

PCB 4674 – Evolution

Sections 04H8, 7677, 7685, 7687

Syllabus for Spring 2015

I. Course Description and Prerequisites

Processes and mechanisms of evolution, including population genetics, speciation, patterns of evolution and molecular evolution. 4 credits.

Prerequisites: BSC 2010/2011 and labs or the equivalent. Familiarity with Mendelian genetics, basic molecular biology, and high-school algebra.

II. Course Meetings

Lectures: MW periods 3-4, 9:35-11:30, 103 Fine Arts B

Labs: Section 04H8 R periods 3-4, 9:35-11:30, 109 Carr
Section 7685 R periods 5-6, 11:45-1:40, 109 Carr
Section 7677 F periods 3-4, 9:35-11:30, 109 Carr
Section 7687 F periods 5-6, 11:45-1:40, 109 Carr

First day of classes: 07 January 2014

Last day of classes: 22 April 2014

III. Instructors

Course Instructor:

Dr. Nicole Gerlach

Department of Biology

Office: 520 Carr Hall

Office Hours: After lecture or by appointment

E-mail: ngerlach@ufl.edu

Teaching Assistants:

Arthur Rudolph

Sections: 7677, 7687

Office: 616 Bartram Hall

Office Hours: by appointment

E-mail: rudolph3@ufl.edu

Emily Woodruff

Sections: 04H8, 7685

Office: TBA

Office Hours: by appointment

E-mail: emilywoodruff@ufl.edu

IV. Course Communications

- A. Course Website:** <http://lss.at.ufl.edu> (select Canvas); or <https://ufl.instructure.com/courses/314380>
- B. Contacting Your Instructors:** If you have a question about course mechanics or course material that cannot be answered from the syllabus, course announcements, or the course FAQ, please post it to the Discussion Boards on Canvas (see section IX “Getting Help”, below). If you have a question involving a personal/grade-related issue, please e-mail your TA or Dr. Gerlach, as appropriate. All e-mail correspondence must originate from your @ufl.edu account, have your full name in the body of the e-

mail, and contain “PCB 4674” in the subject line. E-mails not meeting these requirements may not be recognized by our e-mail filters, and thus may not be answered. Barring unusual circumstances, expect a reply within 24 hours during the week, and 48 hours over the weekend. E-mails and Discussion Board posts are checked at least once per day, but sometimes not more than that.

- C. **Communications From Your Instructors:** Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus and on the course webpage. Not having read the information in this syllabus, on the webpage, or in course announcements will not constitute an excuse for missing deadlines, assignments, or other assessments. Please set your preferences in Canvas so that you receive timely notifications of course announcements and other information.

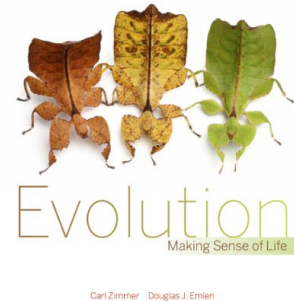
V. Course Resources

A. Textbook

Evolution: Making Sense of Life, 1e by Carl Zimmer & Douglas Emlen.
Roberts and Company (publisher), 2012.

Textbook publisher web site: <http://www.roberts-publishers.com/new-publications/evolution-making-sense-of-life-36.html>

A copy of this textbook is on reserve at the Marson Science Library.



B. TopHat

We will use the Top Hat Classroom Response System for quiz questions during class. THM allows students to use text messaging, laptop, tablet, smartphone, etc. to participate in class. Information on correctly registering for TopHat will be available in Canvas. When setting up your account, **you must use your Gatorlink (ufl.edu) e-mail address.** Using an e-mail address other than your UFL e-mail address will result in you receiving NO credit for Top Hat questions.

C. Course Website (Canvas)

Class material - including the syllabus, handouts, assignments, and gradebook – will be posted on the course Canvas website (<https://ufl.instructure.com>). For help with Canvas, call the UF Computing Help Desk at 352-392-4357, or visit the e-Learning support website: <http://help.instructure.com/>.

D. Course Fee

For UF students, the course fee is \$1.33.

VI. Course Objectives

This course will provide a comprehensive introduction to the current field of evolutionary biology, including the theoretical background as well as an introduction to current research in experimental evolution. By the end of this course you should be able to see how evolution provides a framework for the broader field of biology, and have a basic understanding of the major topics in evolutionary biology: the theory of evolution by natural selection, the history of evolutionary thought, population genetics, sexual and kin selection, evolutionary trees/phylogenies, how new species form, and human evolution.

