs, and assignments.*

Several of the topics in lecture are not in your book. You will still be responsible for this material. I am happy to help students during office hours. However, office hours are not a substitute for attending lectures. Changes in the lab schedule will be posted separately on Canvas.

Tests: There will be 4 closed-book exams during regular class hours. Each will include material covered since the last exam. Exams will be multiple choice and essay questions. The format may vary from exam to exam. Grades will be posted in the Canvas gradebook as soon as possible. The lowest grade of the 4 closed-book exams **will be dropped**. There will be a comprehensive final during exam week which cannot be dropped.

*******There will be no make-up exams.** Make sure to arrive on time for the exams (students that arrive late will not be allowed to take the exam).

Lab Schedule

Date	Lab	Assignment Due	Points
Jan 7-11	NO LABS		
Jan 14-18	Introduction, Discuss term paper topics and plagiarism essay		
Jan 21-25	Brain Drawings, Visual Perception lab (Prisim Goggles)	Plagiarism Essay, Term Paper Assignment 1	10 pts, 10 pts
Jan 28-Feb 1	Receptive Fields Paper		
Feb 4-8	Cockroach Action Potentials	Term Paper Assignment 2	10 pts
Feb 11-15	Human ECG	Lab Report #1	30 pts
Feb 18-22	Crayfish ECG	Term Paper Assignment 3	10 pts
Feb 25-Mar1	Daphnia Heart Rate		
Mar 4-8	Peer Review Day (pts participation)	Term Paper Rough Draft	10 pts, 10 pts
Mar 11-15	NO LABS-SPRING BREAK		
Mar 18-22	SDL Planning day #1	Lab Report #2 Due	30 pts
Mar 25-29	SDL Planning Day #2		
Apr 1-5	SDL Day 1		
Apr 8-12	SDL Day 2	Term Paper Final Draft	100 pts
Apr 15-19	SDL Presentation	SDL Reports	80 pts

300 pts

Term Paper: You will complete one literature research paper. An essay defining plagiarism, the transitions with an outline, the summary of one of your selected articles, a rough draft, and a peer review session will help you make continuous progress through the semester. These assignments, except completing the peer review, are due at the beginning of your lab session.

Lab reports: You will write three lab reports. The lab reports may include brief background information, the methods, the results, your conclusions and a complete list of articles cited, as described in the assignments to be posted on Blackboard. Lab reports are due at the beginning of your lab session as indicated in the schedule.

The beginning of the lab session is defined as the time that your lab session is scheduled to start. Assignments turned in after the beginning of your lab session (**even one minute**), but during the same day, will be downgraded 10% of the possible points. Assignments not turned in during lab should be taken to the Biology office. Ask the front desk personnel to **time stamp** your assignment and put it in your TA's mailbox. You are responsible for assignments turned in to the office. If they lose your assignment, we will assume you did not turn it in. **You may not turn in or earn credit for a lab report for a lab you did not attend and fully participate in. If an assignment is turned in more than 4 days late, no credit will be given! No lab swapping!**

Grades:

Points for exams.

Exam 1	140
Exam 2	140
Exam 3	140
Exam 4	140
(Only the 3 highest of the 4 exam scores "count")	
<u>Final exam</u>	<u>280</u>
Total	700

Points for lab activities.

3 Lab reports	140
(30 points for the first two and 80 for the last one)	
Plagiarism essay	10
Peer review	10
Term paper articles	10
Term paper transitions	10
Term paper first summary	10
Rough Draft	10
<u>Final Term Paper</u>	<u>100</u>
Total	300

Grading Policy:

Your point totals from the exams (**700 possible points**) and labs (**300 possible points**) will be added together. This number is then converted to a letter grade as shown below:

A student who earns an overall total of 93.000 % or more will have earned the grade of A.
A student who earns an overall total of 90.000 – 92.999 % will have earned the grade of A-.
A student who earns an overall total of 87.000 – 89.999 % will have earned the grade of B+.
A student who earns an overall total of 83.000 – 86.999 % will have earned the grade of B.
A student who earns an overall total of 80.000 – 82.999 % will have earned the grade of B-.
A student who earns an overall total of 77.000 – 79.999 % will have earned the grade of C+.
A student who earns an overall total of 73.000 – 76.999 % will have earned the grade of C.
A student who earns an overall total of 70.000 – 72.999 % will have earned the grade of C-.
A student who earns an overall total of 60.000 – 69.999 % will have earned the grade of D.
A student who earns an overall total of below 60 % points will have earned the grade of F.

I do not curve the grades. Everyone can earn an A, if they perform well.

General Policies.

