

ECOL 4240 - Physiological Ecology - Fall 2011

Tues-Thurs 12:30pm – 1:45pm,
Ecology Building Rm 12
Labs: Fri – 9:05am-12:05pm BioSci Rm 304

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Office hours: Thursdays 2:00 – 4:00

Welcome to EcoPhys! This course will provide you with a broad overview of selected topics in physiological ecology, including immunity, metabolism, stress, nutrition and thermoregulation. You will also become familiar with a variety of field and lab techniques common to physiological research including surveying methods and physiological data collection. This is a new course in the Odum School, and as such, many of the lectures and labs will be taught for the first time. You will be the guinea pigs!

Attendance: Attendance in class is not mandatory, although since there is no textbook for the class, the majority of exam questions will come from the class or lab notes. Also, because this class is small, your absence on any given day will definitely be noticed! And, keep in mind that a large portion of the final grade will be based on your participation in class discussions.

Books & Equipment: There is no text for the class, but many assigned readings, which will be emailed or handed out in class. Also, for many of the labs and some of the lectures we will be conducting small experiments where it will be necessary to enter some data into a spreadsheet program (MS Excel). If you have a personal laptop with this program already installed, you should bring it to the class and labs. If you do not have this program, a cd will be available to install it on your computer. You will also need to purchase a **student dissecting kit** from the UGA bookstore (they are at the back of the store near the office supplies) for ~\$15. Bring this to all labs.

Individual Project: As part of your learning experience you will be required to write a short paper on a topic which you will research yourself, as well as give a short presentation to the class on that topic. Please see the separate instructions on p. 2 of this syllabus. The report/presentation will be worth 20% of your final grade.

Participation: This part of your grade, which is worth 20% of your final grade, will be assessed by considering your participation in class discussions, labs, and field demonstrations. If you want to get full marks here, you **MUST SPEAK UP DURING CLASS AND LABS** (i.e. ask questions). Quiet students will score poorly!

Midterm: The midterm will cover lecture materials, paper discussions, and lab material. The midterm will be worth 30% of your final grade.

Final exam: The final exam will cover the whole course, with an emphasis on material presented since the midterm. Questions will span all class materials, both inside and outside. The final will be worth 30% of your grade.

There will be no lab exam. All material covered in labs will be incorporated into the midterm and final.

Individual Project

As part of your final grade, you will be expected to write a 5-10 page (double-spaced) essay on a subject of your choice, and give a 20 minute presentation to the class on the subject, which combined will total 20% of your final grade. The topic can be anything you wish, as long as it fits within the general theme of physiological ecology. The paper should be based on your own reading of the scientific literature. You should think carefully of the topic, then do some reading on the subject, from both books at the library, as well as from scientific papers, then write a summary of the information you gathered. The essay you write should contain as much current information on the subject as possible.

There are no set guidelines for how to write the paper, only that it should contain a bibliography listing the sources you used. You should try to have at least 8-10 sources (i.e. scientific journals). Internet webpages do not count!

Near the end of the semester, you will also give a (20 min) PowerPoint presentation on your topic to the class. Again, there are no formal guidelines on how to give your talk, or what to put in it. The overall goal of the paper and the talk is to teach yourself, your classmates (and your professor!) about the subject you picked.

You will be graded on both the paper (10%) and the talk (10%). For the paper, the grade will be based on how interesting your paper is, your writing skills, and how much background reading you did. You are also free to include pictures, if they help to illustrate the concepts. For the talk, the grade will be based on general organization, speaking skills and your own enthusiasm!

Course Calendar

Each week will be devoted to a single topic, which we will cover in lectures, paper discussions and labs. Every Tuesday will be a lecture on the topic, Thursdays we will discuss relevant papers from the scientific literature, and in labs on Friday there will be activities devoted to the same topic. The calendar below lists the topics in the order in which they will appear.

Week	Lecture	Paper Discussion	Lab
8/16	Intro to class and Physiological Ecology	Intro to paper discussions and basics of paper critiquing	Intro to labs, equipment and example project
8/23	Thermoregulation and integument color	Discussion of butterfly wing color and thermoregulation papers	Thermoregulation in butterfly larvae
8/30	Insect immunity	Discussion of melanism trade-off papers	Cricket encapsulation lab
9/6	Nutrition	Discussion of ptilochronology papers	Ptilochronology lab
9/13	Metabolism and metabolic rate	Discussion of Hopkins SREL articles	Metabolic rate lab
9/20	Stress physiology – vertebrates and invertebrates	Discussion of marine iguana articles	Insect stress lab
9/27	Innate immune system in vertebrates – effects of stress	Field trip to catch tadpoles	Tadpole stress and leukocytes lab
10/4	Midterm	No class	No lab
10/11	Guest lecture – Kristen Navara Effects of Cort on physiology	Discussion of Wingfield et al. articles	Lab TBA
10/18	Physiological adaptation to extreme environments	Articles TBA	Lab TBA
10/25	Erythrocytes and oxygen delivery	No class	No lab
11/1	Physiology and animal behavior - Guest lecture – Vanessa Ezenwa	Discussion of Ezenwa articles	Bessbug behavior lab
11/8	Guest lecture – Sonia Altizer Parasitism and Disease	Discussion of tadpole gut parasites papers	Tadpole gut parasites lab
11/15	Conservation Physiology	Conservation Physiology review article	No lab
Dec 1	Student Presentations	Student Presentations	No lab