

PCB 5937
Population Genetics and Evolution
Spring Semester, 2006

This course will serve as an introduction into the field of population genetics. Of primary importance is an understanding Mendel's laws and other genetic principals as they affect entire populations of organisms. This course will also include the study of the various forces that result in evolutionary changes through time. Moreover, this class will focus on how to estimate population parameters that are important descriptors of genetic variation. 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 classic and modern genetic techniques to understand how genetic variation is produced, maintained, and distributed within and among populations.

Time and Place: Lecture: 2:00 – 4:50pm on Tuesday in BL 209. *Please do not be late or leave early, this disrupts the class.*

Credit: 3 semester hours.

Contact: 2 hours per week of lecture; 1 hour per week of discussion.

Instructor:

Dr. Eric A. Hoffman
Department of Biology
Office BL 439, Phone 407-823-4007
E-mail: eahoffma@mail.ucf.edu

Office Hours: Wednesday and Thursday from 2:00 – 4:00 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.

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 population genetics.

Text: Hartl, DL and AG Clark. *Principles of Population Genetics*. Sinauer Associates, Inc., Sunderland, Massachusetts.

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 during the 13th week of class, Spring 2006. 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 population 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) http://research.amnh.org/grants/Small_Grants_2000.pdf).

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

93 – 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

Paper = 60 points

Class participation = 75 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		Genetic and statistical background	1
2		Genetic and phenotypic variation	2
3		Organization of genetic variation	3
4		Population substructure	4
5		Sources of variation	5
6		Darwinian Selection Choose topic for grant (term paper)	6
7		MIDTERM	
8		More complex types of selection	6
9		Random genetic drift I	7
10		Random genetic drift II	7
11		Molecular population genetics I	8
12		Molecular population genetics II	8
13		Quantitative Genetics I Grant Due	9
14		Quantitative Genetics II	9
15		Primary literature paper discussions	
Final Exam		Final Exam	

Important dates:

– Withdrawal deadline

– Grades available on MyUCF

PCB 5937, Dr.
Hoffman

Fall

2005