Ecological Genetics (ENTOM 4700 / BioEE 4800) Spring 2013

Lectures:

Tue, Thur 10:10 – 11:25
B108 Comstock Hall

Discussion sections:

Wed 10:10 – 11:00
B106 Comstock Hall

Second section TBA

Professor:

Dr. Brian Lazzaro
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255-3254
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Office Hours: Thurs 2:30 – 3:30
3134 Comstock
or by appointment

Teaching Assistant:

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Office Hours: Mon 10-11
3125 Comstock
or by appointment

Course Overview

Ecological Genetics (Entom 4700 / BioEE 4800) is a 4-credit course that focuses on the application of population genetic concepts in ecological or natural contexts. Course topics include natural selection and adaptation, quantitative genetics and genetic mapping, substructured populations, and community genetics. Class meets for two 70-minute lectures each week, plus a weekly 50-minute discussion of relevant papers from the primary scientific literature.

The only prerequisite for the course is BioEE 2780 (Introductory Evolutionary Biology) or permission of the instructor. I recommend having some familiarity with basic genetics (having taken BioGD 2810 is more than sufficient), and a comfort level with very basic statistics and algebra (you don't need to have a math background, but you shouldn't panic if I talk about means and variances).

Text and Readings

There is no text book for this course. I have never found a book that covers all of the material that I think this course should cover in the depth with which I want to cover it, and I do not want to ask you to buy one or more books that we read only half of or that only cover half of the course. Instead, I will provide supplemental lecture notes and/or readings to complement course lectures. I will always post the powerpoint slides from lectures to Blackboard.

There are a couple of textbooks that I can recommend for supplementing or extending class material if you have deeper personal interest, but you are not required to buy any of these. The short paperback A Primer of Ecological Genetics by Jeffery Conner and Daniel Hartl is clearly written and includes material that is relevant particularly to the first half of this course. Ecological Genetics: Design, Analysis and Application by Paul Ashton, Stephen Harris and Andrew Lowe covers material more relevant to the third quarter of the course.

Ecological Genetics (ENTOM 4700 / BioEE 4800) Spring 2011

This class will touch on topics in population genetics, statistical analysis, and quantitative genetics. There are a number of textbooks that could support entire courses in these areas. Population genetics is covered in much greater depth in the excellent textbook Genetics of Populations by Philip Hedrick. Many statistical analyses useful in biology are described in Biometry by Robert Sokal and F. James Rohlf. Quantitative genetics is covered by in great depth in Introduction to Quantitative Genetics, 4th edition by Douglas Falconer and Trudy Mackay and Genetics and Analysis of Quantitative Traits by Micheal Lynch and Bruce Walsh.

Discussion Sections

Attendance in the weekly discussion section is mandatory. Readings from the primary literature will be assigned for each discussion, and the T.A. will lead you in interpreting them and discussing their relevance to the lecture material. Readings will be assigned every Thursday to be discussed the following week. A couple of short-answer questions about the paper will also be assigned, and you will be expected to turn in your answers. The point of these questions is to stimulate thought and discussion, not for you to write a detailed essay about every paper, so you should typically restrict your answers to only a few sentences. Discussion is worth 150 points toward your grade (30% of the total course grade). Each of the 13 weeks is worth 10 points, based on both your written answers to the assigned questions and your participation in group discussion. An additional twenty "flex" points will be assigned based on your overall participation in Discussion over the semester.

Blackboard

All materials for the course will be posted on www.blackboard.cornell.edu. You must "enroll" in this course, which is listed as "Entom4700," through the Blackboard website in order to access lecture notes and assigned readings. Please see the instructor or the T.A. immediately if you have trouble using Blackboard or enrolling in this course.

Grading

Ecological Genetics may be taken for a letter grade or S/U. Grades will be based on six take-home problem sets (30%), one in-class midterm (20%), a final exam (20%), and participation in discussion section (30%).

The precise point distribution will be:

Prob Set 1	25 pts
Prob Set 2	25 pts
Prob Set 3	25 pts
Prob Set 4	25 pts
Prob Set 5	25 pts
Prob Set 6	25 pts
Disc. Section	150 pts
Midterm Exam	100 pts
Final Exam	100 pts
TOTAL	500 pts.