EEOB 3310: Evolution

Instructor

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Course Logistics

Five-week course held at Stone Laboratory, Put-in-Bay, Ohio, June 17- July 21, 2018.
First Sunday, check-in, orientation, and evening class. Regular class meetings are then every Monday, Wednesday, Friday, 8 am - 5 pm with breaks for lunch and dinner (further evening class activities may also be scheduled); last Friday and Saturday are altered schedules, 8 am - 12 pm.

Course Format

Four semester credit hours consisting of five weeks of combined lecture and field work. Lectures will be in the classroom building on Gibraltar. Field activities will be on the various islands in Lake Erie and the Cleveland Museum of Natural History.

Course Description

Evolutionary theory ties together the entire field of biology, yet most evolution courses are taught in lecture halls. Charles Darwin, however, began developing the theory of natural selection based on evidence gathered from islands. Stone Lab provides a unique opportunity to study evolution in a field-based environment, much as biologists continue to do in the Galapagos.

We will review the intellectual developments that led to Darwin's theory of evolution by natural selection, and the subsequent thinking that combined natural selection and Mendelian genetics in the Modern Synthesis. We will then review recent developments in evolutionary biology, including other evolutionary mechanisms, speciation, evolution and development, systematics, and co-evolution. We will also see how evolution and chance I interacted in the history of life on earth. We will take full advantage of the facilities of Stone Lab and surrounding islands to illustrate these concepts in action.

Course Materials

Evolutionary Analysis 5th Edition. Scott Freeman and Jon C. Herron, authors; Pearson Prentice-Hall, publisher.

The Beak of the Finch. Jonathan Weiner, author; Vintage Books, publisher.

Materials are available through the Marion campus bookstore.

Course Outline (Subject to change)

Below is a rough itinerary. The field trips will largely proceed as scheduled because they are scheduled far in advance. Banding does not happen if it rains, however, so some banding days may change depending on the forecast. Other activities depend on our pace through the material, the cooperation of island weather, and the ability of your professor to stay out of the hospital (short story, long thorn).

June 18 Kelleys Island – Barn swallow banding

June 20 Quiz Goby selection exercise; assign Excel exercises

June 22 Quiz Gibraltar banding

June 25 Quiz M&M selection exercise **Project choices due**

June 27 Exam I Kelleys Island – glacial grooves, quarry fossils **Project Proposals**

June 29 Quiz South Bass Island banding; **Problem Set I Due**

July 2 Quiz Allometry exercise (GIB); Drift demo

July 4 Quiz Selection demo, sexual selection analysis

July 6 Quiz Middle Bass Island banding

July 9 Exam II Drift exercise **Problem Set II Due**

July 11 Quiz Kelleys Island – salamanders

July 14 Quiz North Bass Island banding

July 16 Quiz Phylogeny Exercise

July 18 Quiz Cleveland Museum of Natural History

July 20 Quiz Project presentations; banding analysis

July 21 Final Exam

The lecture schedule and readings are in a separate document that I will send to you. Please do not print out that document or all of the papers. Save copies of the papers in a safe place, and refer to them as needed.

Major Assignments

Quizzes: There will be 12 quizzes, starting on Wednesday, June 20, and continuing every day except on days we have an exam. The quiz will cover material from the previous day's class. Each quiz will be 10 points, and will be composed of short answer questions. I will count your quiz grade out of 110 points. In effect, this means that you can drop your lowest quiz grade, and that the really well-prepared among you may earn a bit of extra credit.

Exams: There will be two exams, scheduled for June 27 and July 9. Each will cover material from the last exam up to the lecture before the exam. While exams will not be intentionally cumulative, many of the ideas we discuss early in the term will rear their ugly heads again in later topics.

Final Exam: The final exam will cover the last material of the course. The final exam is **Saturday, July 21.**

Assignments: I will assign a number of small assignments during the term. Some will be essentially ungraded, although a lack of effort will be noted in deciding the grades of people on the border between grades. Others will have assigned letter grades. We will discuss the details of these assignments as the term progresses.

Labs: We will have several exercises of varying seriousness to prepare during the term. Some will simply require a paragraph or short answers to questions, while others will involve more serious thinking. None of the daily labs will require a formal manuscript-style write-up.

Term Project As your assignment for the entirety of the term, you will choose a book published on a particular topic in evolution. From that book you will prepare three things for a presentation on the last day of class:

1) A review of a topic discussed in class that is also discussed in your book. You will review that topic for the class and explain how the book enriched your understanding of the topic. (5-10 minutes)

2) An overview of a topic covered in your book that was NOT covered in class. (10-15 minutes)

3) A critique of the book. Note that a critique is not a list of things you don't like. A good critique reviews both the strengths and the weaknesses of the book. You will also discuss other critiques of the book (published and online). Finally, you will make a recommendation about whether the book should be included as one of the reading options for next summer. Please provide a rationale for your recommendation. (5-10 minutes)

I will present the options at our first meeting. Each of you must choose a different book.

Annotated Bibliography A large amount of the reading for this class is recent peer-reviewed literature. Reading literature is a skill that has to be developed just like any other skill. In many papers, there is material that you can skim over quickly, either because you don't need to fully understand it to make use of the paper or because the details are not pertinent to the information you are extracting from the paper. Other parts of the paper are critical to understand. The purpose of this assignment is to help you recognize important parts of papers and practice reading them.

The papers listed in the syllabus are part of the readings for the class, and the parts of those papers that we address in class will be fair game for quizzes and tests. Those parts of the papers (and occasionally entire papers) that we do not discuss will not be on assessments.

As part of your training in reading scientific literature and learning how to use it effectively, I am asking you to prepare an annotated bibliography related to your term project. You will start with five papers cited in the book you are reading. Using the Science Citation Index or similar resource, you will find peer-reviewed primary literature articles that cite your five papers. For each paper from your book, you will choose and summarize a paper published since 2012.

Once you have chosen a paper, you will briefly review its content. What is the point of the study? What predictions are the authors testing, and how did they arrive at those predictions? Briefly summarize their methods and data analysis. What were the major findings? How did these results support or refute the predictions, and what are the implications for our understanding of the broader topics under consideration?

The annotated bibliography is due Saturday, July 14.

Participation: I will assign 20 points for participation. This will obviously be largely subjective, but based on my impression of your contributions to class discussions and your general approach to the class. A lot of what we are trying to do will work better if we work together as a group with everybody participating. You don't have to be the first volunteer for everything, but you definitely don't want to be the one parasitizing the efforts of others. Also, while we do operate on "island time" while on Gibraltar, I will be taking off participation points if you are chronically the last one to show up for class, as this delays everybody. So, don't be too laid-back about showing up in the morning. I guarantee you that nobody dislikes the 8 AM start of class more than me.

Grading Information

Quizzes	110 pts.
Exams	200 pts. (2 each worth 100 pts.)
Final Exam	100 pts.
Labs	170 pts.
Assignments	90 pts. (This total subject to change if I add assignments)
Term Project	60 pts.
Bibliography	25 pts.

Participation	20 pts.
Total	**775** pts.

Your final grade will be assigned based on the percentage of 775 points that you accumulate.

Attendance Policy
Students are expected to actively participate in all class sessions, including lectures, fieldwork and laboratory time.

Academic Misconduct
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed: illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Disability Services
Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 614-292-3307, TDD 614-292-0901; http://www.wds.ohio-state.edu/.