

Reproductive Physiology, Ecology, and Evolution Spring 2013

Instructors: Dr. Wendy Hood and Dr. Haruka Wada

Meeting times: Tues and Thurs at 8AM

Location: LSB 310

Prerequisite: Consent of instructor(s),
Recommended – Ecology, Evolution, and/or Physiology

Credit: This is a 3-credit course.

1. The goals of this course are several fold.

You will become conversant in reproductive biology topics that are currently receiving attention in the field of physiological ecology.

You will develop and hone skills that will be valuable in completing your degree and being a successful member of the scientific community, including

- a. developing novel research questions.
- b. writing an idea paper.
- c. presenting your ideas to a group of peers.
- d. defending your ideas.
- e. reviewing manuscripts and responding to reviews.
- f. being an active listener and participant in discussions.

2. Topics of this course.

Each semester we will focus on 3 topics that recently received a substantial amount of attention in reproductive physiological ecology. For spring 2013 the topics will be:

- a. reproductive constraints vs. restraint
- b. the developmental environment and performance
- c. predicting physiological and reproductive responses to a changing environment

Within each topic, you will hear lectures and read papers that:

- a. give you a historical perspective on the topic
- b. describe key physiological mechanisms that are relevant to each topic
- c. address how variation in physiology and reproductive performance impact and are impacted by ecological and evolutionary processes.

Finally, we will review several recent papers on the topic.

3. Format of the course

We will spend ~4-5 weeks on each topic. Within each topic, there will be lectures, paper discussion, and student presentations (see below for the calendar). During the first week of the semester, you will be asked to select different topics for each of the following:

- a. Presentation and paper
- b. Peer review
- c. Selecting paper and leading discussion

As a result, you will participate in discussion for all 3 topics.

4. Paper and presentation

For one of the three topics, you will complete a 8 to 10-page paper (double spaced) that reflects your own ideas about the current issues, theories, and future directions of the field of study. The topic of your proposal should have limited, if any, overlap with your thesis/dissertation project. The goal of this paper is to synthesize new ideas and questions that could be the topic of a future study. Your arguments should be based on a current published data and theories on your topic of choice. Your paper should be beyond a list of particular experiments to be done but rather hypothesis driven. You will consult with the instructors about your topic prior to writing your paper. You have 2 weeks to write the paper. All papers for each topic are due on the last day of the lecture preceding the first student presentation.

Your peers and instructors will be reviewing your work. Reviews of you paper will be returned 2 weeks after submission. You will have an additional week respond to the reviews and resubmit your final paper.

Tips for a successful paper: think of a big picture. Read example idea papers below:

Reddon AR. 2012. Parental effects on animal personality. *Behavioral Ecology* 23:242-245.

Royle NJ, Schuett W, Dall SRX. 2010. Behavioral consistency and the resolution of sexual conflict over parental investment. *Behavioral Ecology* 21:1125-1130.

Valcu M, Kempenaers B. 2010. Spatial autocorrelation: an overlooked concept in behavioral ecology. *Behav Ecol* 21:902-905.

Presentation: During the last weeks of discussion on each topic, a review of your idea paper on that topic will be presented and defended. You will present your ideas in a 35-45 min long seminar. Each seminar will include background on your topic, pertinent and current theories (if any), your own hypothesis and/or question, discussion of current support for this line of research, and future direction or your proposed experimental design. The class and instructors will critique your presentation and ask you to defend your hypotheses and experimental design.

5. Peer review

You will both be reviewing a paper that has been submitted by one of your peers and the performance of all of your peers. For the peer review, you will be assigned a paper from one of your peers to review as if it were being submitted as a journal article. You will be asked to submit detailed comments and suggestions and you are welcome to remain anonymous. In addition, each time a student gives a presentation you will be asked to provide feedback to that student in effort to help everyone improve his or her presentation skills.

6. Discussion paper

Finally, after each presentation we will have a short discussion about the topic. On the days you are assigned to bring in a paper (2 times for the topic you have been assigned), you will be asked to give a short 5 minute review of that paper within the context of the talk that you have just heard. You will be given the references and abstract to the talk ahead of time so you do not repeat content that the speaker is covering. Instead, your goal will be to bring in a paper that adds to or contrasts the presentation. The goal of this assignment is to help you think on your feet and put ideas into context.

7. Grades for this course

Paper, 40pts first submission + 40 pts final submission with response to reviews:	80pts
Presentation:	50pts
Critique of peer's paper:	30pts
Critique of peers' presentations, 5pt x 12:	60pts
<u>Paper discussion following a presentation 15pts x2:</u>	<u>30pts</u>
TOTAL:	250pts

Grading scale A = $\geq 90\%$, B = 89-80, C = 79-70%, D = 69-60%, F = $\leq 59\%$

Course schedule

Week	Topic	Format	
1 (Jan 9-11)	Introduction	Lecture	
2 (Jan 14-18)	Intro to repro phys	Lecture	Presentation, defending ideas, critically reviewing papers (including design); Reproductive stages, control of reproduction
3 (Jan 21-25)	Intro to repro eco & evo	Lecture	<i>Continued</i>
Topic 1 – authors meet with Hood and Wada			
4 (Jan 28-Feb 1)	Constraints & restraints	Lecture	Life-history tradeoffs & cost of reproduction, physiological limitation (2 classic papers)
5 (Feb 4-8)	Constraints & restraints	Lecture	<i>Continued</i> (1-2 current reviews)
Feb 7: Papers DUE for topic 1 authors			
6 (Feb 11-15)	Constraints & restraints		Student presentation & student-led paper discussion
7 (Feb 18-22)	Constraints & restraints		<i>Continued</i>
Topic 2 – authors meet with Hood and Wada			
8 (Feb 25-Mar 1)	Dev. environment	Lecture	Phenotypic plasticity, reaction norms, epigenetics, fitness consequences
9 (Mar 4-8)	Dev. environment	Lecture	<i>Continued</i>
March 14: Papers DUE for topic 2 authors			
10 (Mar 11-15)	-----SPRING BREAK-----		
11 (Mar 18-22)	Dev. environment		Student presentation & student-led paper discussion
Topic 3 – authors meet with Hood and Wada			
12 (Mar 25-29)	Dev. Environment		<i>Continued</i>
13 (Apr 1-5)	Changing environment	Lecture	
April 4: Papers DUE for topic 3 authors			
14 (Apr 8-12)	Changing environment		Student presentation & student-led paper discussion
15 (Apr 15-19)	Changing environment		<i>Continued</i>
16 (Apr 22-26)	Changing environment		<i>Continued; wrap-up</i>