

**Evolution**    PCB 4674 (3 credits)                      Spring 2012                      Jan - Apr 2012

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**Prerequisites:** Genetics PCB 3063 or equivalent

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

**Course objectives:** By the end of this course, you will be able to discuss the history and development of evolutionary thought in Western society. You will be able to outline the mechanism of natural selection and provide examples that illustrate the process of speciation. You will understand the genetic basis of variation and be able to calculate gene frequencies and how they relate to populations in genetic equilibrium. You will also be able to distinguish sexual selection and kin selection from natural selection, and illustrate how they function differently. You will be able to summarize the history of life on earth and comment on the place of higher primates.

### 1.     **Lecture schedule**

Tue & Thu 11:00 am - 12:20 pm

GS 120

Jan 11 - Apr 26 2011

See attached schedule for details

The attached lecture schedule is intended to assist you as you formulate a study plan for this course. *I make every effort to maintain this schedule, but an occasional modification may be necessary.* The large volume of material associated with this topic necessitates individual study as not everything can be covered in lecture. It is your responsibility to read the required text chapters *before* coming to class and class attendance is required in order to excel.

### 2.     **Required texts**

Futuyma, DJ. 2009. Evolution, 2<sup>nd</sup> edition. Sinauer Associates Inc, Sunderland, MA.

Darwin, C. 1859. The Origin of Species. (various publishers produce copies of this work, any edition will suffice.)

The complete text of The Origin of Species is available online:

<http://www.literature.org/authors/darwin-charles/the-origin-of-species>

Students will be expected to read The Origin of Species over the course of the semester. In addition to the required texts, various papers from the primary literature that address specific topics will be assigned throughout the semester and posted on Blackboard for download.

### 3.     **Grade distribution**

Evobeaker lab 1, Evolutionary Evidence

5%

Jan 31

Mid-term exam 1

25%

Feb 14

Evobeaker lab 2, Darwinian Snails	5%	Feb 21
Evobeaker lab 3, How the Guppy got its Spots	5%	Mar 15
Mid-term exam 2	25%	Mar 22
Evobeaker lab 3, Flowers and Trees	5%	Apr 5
Final exam	30%	May 1

Mid-term and final exams will consist of multiple choice and short answer questions based upon lecture material and assigned readings. The emphasis will be upon integration of concepts. A blue scantron is required for each exam. Grades will be posted on Blackboard and exams can be viewed in Sanson 215 during regular office hours.

Three computer based labs will be assigned and their completion is mandatory. The labs are downloaded at a nominal cost from Simbiotic software (<http://simbio.com>) and can be completed on any computer. In accordance with the contract between FAU and Simbiotic, only students who pay to download the software will be graded. Additional information on the labs will be provided during class.

#### 4. **Exam Administration (mid-terms and final)**

- a. Please arrive before the start of the scheduled exam. The instructor reserves the right to refuse to administer an exam to any student arriving late.
- b. You will be given the full class period to complete the exam although the actual exam will not take that long to complete.
- c. Make-up exams will be given only if a medical emergency or similar extraordinary circumstance prevents you from taking the exam at the regularly scheduled time. You must notify the instructor and arrange a time for a makeup exam. The instructor reserves the right to substitute an oral exam for any make-up exam.

#### 5. **Proposed grading scale**

This is an *estimated* grading scale for the class. The instructor reserves the right to modify the scale as required.

A	80-100%
B	70-80%
C	60-70%
D	50-60%
F	<50%

#### 6. **Students with disabilities**

In compliance with the Americans with Disabilities Act (ADA) students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in SU 133, 561-297-3880, and follow all OSD procedures.

#### 7. **Academic integrity**

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 [http://www.fau.edu/regulations/chapter4/4.001\\_Honor\\_Code.pdf](http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf).

#### **8. Class demeanor and communication**

Please arrive to class on time. The instructor reserves the right to refuse entry to any student arriving late. Students are required to turn off cell phones and other potentially disruptive electronic devices prior to the start of a lecture. The instructor reserves the right to answer any phone calls or text messages received by any student during class. The instructor also reserves the right to temporarily confiscate any disruptive or distracting electronic devices operated during class. Open discussion is always encouraged so feel free to raise questions at any time. Email inquiries are typically answered the same day; please send email from your FAU email address rather than a third party provider such as a Hotmail or Gmail address.

#### **9. 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.

#### **10. Recommended Reading**

Alcock, J.	Animal behavior
Ayla, F.	Darwin's gift
Darwin, C.	The descent of man
Dawkins, R.	The selfish gene
Dawkins, R.	The greatest show on earth
Futuyma, D.	Science on trial
Morris, D.	The naked ape
Scott, E.	Evolution vs creationism
Zimmer, C	Evolution, the triumph of an idea

<b>Date</b>	<b>Topic</b>	<b>Text chapter</b>	<b>TOS chapter</b>
Jan	10 Introduction to evolution		1
Jan	12 History of evolutionary thought		1
Jan	17 Darwin & the modern synthesis		1
Jan	19 Darwin's dangerous idea – video		2
Jan	24 Darwin's dangerous idea – video		
Jan	26 Classification & phylogeny		2
Jan	31 Patterns of evolution ( <b>Lab 1 due</b> )		3
Feb	2 Geography of evolution		6
Feb	7 Origin of variation		8
Feb	9 Variation		9
Feb	14 <b>Midterm exam 1</b> , 11:00 am – 12:20 pm	1-3, 6, 8, 9	1-5
Feb	16 Genetic drift		10
Feb	21 Natural selection ( <b>Lab 2 due</b> )		11
Feb	23 Gene theory of selection		12
Feb	28 Reproductive success		14
Mar	1 Sexual selection		15
Mar	6 Spring break – no class		
Mar	8 Spring break – no class		
Mar	13 Sexual selection – video		
Mar	15 Kin selection & social behavior ( <b>Lab 3 due</b> )		16
Mar	22 <b>Midterm exam 2</b> , 11:00 am – 12:20 pm	10-12, 14-16	6-10
Mar	24 Species concept		17
Mar	27 Speciation		18
Mar	29 Co-evolution		19
Apr	3 Macroevolution		22
Apr	5 Evolution and theology ( <b>Lab 4 due</b> )		23
Apr	10 A history of life on earth 1		5
Apr	12 A history of life on earth 2		5
Apr	17 Life on Earth - video		
Apr	19 Primate evolution & human origins		4
Apr	24 Culture & control of human evolution		
May	1 <b>Final exam</b> , 10:30 – 1:00 pm	4, 5, 17-19, 22, 23	11-15