Physiological Ecology of Reproduction
Spring 2019

Instructors: Dr. Wendy Hood and Dr. Haruka Wada
Course number: BIOL 7550
Meeting times: Mon and Wed at 3:00-4:15
Location: Funchess 332
Prerequisite: Consent of instructor(s), *Recommended* – Ecology, Evolution, and/or Physiology
Credit: This is a 3-credit course.

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1. **Goals of this course**
   - You will become conversant in reproductive biology topics that are of interest 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. anticipating questions and defending your ideas.
     e. reviewing manuscripts and responding to reviews.
     f. being an active listener and participant in discussions.

2. **Topics covered**
   Each semester we focus on 4 topics that have received a substantial amount of attention in the physiological ecology of reproduction. For spring 2019, the topics will be:
   a. reproductive constraints.
   b. the developmental environment and performance.
   c. the mechanistic basis of life-history tradeoffs.
   d. predicting physiological and reproductive responses to a changing environment.

   Within each topic, you will hear lectures and read papers that:
   a. describe key <u>physiological</u> mechanisms that are relevant to each topic.
   b. address how variation in physiology and reproductive performance impact and are impacted by <u>ecological and evolutionary</u> processes.

   We will review several recent papers on each topic.

3. **Format**
   We will spend ~3-4 weeks on each topic. Within each topic, there will be lectures, paper discussion, and student presentations. You will be completing a literature review for each topic. During the first week of the semester, you will be assigned a topic for your journal article presentation.

   Throughout the semester, you will be working on an idea paper.

At the end of the semester,

- we will complete peer review of the idea papers, as if it was a journal article.
- you will be presenting the details of your idea paper and participating in a mock-defense.

4. Literature search and journal article presentation

For each of the 4 topics we cover this semester, you will be required to do a literature search. The goal of this assignment is for you to find papers that could be useful in the development of the hypothesis you will present in your idea paper and find examples and theoretical papers that you will cite in your paper.

For 1 of the topics, you also are required to do a short presentation on a journal article. The goal of this assignment is 1) to introduce the class to research related to the topic, 2) to encourage you to think about the contribution and assumptions of the study, and about what is missing from this line research, 3) to give you the opportunity to get some feedback on your presentation style, and 4) to give you the opportunity to hone your defense skills. Each presentation should last 12 minutes. Following the presentation, you will be asked to answer questions about the content of the paper. These questions will allow you to practice thinking on your feet before you give the presentation of your idea paper and have your defense graded.

See ***Journal Article Presentations*** guide for details on both the literature search and presentations. You will also receive points for critiquing and coming up with questions for students in the journal article presentation – ***See Journal Presentation Evaluation*** form. Please read the ***Verbal Self-defense*** guide on how to prepare for and respond to questions.

5. Idea paper and presentation

Throughout the semester, you will work on completing an 8 to 10-page paper (double spaced) that reflects your own ideas about the current issues, theories, and future directions of research related to the topics discussed in class. 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 current published data and theories on your topic. Your paper should be hypothesis-driven. You will consult with the instructors about your topic before writing your paper.

See ***Idea paper*** guide for a more detailed description of the presentation

Your peers and instructors will be reviewing your work. Reviews of your paper will be returned 1 week after submission. You will have more than 2 weeks to submit a response to the reviews with the final submission of your paper.

Presentation: During the last 3 weeks of class, all students will give a presentation on their idea paper. Following your presentation, you will be asked to defend your project and you will be verbally quizzed on your understanding of the physiological, ecological, and

evolutionary processes underlying your paper. Your presentation needs to be 20 minutes long and include background on your topic, pertinent and current theories (if any), untested assumptions and/or major gap in knowledge in the field, your own hypothesis and/or question(s), discussion of current support for this line of research, and future directions or your proposed experimental design.

Please make sure you come to class 15 minutes early on the day you are giving your presentation.

