

PCB 5556
Conservation Genetics
Spring Semester, 2007

This course will serve as an introduction into the field of conservation genetics. Of primary importance is an understanding of genetic diversity and how it is measured. Additionally, this class will focus on understanding why it is important to stop the loss of genetic diversity that is currently ongoing and how this can be achieved. This class will also introduce the tools of molecular genetics that are used to understand population structure, breeding systems, and evolutionary relationships among taxa. Moreover, this class will focus on how to estimate population parameters that are important for maintaining genetic diversity. These concepts will necessarily be based on genetic models and require a quantitative approach to genetics. Overall, the aim of this class is to enable you to apply insights gained from modern genetic techniques to improve the effectiveness of traditional approaches to conserve biological diversity.

Time and Place: Lecture: 5:30 – 8:20pm on Wednesday in BL 415. *Please do not be late or leave early, this disrupts the class.*

Credit: 3 semester hours.

Contact: 1 – 1½ hours per week of lecture; 1 – 1½ hours per week of discussion.

Instructor:

Dr. Eric A. Hoffman
Department of Biology
Office BL 439, Phone 407-823-4007
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Office Hours: Tuesday and Thursday from 1:00 – 3:30 pm. Unless there are extenuating circumstances, I will be able to see you at any time during my office hours. If I am not in my office, then look for me in my lab (Rm. 440). If you cannot make these times, I can arrange to meet you at other times if you make an appointment. It would be ideal if you could schedule an appointment even during office hours to ensure that I can dedicate my time to you. Please do not plan to see me just before class, as I will probably be busy getting prepared.

Obtaining additional reading material: Josh (the computer guy) will set up a site to enable you to have access to the weekly papers we will read and discuss. I am not quite sure how this will work, but will inform you as soon as I figure it out.

Prerequisites: Grade C or better in undergraduate genetics and population biology and evolution. An excellent understanding of genetics and evolution are very important. I

strongly encourage you to drop this class if you are not well grounded in genetics *and* evolution. This is a *graduate level advanced* course in conservation genetics.

Text: Frankham, R., JD Ballou, and DA Briscoe. 2002. *Introduction to conservation genetics*. Cambridge University Press, Cambridge UK.

Readings: In addition to the text there will be supplemental papers I will make available to you each week. As a graduate level class, it is important that we study the most up-to-date material and this necessitates reading the primary literature. Please have all book chapters and papers read prior to lecture.

Evaluation: Your grade in this class will be derived from several sources:

1) **Exams** – There will be a midterm and final exam in this course. Both exams will comprise both in-class and take-home components.

2) **Discussions** – As mentioned above, you are required to read all papers assigned for discussion. Each class period we will discuss the assigned paper in detail. Two students will be assigned at random (today) to lead each discussion. You are **REQUIRED** to read and try to understand every paper. Your grade will be based on how you lead during your chosen week as well as your ability to participate in the other discussions over the course of the term.

3) **Written Grant** – Due November 15th, 2005. You will be required to write a grant on any topic you choose (*Ok'ed by me*) so long as a major component of the grant involves using molecular techniques to address an issue of conservation genetics. Grants should follow the guidelines for grant from the American Museum of Natural History (HYPERLINK "http://research.amnh.org/grants/Small_Grants_2000.pdf" http://research.amnh.org/grants/Small_Grants_2000.pdf).

4) **Oral presentation** – You will present your proposed research (from your grant) in an oral presentation during the last few weeks of class. Presentations will be approximately 12 minutes in length with three minutes for questions following the presentation.

Grading Procedure: The following scale will be used to assign course grades.

90 – 100 = A	77 – 79 = C+
90 – 92 = A-	73 – 76 = C
87 – 89 = B+	70 – 72 = C-
83 – 86 = B	<70 = F
80 – 82 = B-	

Points will be assigned as follows:

Mid-term = 75 points

Discussion leader = 50 points

Paper = 60 points

Oral presentation = 40 points
Class participation = 25 points
Final Exam = 75 points

This is a graduate level course; I expect all of you to put for the effort to achieve at least a B.

Cheating: I will not tolerate ANY cheating or plagiarism of any type and will pursue disciplinary actions to the fullest extent possible. Do not copy anything from the web. Use primary literature and cite it!

Tentative Lecture Outline and Discussion Topics

(I reserve the right to change this schedule)

Week	Date	Subject	Book Chapter
1	January 10	Introduction	1, 2
2	January 17	Genetic diversity	3
3	January 24	Characterizing genetic diversity	4, 5
4	January 31	Natural selection	6
5	February 7	Mutation and migration	7
6	February 14	Small populations and maintaining genetic diversity Choose topic for grant (term paper)	8, 9
7	February 21	Loss of genetic diversity and MIDTERM	10
8	February 28	Inbreeding	11, 12
9	March 7	Population fragmentation	13
10	March 14	Spring Break	
11	March 21	Genetically viable populations	14, 19
12	March 28	Defining management units	15
13 18	April 4	Management of wild populations	16, 17,
		Grant Due	
14	April 11	Presentations	
15	April 18	Presentations	
Final Exam	April 25 (5:30 – 8:20 PM)	Presentations, Final Due	

Important dates:

March 2 – Withdrawal deadline

May 5 – Grades available on MyUCF

PCB 5556, Dr.

Hoffman

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