

PCB 3674 -002 Evolution (37108): 3 Credits
Tuesdays and Thursdays 9:30am-10:50am. (DW 103, Davie Campus)
Prerequisite: BSC 1010

Syllabus Spring 2017

Instructor: Tim C. Theisen, Ph.D.

Office Hours: Tues and Thurs 11:30 a.m. – 1:00 pm

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Course Description: An in-depth examination of the mechanisms that operate in the evolutionary process.

Course Details and Expected Learning Outcomes: This course will introduce concepts that form the basis of evolutionary biology, namely the observation that variability among individual members of a population, interacting with other factors, can lead to changes over generational time. We will examine some important mechanisms underlying this rather simple observation, including the types and sources of variation, selection, genetic drift, nonrandom mating and molecular evolution. You will also be introduced to experimental and analytical methods used in the study of evolutionary processes. At the conclusion of this course, the student will be able to:

1. describe the fundamental mechanisms underlying the evolution of living things
2. apply the principles of biological evolution to any living organism
3. describe experiments that validate some of the basic principles of evolution
4. apply an evolutionary perspective to other fields of biology
5. infer ancestral relationships from biological data
6. critically evaluate articles, opinions and news on evolution

Course Format: Lectures will follow PowerPoint presentations as outlines. The PowerPoints will be posted onto Blackboard in advance of each lecture. You should print these out as handouts or load them onto a laptop, notepad, smart phone, etc. and bring them to class each day. During the lecture you should spend your time listening to the presentation and related discussions, adding notes to your slides as you see fit. **These PowerPoints are used by the instructor as a guide, they are not at all suitable substitutes for coming to class and they do not represent all the material that will be covered in class.**

Course Assignments: At the end of this syllabus you will find a lecture schedule. There is a reading assignment listed alongside each lecture topic. These are **REQUIRED** readings, and they are to be completed **BEFORE** coming to lecture. It is expected that proper, thorough reading of these assigned sections and associated studying will take approximately 5-6 hours per assignment, or approximately 10-12 hours per week. Clearly, careful scheduling will be required in order to complete these assigned readings prior to each lecture.

Course Examinations: There will be four unit examinations, each worth 100 points. Examinations will consist of multiple choice questions based mostly on understanding fundamental concepts. The fourth exam is not cumulative.

Missed Exams: Make-up exams will be available only under **exceptional** circumstances as outlined in the FAU student handbook, and only if taken within 1 week of the missed exam. **Make-up exams will be essay format.**

i>clicker: In-class credit for this course will be made available using the i>clicker polling system. Each student is responsible for obtaining an i>clicker transmitter and bringing it to every lecture. At several points during lecture a multiple choice question will be put up on the screen. Students will answer the question using their i>clicker transmitter. Students will be awarded 1 point for answering at least one of the questions, even if

wrong (maximum points per lecture for answering if all answers are wrong = 1). Students will also be awarded one additional point if any additional questions are answered correctly. These are extra points so there is no penalty for not answering; however you can only earn these points by being in class and answering. **i>clicker points are only available in class at the time the question is presented; no points can be made up in the event a student is unable to attend a lecture, regardless of reason. Also, points cannot be made up if the student forgets their transmitter, or if the batteries have gone dead.**

i>clicker Registration: You must register your i>clicker with this course in order to be able to use it.

Registration can be done from your Evolution Blackboard course page or from the i>clicker website.

To register your i>clicker on Blackboard, go to Blackboard and log in to your Evolution course. Click on “Tools”, then click on the “Register your i>clicker” icon, and follow the instructions provided.

To register via the i>clicker site, go to www.iclicker.com. Use your FAU username as your student ID #, **DO NOT USE YOUR Z-NUMBER**. You will also need the i>clicker ID, printed on the back of your i>clicker.

Students should verify that they are receiving i>clicker points by checking their grades in Blackboard. The instructor will post i>clicker points for each class as soon as possible after the class meets. It is **THE STUDENT’S RESPONSIBILITY** to check the gradebook in Blackboard early and often to make sure they are receiving points. If a student waits too long to alert me that they are not receiving points, there is nothing I can do about it.

Grading: The course grade will be determined from performance on four unit examinations, plus any extra credit i>clicker points that have been earned. Each exam is worth 100 points. Total course points = 400.

Extra Credit: The only extra credit available for this course is through the in-class i>clicker responses. These extra credit points are only available in class at the time the question is presented; no extra credit points can be made up in the event a student is unable to attend lecture. It is important to stay on top of the material, and seek assistance if you encounter any problems in understanding the material.

