

Biology 4120 – Comparative Physiology, Fall 2017

Instructor: Dr. Marianna Sadagurski

6135 Woodward, IBio (Integrative Biosciences Center)

Tel: 313-577-8637

Class Hours: Tuesday, Thursday, 10:00 am – 11:15 am; 0106 Main

Office Hours: Tuesday, 1 – 2 pm, 4119 Bio (or by appointment in IBio)

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

Course website: www.blackboard.wayne.edu

Labs: Wednesday 8:30 am – 11:20 am; 0309 Shapero Hall

Thursday 11:30 am – 2:20 pm; 02:30 pm-05:20 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, perform labs and write an independent literature research project. Students' success at meeting the objectives will be evaluated by exams, and lab assignments. The three topics of the semester will be signal transduction and 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 |
|----------------|---|
| Aug 31 | Introduction |
| Sept 5-7 | Signal transduction pathways I |
| Sept 12-14 | Signal transduction pathways II |
| Sept 19 | Cell-to-cell communication and diabetes |
| Sept 21 | Exam 1 (covers material 8/31 – 9/19) |
| Sept 26-28 | Endocrine systems and central regulation I |
| Oct 3-5 | Endocrine systems and central regulation II |
| Oct 10-12 | Endocrine systems and central regulation III |
| Oct 17 | Exam 2 (covers material 9/26 – 10/12) |
| Oct 19 | Metabolic syndrome and animal models |
| Oct 24-26 | Metabolism and Longevity I |
| Oct 31 | Metabolism and Longevity II |
| Nov 2-7 | Treatment of metabolic syndrome |
| Nov 9 | Exam 3 (covers material 10/19 – 11/7) |
| Nov 14-16 | Neural signaling and function I |
| Nov 21 | Neural signaling and function II |
| Nov 23 | <i>No Class - Thanksgiving Holiday</i> |
| Nov 28-30 | Animal models and neurodegeneration |
| Dec 5 | Exam 4 (covers material 11/14 – 11/30) |
| Dec 7 | Review |
| Dec 19 | Final Exam, 8 – 10:00 am |

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.*

Some 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 Blackboard.

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 Blackboard 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.*

Lab Schedule

| Date | Lab | Assignment Due | Points |
|---------------|--|---|-----------------------|
| Aug 30-Sept 1 | NO LABS | | |
| Sept 6-8 | Introduction, Discuss term paper topics and plagiarism essay | | |
| Sept 13-15 | Brain Drawings, Visual Perception lab (Prisim Goggles) | Plagiarism Essay, Term Paper Assignment 1 | 10 pts, 10 pts |
| Sept 20-22 | Receptive Fields Paper | | |
| Sept 27-29 | Cockroach Action Potentials | Term Paper Assignment 2 | 10 pts |
| Oct 4-6 | Human ECG | Lab Report #1 | 30 pts |
| Oct 11-13 | Crayfish ECG | Term Paper Assignment 3 | 10 pts |
| Oct 18-20 | Daphnia Heart Rate | | |
| Oct 25-27 | Peer Review Day (pts participation) | Term Paper Rough Draft | 10 pts, 10 pts |
| Nov 1-3 | SDL Planning day #1 | Lab Report #2 Due | 30 pts |
| Nov 8-10 | SDL Planning Day #2 | | |
| Nov 15-17 | SDL Day 1 | | |
| Nov 22-24 | NO LABS- THANKSGIVING | | |
| Nov 29- Dec 1 | SDL Day 2 | Term Paper Final Draft | 100 pts |
| Dec 6-8 | 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 point total will be normalized (averaged) to that of the student with the second highest point total in the class. This number is then converted to a letter grade as shown below:

| | | |
|-----------|-----------|-----------|
| A 92-100% | B- 80-81% | D+ 68-69% |
| A- 90-91% | C+ 78-79% | D 62-67% |
| B+ 88-89% | C 72-77% | D- 60-61% |
| B 82-87% | C- 70-71% | F <59% |

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.

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.

5) **Withdrawals:** Last day to withdrawals- November 12, 2017. 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 Nov. 12, letter grades will be issued.*

6) 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

7) University closures will be publicized through:

- the University Newsline (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.

8) Updates and corrections to this syllabus will be described in class and/or posted on the course Blackboard site. You are responsible for checking Blackboard 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