Lectures will cover a variety of topics within the field of evolutionary biology. We will examine the theoretical basis of these various topics in detail, break that theoretical basis down into its underlying components, and pay particular attention to the mathematical theory underlying the main conceptual ideas. We will also examine how evolutionary theory can be applied to real-world examples, particularly in issues relevant to medicine, agriculture, conservation, and sociology. Lectures will include in-class clicker questions as well as break-out activities and discussions.

In addition to lectures there will be a series of discussions, workshop activities, and computer exercises in the context of the laboratory portion of the course. Discussions will involve readings from the primary literature followed by presentations, analysis, and/or discussion by groups of students. Computer and physical simulations will be used to illustrate a variety of concepts and methods of analysis used in modern evolutionary biology.

VII. Course Policies

A. Time Commitment

The UF College of Liberal Arts and Sciences assumes that each student will devote 3-4 hours per week per credit-hour to each course during the regular semester. Because PCB 4674 is 4 credits, each student should therefore expect to devote 12-16 hours per week to this course in a 15-week semester.

B. Attendance

Students are expected to attend all scheduled classes, and are responsible for all material presented in lecture, lab and in the assigned readings. Students who miss class are welcome to ask to borrow the notes of their classmates; the instructors will not be responsible for providing notes. Please note that no in-class quizzes, or participation points can be made up, regardless of the reason for missing class.

Expectations for lab attendance follow the above and have the following additional specifications: labs are only set up for a few days each week, so there is little opportunity to make-up a missed lab. Notify your instructor immediately if you will miss a lab and if at all possible arrange to attend the lab for one of the other sections. Lab attendance and participation are part of your grade and there will be minimal (=no) opportunity to review the missed material if you do not attend lab. Note that labs meet once a week for two hours – plan accordingly.

C. Quizzes

Quizzes may be given at any time in lecture or lab, without notice. There will be no make-up quizzes during class or afterwards. You are required to attend your registered lab section for all lab quizzes unless you have a verifiable excuse or permission of the lab instructors involved. You must arrive within 10 minutes after the start of lab in order to take the quiz. Arriving after 10 minutes or after the quiz has been given will result in a 0 for that quiz.

D. Exams

Students are expected to arrive on time; no extra time will be given for students who arrive late. Any material covered during the lecture period or assigned in the reading may be included in the lecture exams. This can include textbook illustrations, films, Powerpoint slides, and actual lectures. Take notes!

We will post exam keys that highlight the salient points for which credit is awarded. Please see us immediately if 1) your score is incorrectly summed, or 2) your posted score on Canvas does not agree with the score on your exam. We will consider other re-grade requests on a case by case basis, however, we will not argue about point assignments. To request a regrade, write a brief paragraph explaining why you believe your answer to a question was incorrectly scored, make specific reference to the posted key and submit to us in office hours (so that an instructor can look over your request and be sure it is clear). Regrade requests must be submitted within one week of the exam scores being posted.

Make-up exams will **only** be available in cases of medical and/or family emergencies when documented by an accompanying letter from the Dean of Students, or for official academic activities (in which case the instructor should be contacted a minimum of two weeks in advance). The student is responsible for scheduling timely make-up exams with the instructor.

E. Late Work

Assignments should be submitted by the assigned deadline. Late work will be subject to a 20% penalty for

every day it is late. For example, an assignment initially worth 10 points will be subject to a 2 point penalty if it is submitted up to 24 hours after the deadline, a 4 point penalty up to 48 hours, etc.

Graded lecture and lab assignments should be submitted to the course website by the posted deadline, unless otherwise noted. Any lab assignments for which a physical submission is required are due at the beginning of the lab session one week after the actual lab work was done, unless otherwise noted. Assignments turned in after the start of the lab session will be considered late work. If you are unable to turn in your work during your regular lab section and are not able to hand it in directly to your instructor, DO NOT leave an assignment at your instructor's office. Rather (1) make a photocopy of your assignment for safekeeping and (2) hand in the original to the staff of the departmental office (220 Bartram Hall) during regular office hours (8 am – 4 pm).

F. **Classroom Behavior**

Readings should be done in advance of class; you are expected to come ready to discuss the topics. Please be courteous to others during both lecture and lab, particularly during in-class discussions. Students exhibiting disruptive behavior in class will be asked to leave, with the subsequent loss of participation points for that day. Use of electronic devices in class to take notes or otherwise participate in classroom activities is approved. Approved electronic devices are laptop computers, cell phones, smart phones, tablets, iPod touch, and voice recording devices. Other uses of these devices or the use of unapproved devices will be considered disruptive. Unapproved electronic devices include video recorders, digital cameras and MP3 players.