Grading Scale

| Grade | Percentage | Grade | Percentage |
|----------------|-------------------|----------------|-------------------|
| A | ≥93 | C | 73-76 |
| A ⁻ | 90-92 | C ⁻ | 70-72 |
| B ⁺ | 87-89 | D ⁺ | 67-69 |
| B | 83-86 | D | 63-66 |
| B ⁻ | 80-82 | D ⁻ | 60-62 |
| C ⁺ | 77-79 | F | ≤59 |

University Policy on the Use of Electronic Devices: “In order to enhance and maintain a productive atmosphere for education, personal communication devices such as cellular telephones and pagers are to be disabled in class sessions.” The only permissible use of a cellular telephone during class is to follow the PowerPoint, which may be loaded onto your phone rather than onto a laptop or printed out. However, if at any time a student appears to be using their smart phone for any other purpose (checking Facebook, texting, surfing the internet, etc.), they will be required to turn the phone off and will not be permitted to use it for any purpose the remainder of the semester. **It is highly recommended that you either print the PowerPoints as black and white handouts, or download them onto a laptop or tablet, and avoid using your smart phone for that purpose.**

Religious Accommodation: In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs with regard to admissions, registration, class attendance, and the scheduling of examinations and work assignments. Students who wish to be excused from course work, class activities, or examinations must notify the instructor in advance of their intention to participate in religious observation and request an excused absence. The instructor will provide a reasonable opportunity to make up such excused absences. Any student who feels aggrieved regarding religious accommodations may present a grievance to the director of Equal Opportunity Programs. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Disability policy statement: In compliance with the Americans with Disabilities Act (ADA), students who require reasonable accommodations due to a disability to properly execute coursework must register with the Office of Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses- Boca Raton, Davie, and Jupiter, however, disability services are available for students on all campuses.

Honor Code Policy Statement: Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf

Policy Regarding Exams:

1. Students will be required to show either an FAU student ID or a driver's license when turning in exams.
2. Cellular phones or any other electronic devices are not allowed to be turned on or visible during exams, but instead must be turned off and placed inside a purse or backpack on the floor. You will not be permitted to touch or use cellular phones or any other electronic devices during exams.
3. There will be no bathroom breaks during exams so plan accordingly.
4. Any student cheating, or appearing to cheat by looking at someone else's exam or any other source of information will be given an “F” for the course.
5. Be careful not to give the perception that you are cheating. Stay focused on your own paper and do not look around the room or towards another student's paper.

Policy Regarding Use of i>clickers: Cheating includes using your absent friend's i>clicker during class so they can get points despite their absence, or using i>clickers from outside the classroom in an attempt to record points. If I suspect that students may be voting for an absent friend, I will take an exit attendance and if a student's i>clicker was used during class but the student was not present, the owner of the i>clicker will be given an "F" in the course, as well as a notation on their academic record.

Incomplete Grade: Consistent with FAU policy, an incomplete grade will only be given to a student who fulfills *all* of the following criteria:

1. Misses coursework or exams due to an FAU approved emergency
2. Has a grade of C or better at the time
3. Submits evidence of the emergency and signs an incomplete agreement.

Course Supplies:

Textbook: *Evolutionary Analysis* by Herron, 5th Ed.
Pearson Publishing ISBN: 9780321616678

In addition to the textbook, an i-clicker transmitter registered to this course is required to receive extra credit.

Attendance Policy:

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University- approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

**Evolution PCB 3674 (37108) Spring 2017
Lecture and Exam Schedule**

| <u>Date</u> | <u>Topic</u> | <u>Reading</u> |
|--------------------|---|-----------------------|
| 1-10 | Introduction, Patterns of Evolution | Chapter 2 - 3 |
| 1-12 | Introduction, Patterns of Evolution | |
| 1-17 | Types of Variation | Chapter 5 |
| 1-19 | Sources of Variation | |
| 1-22 | Selection and Mutation | Chapter 6 |
| 1-24 | Migration, Genetic Drift and Non-Random Mating | Chapter 7 |
| 1-26 | Exam 1 | |
| | Linkage and the Effects of Sexual Reproduction | Chapter 8 |
| 1-31 | Quantitative Genetics | Chapter 9 |
| 2-2 | Form and Function | Chapter 10 |
| 2-7 | Sexual Selection | Chapter 11 |
| 2-9 | Sexual Selection | |
| 2-14 | Social Behavior | Chapter 12 |
| 2-16 | Exam 2 | |
| 2-21 | Life History Characters | Chapter 13 |
| 2-23 | Life History Characters | |
| 2-28 | Genome Evolution | Chapter 15 |
| 3-2 | Genome Evolution | |
| 3-7/3-9 | Spring Break | |
| 3-14 | Mechanisms of Speciation | Chapter 16 |
| 3-16 | Mechanisms of Speciation | |
| 3-21 | Phylogenetic Trees | Chapter 4 |
| 3-23 | Exam 3 | |
| 3-28 | Origins of Life | Chapter 17 |
| 3-30 | Origins of Life | |
| 4-4 | The Fossil Record | Chapter 18 |
| 4-6 | Development | Chapter 19 |
| 4-11 | Development | |
| 4-13 | Human Evolution | Chapter 20 |
| 4-18 | Human Evolution | |
| 4-20 | Exam 4 (regular time, 8:00 a.m. – 9:20 a.m.) | |

Note: Final Exam is NOT Cumulative