

**Species Interactions and Coevolution**  
**Bisc 579 Section 1:**  
**Advanced Topics in Biology**  
**University of Mississippi**  
**Spring Semester 2019**  
**1 credit**

**Instructor:**

Dr. Jason Hoeksema

Phone: 915-1275

Email: hoeksema@olemiss.edu

Office: 318 Shoemaker Hall

Office hours: By appointment (Shoemaker Hall Rm. 318)

**Meeting time/place:** Mondays, 2:00-2:50 p.m., Shoemaker Hall Rm. 408

**Course Overview:**

The course explores the ideas that species interactions and coevolution, broadly defined as the reciprocal effects that species have on the evolution of each others' traits, may play a central role in the evolution and organization of biodiversity. These ideas will be explored through discussion of readings from the primary literature, including book chapters and scientific papers.

**Learning Outcomes:**

By the end of the semester, students should be able to:

- Understand and critique the variety of approaches being used to study the evolution of species interactions
- Demonstrate a deep understanding of the primary scientific literature on a specific aspect of evolutionary biology
- Design research approaches to answer specific questions in evolutionary biology

**Course format:**

Each week, we will typically discuss one or two readings, which will be chosen during the semester based on the flow of discussion and the interests of students in the class. Many readings will be journal articles, and some will be chapters from books, such as Relentless Evolution by John N. Thompson (2013, University of Chicago Press, ISBN 978-0-226-01875-1). Each week, a different student or group of students will be responsible for leading discussion on that week's readings. **Additional requirements for graduate students:** In the second part of the semester, each graduate student will write a short essay in which they synthesize a subset of relevant literature and pose one or more hypotheses that they would like to test in future research.

**Grading** will be based on a combination of equally weighted factors: weekly participation, effective leading of discussions, plus the synthetic essay (grad students only). Ten points are possible for participation each week, based on: 1) a student's level of engagement and discussion contribution (up to 5 points), and 2) proper preparation of two high-quality discussion questions (even if you are leading discussion that week) pertaining to the week's assigned reading (up to 5 points).

**\* To prepare for discussion each week:** First, read all readings thoroughly (perhaps more than once if you find them difficult), taking notes and keeping track of questions you have. Then, on a piece of paper with your name on it, write or type at least TWO discussion questions (you will turn this in after class). Do not wait until you arrive in class to write down these questions--it should be part of your advance preparation for the class. At least *one question should be for clarification*--a concept or bit of terminology that you would like clarification about, or that you think would be useful to discuss; or perhaps a figure from a paper that you don't understand, or a result, etc.. At least *one question should be for conceptual discussion*--something from the paper that you think might be interesting to ask the group their opinions about. This could be something interesting from the Methods, an intriguing idea from the Introduction or Discussion, an idea for an experiment that could be done, a possible criticism of the paper, or any other idea you want to discuss from the readings. During class, we will randomly (or otherwise) choose among all students to read one of their questions, focusing at first on clarification, and then on conceptual discussion. I also encourage you to do your own extra outside reading to help clarify key terminology, especially if it is important for understanding the paper--don't always just wait until class time to get things clarified.

**\*What makes a good discussion question?** A good discussion question does one or more of the following: a) stimulates discussion to clarify a subtle or difficult concept the author is trying to convey, b) stimulates discussion on a question about the material for which there are multiple potential answers, c) clarifies an important concept or bit of knowledge that is assumed or fundamental in the reading. Some good questions are focused on clarification of concepts, while others are focused on stimulation of debate.

**\*Leading discussions:** Students will work solo or in groups of 2-3 to lead classmates in a discussion of the week's readings. Overall, a group will be graded on four elements:

- (1) a brief synopsis of the reading,
- (2) preparedness for discussion,
- (3) ability to initiate and further discussion, and
- (4) ensuring that all students contribute over the course of the discussion.

**\*Some tips for leading a good discussion:** First, you need to be intimately familiar with the readings, even more than usual, and be prepared with additional potential points of discussion, in case the discussion lags. After brief introductions, you should commence the discussion by presenting a *brief* synopsis of the reading. Keep the synopsis short (no more than 1-3 minutes). Then, start discussion by asking if anyone has a question of *clarification*, perhaps relating to a key bit of terminology in the Introduction, or a key aspect of the Methods. After the most pressing questions of clarification have been discussed, then proceed by asking for students to read a question for *conceptual discussion*.

Do not immediately give your own thoughts on answering a particular question; rather, first try to solicit a diversity of opinions from your classmates, possibly including the person who wrote the question. **\*\*Pay attention to who is contributing, and think about how to solicit equal participation from all group members. Occasionally call on particular people, if we haven't heard from them much that day.**