PCB 4683 Evolutionary Biology, Summer Semester 2022

This course provides an introduction to the topics of population biology, population genetics and evolutionary biology. The approach will not be descriptive but instead will emphasize basic principles and theory. Basic evolutionary genetics will be considered as the foundation underlying all aspects of evolutionary biology. Concepts in speciation, adaptation, classification, and macroevolution will be considered. The importance of evolutionary concepts to all facets of biology will be stressed, with special emphasis on the interplay between evolution and the traditional fields of ecology, genetics, and development.

Course Objectives

- To understand evolutionary patterns and how evolutionary relationships are estimated.
- To become a skilled reader and critic of scientific literature.
- To understand the principles of population genetics, including selection, genetic drift, mutation, linkage, and gene flow.
- To understand the mechanisms of speciation and diversification.
- To understand the relevance of evolutionary biology to human society, particularly human health.

This class requires you attend Face-to-Face lectures. These lectures will have periodic in-class discussions (for points) that require you attend to earn those points.

***PREREQUISITES*:**

A Grade of C or better in undergraduate genetics or consent of the instructor. A good understanding of basic genetics and ecology is vitally important to your success in this class.

TIME AND PLACE:

Lecture: 12:00 – 2:20 Monday – Thursday in CB2 room 105.

CREDIT:

Lecture (PCB 4683A): 4 semester hrs.

LECTURE INSTRUCTORS
Eric A. Hoffman
Department of Biology
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Web Site: https://sciences.ucf.edu/biology/hoffman/
Office Hours via Zoom: Monday 11:00 – 12:00; Thursday 10:00 – 11:00
LECTURE UNDERGRADUATE TEACHING ASSISTANT:
Kristen Brightwell - Kristen.Brightwell@knights.ucf.edu
Biology Major
Office Hours: TBD

OFFICE HOURS:

Generally, I will be available during my respective office hours. However, this may not be the case on any specific day. Therefore, you are requested to please email ahead if you can. Also, Dr. Hoffman will be available online in Webcourses in the chat room on evenings before exams.

WEBCOURSES SITE:
I use Webcourses (https://webcourses.ucf.edu) to post materials for the course, including the syllabus, calendar dates, PowerPoints, quizzes, and your grades. If you need to contact me, please do so using the email function in Webcourses or via my regular email at eric.hoffman@ucf.edu.

REQUIRED TEXT:
Evolutionary Analysis, 5th edition 2014. *By Herron and Freeman. Prentice Hall, Inc., Upper Saddle River, NJ*
ISBN: 0-321-61667-7
Companion Website: www.pearsonhighered.com/herron

CLASS POLICIES:
1. Attendance is not strictly required but many studies have shown that students who do not attend class do poorly. In addition, discussion assignments will take place during class and anyone absent will receive a zero for the assignment.
2. Exam make ups will not be given without valid documentation that is presented prior to the absence or within 24 hours of the administration of the test. Quizzes and discussion assignments may not be made up.
3. Assigned readings should be completed before attending class. Quizzes will assess your reading knowledge prior to covering the material in class.
4. You are encouraged to discuss any and all portions of the class with me. Please feel free to come to my office hours or make an appointment to discuss the class, especially if you are having trouble in the class.
5. Respect should be given to fellow students and the instructor. Please try to arrive on time so I am not continuously trying to admit students on Zoom throughout the class.
6. Hateful or offensive speech or writing will not be tolerated.
7. Academic dishonesty (cheating and plagiarism) is strictly prohibited and will be taken very seriously and will result at least in an "F" for that assignment (and may, depending on the severity of the case, lead to an "F" for the entire course) and may be subject to appropriate referral to the Office of Student Conduct for further action. See the UCF Golden Rule for further information.

COURSE ACCESSIBILITY:
It is my goal that this class be an accessible and welcoming experience for all students, including those with disabilities that may impact learning in this class. If anyone believes the design of this course poses barriers to effectively participating and/or demonstrating learning in this course, please meet with me to discuss reasonable options or adjustments. You may also contact SAS (Ferrell Commons 185; 407-823-2371; sas@ucf.edu) to talk about academic accommodations.