G. **Office Hours**

Please see instructors in posted office hours when possible. If you have a conflict with those hours we will make an appt. to meet you and address questions. We cannot meet with students on a drop in basis.

H. **Grammar**

Correct grammar, punctuation, spelling, capitalization and paragraphing should be used in any college level submission, including exams and typed reports. We will take note of spelling and grammar and we will grade accordingly.

VIII. UF Policies

A. **Academic Honesty**

All students registered at the University of Florida have agreed to comply with the following statement:

"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

In addition, on all work submitted for credit the following pledge is either required or implied:

"On my honor I have neither given nor received unauthorized aid in doing this assignment."

Cases of plagiarism or other academic dishonesty will not be tolerated, and may result in grade penalties or other sanctions. If you have knowledge of any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: <https://catalog.ufl.edu/ugrad/current/advising/info/student-honor-code.aspx#honesty>.

B. **Accommodations for Students With Disabilities**

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: <http://www.dso.ufl.edu/drc/>. Note that the student

should provide documentation of a requirement for accommodation to Dr. Gerlach **by the second week of classes**. No accommodations are available to students who lack this documentation, and accommodations are not retroactive. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

C. Drop/Add/Withdrawal

A student can drop/add during the drop add period with no penalty. After drop/add, a student who drops will receive a W until the date listed in the academic calendar. After that date, the student may be assigned an “E” (fail). Note: it is the responsibility of the STUDENT to withdraw from a course, not the instructor. Failure to participate/complete the class is NOT a drop.

D. Teacher Evaluations

Anonymous course evaluations will be open via UF’s online evaluations system (<https://evaluations.ufl.edu>) near the end of the semester; you will receive e-mail notifications of when the evaluations open.

IX. Getting Help

A. Computing Problems

For issues with technical difficulties with Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

It is each student’s responsibility to check their TopHat gradebook in a timely fashion to be sure their submissions are being properly recorded. **For problems with Top Hat, call the following support number:** 1-888-663-5491 or e-mail support@tophatmonocle.com

B. University Support Services

College can be a very stressful time in a person’s life. Resources are available on campus to help students meet academic goals and solve personal problems, which may interfere with their academic performance. If you find that you are having difficulty emotionally or academically, there is substantial support available. See “[A Self Help Guide for Students](#)” or contact on of the following services:

1. [UF Counseling and Wellness Center](#), Radio Rd Facility, 392-1575
2. [Dean of Students Office](#), 202 Peabody Hall, 392-1261
3. [Career Resource Center](#), Reitz Union, 392-1601
4. [CLAS Academic Advising Center](#), Farrior Hall, 100 Fletcher Drive, 392-1521

C. Other Questions

If you have non-tech-support questions about other aspects of the course, check the following sources first to see if it is already answered, **before** e-mailing your instructors:

- Course Syllabus
- Course Announcements (this is the primary means that your instructor has to communicate with you in a timely manner)
- Course FAQ Discussion Boards

If you still cannot find the answer to your questions:

- If it is a question that others might find useful to know the answer to as well, post it to the discussion board.

- If it is a question specific to you (e.g. account or grade specific), contact Dr. Gerlach or your TA via e-mail.

X. Assessments and Grading

A. Course Structure

Final grades will be based on 2 midterm exams (15% each), a comprehensive final exam (15%), a term project/paper (25%), and participation in lecture and laboratory activities (30%). No mechanisms for extra credit are available.

B. Evolution in the News

Each student will give a short presentation (~5 minutes) in lecture during the course of the semester; sign-ups will be available on Canvas. This presentation will count towards the lecture participation score. Each presentation will involve a recent (within the past two weeks) story from the general media that involves evolution. In addition to discussing the news story, students should find the original research / peer-reviewed journal article related to the study, and discuss how well the news media covered / interpreted the original research. For full credit, students must submit a brief summary of their report, including citations and links to both the news story and the original research, along with any slides they wish to use to the course website by the night *before* their presentation.

C. Evolution Seminar

Each student will be required to attend at least one evolution-related research seminar on campus and write up a short report during the course of the semester. We will post suggestions for appropriate talks to the course website, but if you have suggestions of other talks you think would qualify, please let Dr. Gerlach know.

D. Term Project

Students will work to write a mini grant proposal addressing an unanswered evolutionary question. This proposal will be done in several stages, including an initial submission of the question to be asked, a bibliography of related literature, an initial submission that will go through the process of peer review, and a final submission. More information about the various assignments involved will be posted on the course website.

