Evolution

Bi 358 CRN 15162

fall 2009

Instructor: Dr. Susan Masta; email smasta@pdx.edu; office 725-8505
Office hours: Tuesday 8:30-9 pm, in the classroom; Wed 12-1 Room 606 SB1
When and Where: 6:40 - 8:30 pm Tuesday, Thursday; Room 107 Science Building 1
Required Textbook: *Evolutionary Analysis* by Scott Freeman and Jon Herron, 4th edition, 2007 Prentice Hall.
Blackboard will be used to post some material, and for group discussions. You will need an active ODIN account.
Computer lab 139A Science Building 2 is available for you to do your course assignments. The room is available whenever SB2 is open, unless a class is scheduled at that time (which should be posted on the door). You can enter the computer lab by swiping your PSU magnetic-strip student ID on the pad next to the door. If you do not have this type of ID, you can purchase one at the PSU ID office in Neuberger Hall. There is no printer in the room, so you will need to print out your reports elsewhere (the library has a printer).

Course Description: This course provides a broad overview of evolutionary theory. You will become familiar with the ways in which genes and phenotypic traits change over generations, such that you will be able to make inferences about how populations evolve. Evolutionary concepts will be illustrated with both classic examples and recent research. We will also examine the many applications of evolution that impact our daily lives. You will learn how dogs evolved, why HIV continues to be a public health concern, what genes make us human, why elaborate sexual traits are common, and why we age.

Grading: Your grade will be based on 2 exams (35% each), 1 assigned discussion group project and poster (10%), and one selected group report (20%). There will be no make up exams without prior approval. All late assignments will have points deducted for each day they are late. At the end of the term, after the final exam has been graded, the class scores will be scaled such that the student with the highest number of points receives 100%. Regardless of your rank in the class, you will receive at least the following grades if your cumulative scores are: 95-100% = A; 90-94% =A-; 87-89% = B+; 82-86% = B; 80-81% = B-; 77-79% = C+; 72-76% = C; 70-71% = C-; 67-69% = D+; 62-66% = D; 60-61% = D-; ≤ 59% = F.

Exams: The 2 exams will be multiple choice (using scantrons). The second (final) exam is not cumulative, but you will be expected to be familiar with evolutionary concepts built upon throughout the term. The exams will be based on all the material covered in lecture (including special presentations, videos, etc). The lectures will include the material in the textbook, other assigned readings, and current research in evolutionary biology. If an assigned textbook chapter has a topic in it that was not covered in lecture, you will not be responsible for it on the exam.

Discussion group project and poster: The goal of the group discussions is to have you work with your classmates to develop evolutionarily sound arguments for how traits or organisms may have evolved, or could evolve in the future. You will work in assigned groups of 5, and each group will have its own online discussion site on Blackboard. You will be assigned a topic on Blackboard. The results of your research and discussion will be an in-class poster presentation. Further directions will be provided in lecture.

Selected group project report: The goal of this project is to have you think critically and form an evolutionarily sound argument to support your ideas. You will work in groups of 2 (of your choosing). A choice of topics will be posted on Blackboard for you to choose among for your term project. You will first need to research your topic using the scientific literature. Then you must use the knowledge gained in this course to develop a hypothesis that predicts when and why we may expect to see the evolution of the specific trait you have studied. A discussion of which evolutionary concepts you are incorporating into your logic is necessary.
The report must not exceed two single-spaced pages, not including the references. References must be from scientific journal articles or books (non-peer-reviewed web-based sources are not allowed). Further directions will be provided in lecture.

Syllabus

Date	Topic	Reading	Assignment
29 September	Introduction to Evolution; HIV case study	Chapters 1; 2	
1 October	Evolutionary Trees	pp 111-131 of Chapter 4	Discussion group topics assigned
6 October	Natural Selection	Chapter 3	
8 October	Mendelian Genetics in Populations; H-W equilibrium	Chapter 6	
13 October	Mendelian Genetics in Populations; Genetic Drift	Chapter 7	
15 October	Molecular Evolution and the Neutral Theory	Chapter 7	
20 October	Evolutionary Medicine	Chapter 14	**Poster presentations**
22 October	Human-Induced Evolution		**Poster presentations**
27 October	Molecular Clocks	pp 132-137 of Chapter 4	
29 October	Evolution at Multiple Loci; Quantitative Genetics	Chapter 9	**Exam 1 (through 27 Oct)**
3 November	Heritability	Chapter 9	
5 November	Heritability; Sexual Selection	Chapter 11	
10 November	Sexual Selection; Linkage and Sex	Chapter 11; pp 281-295 of Chapter 8	
12 November	Aging and Life History Evolution	Chapter 13	
17 November	Human Evolution	Chapter 20	
19 November	Species Concepts; Genetics of Speciation	Chapter 16	
24 November	Origins and Extinctions	Chapters 17 and 18	**Selected report due**
26 November	**PSU closed: Thanksgiving**		
1 December	Evolution of Sex; Development	pp 302-313; 725-735	
3 December	Evolution of Genes and Genomes	Chapter 15	

****Final Exam (exam #2) is Tuesday 8 December from 7:30-9:20 pm****