EVALUATION:
The grade for this course will be based on three aspects:

(1) Three semester exams will be given on the dates indicated on the schedule. They will consist of multiple choice, math problems, and short answer questions (24% each)

(2) Pre-reading quizzes will be administered online through Webcourses approximately twice a week. You will be expected to read each chapter and take a short quiz to assess your knowledge of the chapter prior to going over that chapter during lecture. This will ensure you will be ready to cover the material during lecture and anything you didn't understand in the reading can be covered in detail during class. You may take each quiz twice and the *most recent* of the two scores will be your grade for that quiz. The first quiz will be dropped if you take the quiz a second time. All quizzes are due by 11:59 pm on their due dates. (20%)

(3) Discussion assignments will take place during class throughout the semester. Dates will often not be announced in advance, so regular attendance is necessary to complete all of these assignments. Groups of students will discuss broad questions based on textbook material and primary literature and write a consensus answer that will be turned in for credit. Two Discussions can be dropped without penalty because I expect that all students will not be able to attend all lectures. (8%)

GRADES:

The following scale will be used to assign course grades. Note that this grade scale can (and often is) adjusted in favor of the students. However, this scale will never be adjusted to hurt student grades.

91-100 = A	**78-79 = C+**
90 = A-	**71-77 = C**
88-89 = B+	**70 = C-**
82-87 = B	**60-69 = D**
80-81 = B-	**≤ 59 = F**

On the next page you will find the
TENTATIVE LECTURE OUTLINE AND DISCUSSION TOPICS
I reserve the right to change this schedule on a moment's notice; but in 10 years of teaching, I have never changed exam dates. Changes will be posted on the course web site!

TENTATIVE LECTURE OUTLINE AND DISCUSSION TOPICS

I reserve the right to change this schedule; changes will be posted on WebCourses!

Date	Topic/Activity	Reading
5/16/22	Introduction to Evolution; Critical thinking/Scientific Method	Chapter 3 pages 97-104;
5/17/22	Evolution and Natural selection	Chapter 2; Online quiz 1 (Chapters 1 & 2)
5/18/22	Evolutionary case study HIV	Chapter 1
5/19/22	Selection	Chapter 3. Online quiz 2 (Chapter 3); Directed Reading 1
5/23/22	Phylogenetic Reconstruction	Chapter 4; Online quiz 3 (Chapter 4 & 5)
5/24/22	Mutation and Genetic Variation	Chapter 5;
5/25/22	Population Genetics: HWE and Selection	Chapter 6;
5/26/22	**Exam 1**	Chapters 1-5.
5/30/22	Memorial Day	Celebrate as appropriate for Memorial Day
5/31/22	Population Genetics: Migration, Drift and nonrandom mating	Chapter 7; Online quiz 4 (Chapters 6 & 7); Population Genetics assignment handed out – Simulation and modeling of population genetics
6/1/22	finish Population Genetics	
6/2/22	Linkage & Sex/ Quantitative Genetic Variation	Chapter 8 & Chapter 9; Online quiz 5 (Chapter 10); Directed Reading 2
6/6/22	Studying Adaptation / Experimental design	Chapter 10;
6/7/22	Sexual Selection	Chapter 11;
6/8/22	**Exam 2**	Chapters 6-10
6/9/22	Kin Selection and Social Behavior I	Chapter 12; Online quiz 6 (Chapter 11 & 12); Directed Reading 3
6/13/22	Finish Social Behavior / ESS exercise	Chapter 12; Online quiz 7 (Chapter 13 & 14)
6/14/22	Life History Evolution	Chapter 13;
6/15/22	Evolution & Human Health	Chapter 14 Online quiz 8 (Chapter 16)
6/16/22	Mechanisms of Speciation	Chapter 16
6/20/22	Mechanisms of Speciation	Chapter 16; Online quiz 9 (Chapter 20)
6/21/22	Human Evolution	Chapter 20;
6/22/22	Human Evolution	Chapter 20; Directed Reading 4
6/23/22	**Exam 3**	Chapters 11-16, 20

Withdrawal deadline is June 10th, 2022

Grade Forgiveness deadline is June 25th, 2022