**PCB 4683L (1 credit hour)**
**Population Biology and Evolution Lab**
**Fall 2014**

**Section 11:** Monday 8:30am – 10:20am
**Section 12:** Monday 10:30am – 12:20pm
**Section 13:** Monday 12:30pm – 2:20pm

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**Course objective:** This course is intended to supplement **Evolutionary Biology** (PCB 4683). The first part of the course will focus on mathematical models of population genetics, including Hardy-Weinberg equilibrium, mutation, gene flow, genetic drift, and selection. The remainder of the course will consist of discussions of assigned readings, in-class projects, and computer simulations.

**Prerequisites:** Grade of "C" or better in undergraduate genetics and ecology courses or consent of instructor. A good understanding of basic genetics is vitally important to your success in this class. In addition, the student must either have had Evolutionary Biology (PCB 4683) or be currently enrolled in that class.

**Website:** Information will be posted on the lab webcourses regularly. Please look here for all assignments, practice problem sets, and papers for the second half of the semester.

**Textbook:** None. However, we recommend having access to the course textbook: either Futuyma. 2013. *Evolution 3rd edition*. Sinauer Associates OR Freeman and Herron. 2007. *Evolutionary Analysis 4th (or 5th) edition*. Prentice Hall, Inc.

**Support items:** Required readings, sample math problems, and supplementary materials will be made available through the class website, and can be printed out on any campus or home computer. You are required to have your own copy of each required reading. A standard (non-programmable) scientific calculator will be required. Use of programmable calculators will not be allowed on tests or quizzes, so it is absolutely essential that you obtain a non-programmable calculator well before the first test.

**Evaluation:** There are a total of 100 points in the class. There will be three in-class projects. There will be an exam covering the mathematical models of population genetics worth 30 points. We will have 5 discussion periods worth a total of 40 points. These points will be broken down to 30 points for participating in discussion and 10 points for leading discussion. No extra credit will be made available, so please take these assignments and tests seriously. Always hold on to any assignments even after they have been graded. Use the grid below to keep track of your grades.

| Assignment | Maximum Points | Your Points |
|---|---|---|
| Phylogenetics | 10 | |
| Evo Beaker Lab 1 | 10 | |
| Evo Beaker Lab 2 | 10 | |
| Exam 1 | 30 | |
| Discussions* | 30 | |
| Discussion presentation | 10 | |
| **Total** | **100** | |

***Discussions:** A large focus of this course will be reading and discussing primary literature in evolutionary biology. In order to reflect this, nearly 1/3 of your grade will determined by your preparation for and participation in these discussions. We will read and discuss at least 10 short papers this semester. You will be assigned to lead discussion with a partner, one week, of one short paper. For all paper discussions (with the exception of when you are lead), you are expected to bring a typed page made up of two short sections. In the first section, write a paragraph (< 200 words) describing 1) the "big-picture" biological questions the study sought to address 2) how the study addressed these questions, and 3) the major findings of the study. The second section should list 2 or more questions or thoughtful comments you had about the study. These sheets should be **typed and printed before class**, brought to class, used as a tool to help you participate in discussions. After the discussion, they should be turned in and will be graded. When you are assigned to lead discussion with your partner, you will be responsible for presenting an overall summary of the paper and for leading the class in the discussion. This will require additional reading to become well-read in the paper topic and is worth 10 points of the final grade.

**Grading scale:** The following scale will be used to assign course grades. Grades will not be curved. In the event of academic dishonesty, we have the option of assigning a Z designation (see http://z.ucf.edu/).

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|---|---|---|---|
| **A** | **93-100** | **C+** | **77-79** |
| **A-** | **90-92** | **C** | **73-76** |
| **B+** | **87-89** | **C-** | **70-72** |
| **B** | **83-86** | **D** | **60-69** |
| **B-** | **80-82** | **F** | **≤ 59** |

**Attendance:** You are required to attend all lab sessions. Supporting documents for an excused absence must be submitted during the next attended lab meeting. Excuses are subject to approval by Dr. Tiffany Doan, Alexa Trujillo, Matthew Lawrance, and the UCF Department of Biology. **One** unexcused absence is permitted during the semester, although points lost for this unexcused absence cannot be made up. **More than one unexcused absence will result in your failure of the course.** You are also expected to come to class **on time** and stay throughout the entire lab period.

**Makeup policy:** Do not miss exams for any reason. Makeup exams will be given only in very extenuating, well-documented circumstances. All makeup exams will be given at the end of the term and will be essay question format. There will be no makeup for the paper discussions, and discussion assignments will not be accepted beyond the scheduled deadline. There will be no makeup for missed quizzes or discussion periods.

**Cheating:** Cheating of any type, including plagiarism, will not be tolerated. Disciplinary action will be pursued to the fullest extent. Please consult the UCF "Golden Rule" policy.

**Expectations:** Students are expected to (1) attend all lab meetings, (2) arrive on time and stay for the entire class, (3) take part in discussions, (4) not talk outside of discussions, (5) turn off cell phones, pagers, and other electronic devices, (6) come to class prepared, (7) ask appropriate and thought provoking questions, and (8) study hard and try hard.

**Tentative schedule:** Please note that we reserve the right to change this schedule as is necessary to better suit the objectives of the course. Asterisks (*) indicate discussion labs.

| Date | Week # | Topic | Assignment DUE |
|---|---|---|---|
| August 18 | 1 | Introduction to lab | |
| August 25 | 2 | Phylogenetic reconstruction | QUIZ in class |
| September 1 | 3 | NO CLASS – LABOR DAY | |
| September 8 | 4 | Hardy-Weinberg Equilibrium | |
| September 15 | 5 | Migration, Mutation, Genetic drift, Selection | |
| September 22 | 6 | Evobeaker Lab #1 (Room 305) | |
| September 29 | 7 | Evobeaker Lab #2 (Room 305) | Evobeaker Lab #1 DUE |
| October 6 | 8 | **Exam 1** | Evobeaker Lab #2 DUE<br>EXAM in class |
| October 13 | 9 | Introduction to scientific writing/<br>Experimental Design* | Paper summaries |
| October 20 | 10 | Adaptation * | Paper summaries |
| October 27 | 11 | Sexual Selection * | Paper summaries |
| November 3 | 12 | Social Behavior * | Paper summaries |
| November 10 | 13 | Conservation Genetics * | Paper summaries |
| November 17 | 14 | Speciation * | Paper summaries |
| November 24 | 15 | Human Evolution * | Paper summaries |
| December 1 | 16 | NO CLASS | |