1) **Anyone caught cheating or plagiarizing will automatically receive a failing grade for the exam, paper or class, and may be expelled from the University.** Your written work will be submitted to SafeAssignment for an evaluation of your ideas and proper use and attribution of sources. As part of this process, you may be required to submit electronic as well as hard copies of your written work, or be given other instructions to follow. By taking this course, you agree that all assignments may undergo this review process and that the assignment may be included as a source document in SafeAssignment's restricted access database, solely for the purpose of detecting plagiarism in such documents. Any assignment not submitted according to the procedures given by the instructor may be penalized or may not be accepted at all.

2) Any special considerations (disabilities, religious holiday conflicts, etc.) must be brought to the attention of the instructor as soon as possible. If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Please refer to the SDS website for further information about students with disabilities and the services we provide for faculty and students: <http://studentdisability.wayne.edu/>

3) Conflicts regarding the grading of any assignment must be brought to the relevant teaching assistant's attention in a typed, concise and coherent memo within one week of the date the assignment is returned to the lab section. **Once you talk to the TA about the work you are no longer eligible for a regrade.** For problems with exam questions, a completed Exam Question Protest Form, which will be available on Blackboard, should be sent to me as an attachment to an email within 1 week of the exam's return. **When I regrade any work I may regrade the whole assignment in addition to the section you are protesting, and your grade may drop.**

4) **Professional behavior** is expected in lecture & lab, which includes respecting your classmates by

- arriving on time
- staying in your seat until lecture ends
- turning off cell phones and
- not talking, eating or drinking during class.

5) **Email guidelines:** I will not reply to emails when the answer can be found in the syllabus or on Blackboard. You must email me from your WSU account for privacy reasons and for professionalism. I will respond to most emails within two business days. After two business days, you may email me again. **I do not answer questions by email if they require a discussion.** This includes questions on content and study or writing strategies. Please come talk to me during office hours to discuss these issues.

All students must show respect in language and attitude towards the instructor and their fellow students. Disrespectful students will be asked to leave the lecture or lab, and will lose their opportunity to turn in any missed assignments. No unregistered students may attend lab or lecture, especially children.

6) If you cannot come to office hours because you have conflicts with classes, or want to meet with your teaching assistant outside of lab, you need to set up an appointment by email. In order to schedule these appointments, you need to email three unique times that you can meet to Dr. Sadagurski or your teaching assistant at least 24 hours in advance. We cannot guarantee that we will be available outside of scheduled class and office hours.

7) Problems and challenges regarding the grading of any assignment must be brought to the relevant teaching assistant's attention in a typed, concise and coherent memo within one week of the date the assignment is returned to the lab section. Once you talk to the TA about the work you are no longer eligible for a regrade.

Challenges to exam questions should be sent to Professor Sadagurski as an email explaining the issue. For challenges to multiple-choice questions, you need to convince me that your answer was the best answer, given reasonable assumptions that you explain. Once you talk to me about the work, you are no longer eligible for a regrade. When I regrade any work I may regrade the whole assignment in addition to the section you are protesting, and your grade may drop.

8) **Withdrawals:** Last day to withdrawals- March 24, 2019. After this date, withdrawals will receive WF or WP (failing, passing). WP will be given for those with average exam grades of 60% or higher. WF will be given for averages below 60%. Missed exams count for 0. *After March. 24, letter grades will be issued.*

9) For any and all issues not covered in this syllabus, refer to the "Student Code of Conduct", which can be found at http://www.doso.wayne.edu/student-conduct/Student_Code_Conduct.html

10) University closures will be publicized through:

- the University Newslines (313) 577-5345*,
- WSU Homepage (www.wayne.edu)*,
- WSU Pipeline (www.pipeline.wayne.edu)*,
- WDET-FM (Public Radio 101.9) and
- by other local radio and television stations.

* Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations.

If an hourly exam is scheduled on a day when the University or lecture room is officially closed during class, the exam will be held during the next scheduled meeting of lecture that occurs when the University and room are open, or as indicated on the class blackboard site.

If the University or lab room is officially closed during your lab, any assignment that was due that day is then due at the next scheduled meeting of **lecture or your lab** that occurs when the University or lab are open, whichever comes first, or as indicated on your lab blackboard site.

11) Updates and corrections to this syllabus will be described in class and/or posted on the course Canvas site. You are responsible for checking Canvas announcements and your University email account. I recommend checking at least once each business day of a semester in which you are enrolled.

From: Principles of Animal Physiology, Moyes and Schulte (3rd Edition)

Part Two:

Chapter 4

Chapter 5

Part Three:

Chapter 8

Chapter 14