See ***Presentation Evaluation*** guide for a more detailed description of how you will be scored. Please read the ***Verbal Self-defense*** guide on how to prepare for and respond to questions during your defense.

6. Peer review

You will review an idea paper submitted by one of your peers. You will be assigned a paper 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.

See ***Peer-review*** guide for a more detailed description of how to review the paper.

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 and defense skills.

7. Submitting materials

All materials must be submitted on canvas. All files should be given a filename that includes your last name FIRST.

8. Grading

Available points:

Literature search, 5 pts x 4	20pts
Journal article presentation 20 pts + anticipated questions 5 pts	25pts
Paper: phase 1 paragraph (10 pts), phase 2 submission (45 pts), phase 3 submission with response to reviewers (45 pts)	100pts
Idea paper presentation	50pts
Idea paper defense (30 pts), including anticipated questions (5 pts)	35pts
Critique of peer's paper	30pts
Critique of peers' presentations, 2pts x 10 students x 2 presentations	40pts
TOTAL:	**300pts**

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

Late papers: *Students will lose 10 points (10 points not 10%) from their final grade per day for each day their literature search, idea paper, paper revision, or peer review is late.*

Students will receive a score of '0' for the critique of peer presentation if they are absent when their peers give a presentation. Students who are not ready to present on the day they are assigned (journal article review or idea paper) will receive a '0' for that assignment.

If you are ill or have a university-approved excuse for not making it on your presentation day, let Wendy and Haruka know as early as possible so they can make adjustments to the schedule.

Tentative Course Schedule

Week	Monday	Wednesday
1 (Jan 9)	----------	Introduction
2 (Jan 14, 16)	*How to's:* Paper, Presentation, Defending your ideas, Reviewing papers	*Lecture:* Constraints on reproduction
3 (Jan 21, 23)	**MLK Day – *No Class***	*Lecture:* Constraints on reproduction **Lit review due**
4 (Jan 28, 30)	*Lecture:* Constraints on reproduction	*Lecture:* Constraints on reproduction
5 (Feb 4, 6)	*Journal presentations:* Constraints on reproduction **(presenters: Zachary, Kaylene, Ashley)**	*Lecture:* Developmental environment
6 (Feb 11, 13)	*Lecture:* Developmental environment **Lit review due**	*Lecture:* Developmental environment
7 (Feb 18, 20)	*Lecture:* Developmental environment	*Journal presentations:* Developmental environment **(presenters: Tori, Cara, Alex)**
8 (Feb 25, 27)	*Lecture:* Life-history **Phase 1 paragraph due. *Schedule meeting with Wendy and Haruka to discuss plans for project***	*Lecture:* Life-history **Lit review due**
9 (Mar 4, 6)	*Lecture:* Life-history	*Journal presentations:* Life-history **(presenters: Halie, Kale)**
10 (Mar 11, 13)	**SPRING BREAK - *No Class***	**SPRING BREAK - *No Class***
SB (Mar 18, 20)	***No class***.	*Lecture:* Changing Environment
11 (Mar 25, 27)	*Lecture:* Changing Environment **Lit review due**	*Lecture:* Changing Environment
12 (Apr 1, 3)	*Journal presentations:* Changing Environment **(presenters: Sara, Shelby, Ulku) Phase 2 paper due. Receive peer review.**	***No class*** *– work on peer review, presentation, defense*
13 (Apr 8, 10)	***No class*** *– work on peer review, presentation, defense* - **Peer review due on Sunday 4/7; Review returned to author 4/8**	Student presentations & defense **(presenters: TBA) *Class will run long***
14 (Apr 15, 17)	Student presentations & defense **(presenters: TBA) *Class will run long***	Student presentations & defense **(presenters: TBA) *Class will run long***
15 (Apr 22, 24)	Student presentations & defense **(presenters: TBA) *Class will run long***	Student presentations & defense **(presenters: TBA) *Class will run long***
Finals (Apr 29-May 3)	**Phase 3 final papers due Apr 29.**	