E. Grading

Minimum grade cutoffs are listed below. These cutoffs will not be raised; in other words, if you receive 93% of the possible points, you are guaranteed to earn an A grade. A curve may be applied to individual exams or to the final scores, depending on the class average, and will be communicated clearly. However, we will *not* adjust grades on an individual basis.

| Point Range (%) | Letter Grade |
|-----------------|--------------|
| ≥ 93 | A |
| ≥ 90 | A– |
| ≥ 87 | B+ |
| ≥ 83 | B |
| ≥ 80 | B– |
| ≥ 77 | C+ |
| ≥ 73 | C |
| ≥ 70 | C– |
| ≥ 67 | D+ |
| ≥ 63 | D |
| ≥ 60 | D– |
| < 60 | E |

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

- F. **Incomplete("I"):** If a student has completed the majority of the course work with a passing grade and particular DOCUMENTED circumstances prevent completion of the course in the time allotted, the student may, with the agreement of the instructor, be assigned an "I" pending resolution of the grade. All incompletes MUST be resolved by the end of the following term or the student will receive a grade of "E" (failing).
- G. **Special Treatment**
Please do not request individual special treatment regarding grading at the end of the semester; **we do not adjust grades for individuals for any reason.** Plan to do well on all exams and other assignments from the beginning of the semester; if you are having difficulty in the class, please let your instructors know sooner rather than later.

XI. Disclaimer

This syllabus represents the current plans and objectives; however, schedules, requirements, and assignments may change throughout the semester as the need arises. Such changes, communicated clearly, are not unusual and should be expected.

XII. Weekly Schedule

NOTE: The following schedule is tentative; lecture topics and coverage may change. Updated schedule and specific reading assignments will be posted on the course website throughout the semester.

| Week # | Lecture # | Date | Lecture Topic | Chapter | Lab Topic |
|--------|-----------|-----------------|---|---------|------------------------------------|
| 1 | | M 05 Jan | DROP/ADD – NO CLASS | | NO LAB |
| | 1 | W 07 Jan | Intro to Evolutionary Biology | 1 | |
| 2 | 2 | M 12 Jan | History of Evolutionary Theory | 2 | History of the Earth |
| | 3 | W 14 Jan | Geology and Paleontology | 3 | |
| 3 | | M 19 Jan | MLK JR. DAY – NO CLASS | | Phylogenies I |
| | 4 | W 21 Jan | Reading and Building Phylogenies | 4 | |
| 4 | 5 | M 26 Jan | Molecular Phylogenies | 4, 9 | Phylogenies II |
| | 6 | W 28 Jan | Fossils and Phylogenies | 4 | |
| 5 | 7 | M 02 Feb | Understanding Variation | 5 | Alleles, Genotypes, Phenotypes |
| | 8 | W 04 Feb | Hardy-Weinberg, Genetic Drift | 6 | |
| 6 | | M 09 Feb | EXAM 1 | | Population Genetics |
| | 9 | W 11 Feb | Natural Selection I | 6 | |
| 7 | 10 | M 16 Feb | Natural Selection II | 6 | Quantitative Genetics |
| | 11 | W 18 Feb | Heritability and the Breeder's Equation | 7 | |
| 8 | 12 | M 23 Feb | Selection Gradients | 7 | Natural Selection in the Wild |
| | 13 | W 25 Feb | Correlated Selection | 7 | |
| | | M 02 Mar | SPRING BREAK – NO CLASS | | NO LAB |
| | | W 04 Mar | SPRING BREAK – NO CLASS | | |
| 9 | 14 | M 09 Mar | Molecular Evolution | 9 | Natural Selection Paper discussion |
| | 15 | W 11 Mar | Adaptation and Novelty | 10 | |
| 10 | 16 | M 16 Mar | Adaptation and Evo-Devo | 10 | Museum Activity |
| | | W 18 Mar | EXAM 2 | | |
| 11 | 17 | M 23 Mar | Evolution of Sex, Sexual Selection I | 11 | Sexual Selection |
| | 18 | W 25 Mar | Sexual Selection II | 11 | |
| 12 | 19 | M 30 Mar | Sexual Conflict, Life-History Evolution | 12 | Hawk-Dove |
| | 20 | W 01 Apr | Evolution of Social Behavior I | 16 | |
| 13 | 21 | M 06 Apr | Evolution of Social Behavior II | 16 | Speciation |
| | 22 | W 08 Apr | Allopatric Speciation | 13 | |
| 14 | 23 | M 13 Apr | Sympatric Speciation | 13 | Term Project Presentations |
| | 24 | W 15 Apr | Macroevolution | 14 | |
| 15 | 25 | M 20 Apr | Special Topics (TBA) | TBA | NO LAB |
| | | W 22 Apr | EXAM 3 | | |