

# WILDLIFE PHYSIOLOGICAL ECOLOGY

## WILD 346 Autumn 2019

**INSTRUCTOR:** Dr. Cerisse Allen, cerisse.allen@umontana.edu  
BioResearch Building (BRB) 108  
Office hours: Mon 12-1 PM, or by appointment

**TA:** Adam Mitchell, adam.mitchell@umontana.edu, office hours TBA

**COURSE MEETS:** MWF 11:00 - 11:50 AM, Jeanette Rankin Hall 202

### **Required readings from the primary literature are listed in the course schedule**

Recommended readings from *Animal Physiology: Adaptation and Environment*, 5th edition, K. Schmidt-Nielsen, 2010 are listed in the course schedule, and two copies of this text are on reserve in the library. These readings are strongly recommended, but not required.

**ONLINE RESOURCES:** Class Moodle page- please check Moodle regularly for due dates and any changes or additions to the course schedule.

**Course Description** – Physiological Ecology is a multidisciplinary field concerned with the ways that individual organisms respond to physical conditions of the environment - including energy availability, temperature, solar radiation, atmospheric composition, solute concentrations, and photoperiod. When confronted with changes in environmental conditions, organisms can respond by changing their own internal conditions (which we generally refer to as ‘physiological responses’) or by changing their behavior, or both. These responses can vary among individual organisms which belong to the same species, and also vary among species. This course is an introduction to those behavioral and physiological responses. Our aim is to understand how responses differ among organisms, and to understand how limitations in the ability to respond to environmental change can limit or otherwise influence the geographic distribution of animal species.

Physiological Ecology is at the intersection of a number of disciplines - traditional physiology, biochemistry, molecular biology, ecology, population biology, and evolution. Our course will take a conceptual approach to understanding environmental challenges and solutions. Although we do not cover mechanisms at the level of a comparative physiology course, we do assume a basic understanding of physics, biochemistry, mathematics, organismal diversity, and principles of ecology and evolution typical of an upper-division student in the biological or environmental sciences.

**EXPECTED OUTCOMES** – This course emphasizes organismal ‘solutions’ to environmental ‘problems.’ We cover basic principles of physiology and organismal biology, and the synthesis of this information. Throughout, we emphasize readings from the primary scientific literature. By the end of this course, you should understand the nature of major environmental challenges to an organism’s homeostasis, and you should gain a basic understanding of the way that biologists study physiological ecology, gather data, and communicate their findings. Exams and assignments are designed to encourage the synthesis of subject matter and assess your ability to make predictions and interpret data.

**LECTURES** – Attendance at lectures is an important part of this course, and all students are expected to attend lectures regularly. You will be assigned to a discussion group of 4 students, and you will be asked to sit with your group during class periods. In-class activities are designed for you to assess your comprehension of the course materials, and for you to gain practice solving problems and synthesizing information. We will ask each of you to evaluate the participation of your group members at the end of the semester. This does not count directly toward your grade, but may be used to determine if a borderline grade at the end of the semester is rounded up to the next letter grade.

In the case of medical absences, family emergencies, religious/cultural observation, or absences due to sanctioned University activities, please discuss in advance and provide documentation where appropriate.

**READINGS** - Required readings from the primary literature are listed in the course schedule. These readings will be available on the course Moodle site. You should read all papers in advance of the lecture. Some of these papers are the basis for homework assignments - see the course schedule for due dates.

**ASSIGNMENTS** - Homework assignments are worth 20% of your grade. These assignments are based on readings from the primary literature, and are designed to synthesize the information we have discussed in class. Assignments are due in class; you should come to class prepared to discuss your work in your group and with the rest of the class. Assignments will be graded on the basis of the coherence, effort and content of your answers, and will receive the following grades:

**+ = 100% (10 points)**

**✓ = 85% (8.5 points)**

**- = 70% (7 points)**

## **MISCELLANEOUS INFORMATION**

**Accommodations** The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification. Arrangements for accommodations on exams must be made through DSS at least one week prior to the exam.

**Academic misconduct** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code [http://life.umt.edu/vpsa/student\\_conduct.php](http://life.umt.edu/vpsa/student_conduct.php)

**Dropping course or changing grading status** will strictly follow the University policies and procedures, which are described in the catalog.

### **Student Behavior**

To maximize their likelihood of success, students should attend each lecture, and complete assigned readings before class. It is unwise simply to rely on the slides or figures posted on-line. When in class, students are expected to behave in a manner that is respectful of others. Cell phones and other electronic devices must be turned off during lecture and during exams. Texting/internet surfing during class are not permitted. If you prefer, you may use laptops or tablets to take notes during lecture – please be respectful of others when doing so. Written assignments are due at the start of class on the assigned day.

## **GRADING**

Makeup exams in case of emergency or illness will only be administered if arrangements are made **prior** to the exam. You must contact Dr.Allen *at least one week before an exam* if you need to make other arrangements to take an exam because you will be off campus for other University activities (track, ROTC, etc.). Additional extra credit will not be offered.

**Exams** are not cumulative - however, topics covered later in the course may refer to ideas or principles discussed earlier in the semester, and require a working understanding of those basics.

Grades will be based how many of **250 points** you earn over the course of the semester.

**(1) Three mid-term exams + final exam** (50 points each; 200 points total)

**(2) Six homework assignments** (10 points each- you may drop the lowest score; 50 points total).

Final course grades will be based on your total points as a percentage of the 250 total points possible. Pluses (+) and minuses (–) will **not** be used in the assignment of letter grades. Grades will be determined by the distribution of total scores, following these guidelines (these cutoffs may or may not be adjusted downward, to the benefit of the student, to better reflect natural breaks in the class scores):

≥90% of points: A

≥80% of points: B

≥70% of points: C

≥60% of points: D