

Evolution in Society

Course #: BSC 1930

Date: Aug - Dec 2009

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An in-depth examination of the mechanisms that operate in the evolutionary process and the widespread impact of evolution upon society.

Goals: 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 how it relates 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 primate evolution and comment on the place of humans. You will be able to distinguish misapplications of evolutionary theory in society and ethics. You will have an appreciation of the enormous breadth of evolution and be able to explain its precepts to a lay audience.

1. Lecture schedule

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

Room SC119

Aug 22 - Dec 11 2009

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.

2. Required texts

Zimmer, C. 2006. *Evolution, the triumph of an idea.* Harper Perennial, New York, NY.

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>

In addition to the required texts, various papers from the primary literature that address specific topics will be assigned throughout the semester. These papers will be posted for download on Blackboard.

3. Grade distribution

Mid-term exam	15%
Final exam	15%
Video summaries (5@3%, 250 words each)	15%
Lab reports (3@5%)	15%
Chapter summary (500 words)	10%
Discussion leadership	10%
Discussion participation	10%
Term paper (1000 words)	10%

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. Grades will be posted on Blackboard and exams can be picked up in Sanson 215 during regular office hours. Several video presentations will be provided in class and you will write a short (250 word) summary of any five videos. Four computer-based labs will be assigned throughout the semester and you will be expected to complete the work outside of class time. In the last half hour of class each week a student will be responsible for presenting a summary of one chapter from *The Origin of Species* and leading a group discussion of the major concepts. All students are expected to participate in the group discussion and participation will comprise part of the final grade. The written chapter summary will also comprise a significant proportion of the final grade. A term paper on a topic of each student's choosing will be due by the end of the semester. Early drafts of the paper will be revised by the instructor and returned to the student to aid in the construction of the final version. Short writing exercises will be assigned throughout the semester.

4. Exam Administration (mid-term and final)

- a. Please arrive before the start of the scheduled exam.
- 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. Honor code

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.

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, x73880, and follow all OSD procedures.

7. Class demeanor and communication

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 cell phone that rings during class and to reply to any text message received 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.

Evolution in Society

Evolution is arguably the single most important idea ever discovered. In a single stroke, Darwin united the mechanics and meaning of life on earth and humans now understand their place in the vast history of the universe. 2009 is the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of the publication of his classic text, *The Origin of Species*. We have a unique opportunity to celebrate this bicentennial and sesquicentennial by pausing to reflect upon the development of evolutionary thought and how it has dramatically affected the course of history. Evolution at once elevates the highest human ideals while a misunderstanding of its principles is responsible for the darkest human depravities. No other discipline is as wide ranging. Everything from love to jealousy, viruses to whales, religion to war is within the purview of evolutionary inquiry. Evolution is the unifying theme that explains them all.

This course will employ interactive learning along with a Socratic approach, which is best executed with a small group of critical thinkers. In the Evolution in Society course, greater emphasis will be placed upon the far-reaching philosophical elements of evolution and less upon the mechanics of genetics. Therefore, the Genetics course (PCB 3063) is not a prerequisite as it is for the senior Evolution (PCB 4674) course. At the core of the course, students will be expected to read *The Origin of Species*, and weekly student-led discussions will highlight the major points from each chapter. In conjunction with the regular classes, students will be provided with computer lab assignments, which illustrate principles of evolution using the learning software Evobeaker. The 200th anniversary year will also produce numerous review, opinion and synthesis papers in both the popular press and the scientific literature, which will provide a regular source of material for class readings and assignments.

This course is designed specifically for the University Scholars Program curriculum. Because the course will be taught in a discussion format, students will be provided with a forum for public expression of their ideas, which will hone their critical thinking and oral communication skills. Also, because evolution is such an all-encompassing topic, this course will necessarily draw from numerous diverse disciplines such as anthropology, astronomy, genetics, medicine, philosophy, religion, biology, ecology, sociology and zoology to name but a few. This will enable students to understand the vast scope of evolution and its effect on nearly all aspects of their life.

The concept of evolution was first laid out in *The Origin of Species* and, along with Bible and the Koran, it is perhaps one of the most influential books ever written. A misapplication of its principles led to the genocide of the Second World War while at the same time an understanding of its core tenets led to the concept of germ theory and modern medicine. A reading of this classic text is essential for the development of well-rounded academic scholars.

Perhaps no other idea has been as widely reviled and simultaneously as widely misunderstood as evolution. This course will no doubt challenge the preconceptions of the students and allow them to develop their own philosophy based upon the evidence, rather than merely perpetuate the philosophies of their parents and peers. By the end of the course, student will have an appreciation of the role of evolution in the world around them and be able to apply what they have learned to their life as a whole. This course will hopefully be life changing.

Date	Topic	Darwin chapter	Zimmer chapter	Labs due
Aug 25	Introduction to evolution			
Aug 27	History of evolutionary thought			
Sep 1	Life of Darwin			1
Sep 3	Neo-Darwinian synthesis	1		
Sep 8	Darwin's dangerous idea – video			2
Sep 10	Darwin's dangerous idea – video	2		Evolutionary
Sep 15	Classification & phylogeny			3
Sep 17	Species concept	3		
Sep 22	Speciation			4
Sep 24	Great transformations - video	4		Flowers
Sep 29	Evolution and theology			5
Oct 1	Intelligent design	5		
Oct 6	Natural selection			7
Oct 8	Variation & genetic drift	7		
Oct 13	Midterm exam, 11:00 am – 12:20 pm			8
Oct 15	Macroevolution	8		Darwinian
Oct 20	Evolutionary arms race - video			9
Oct 22	Sexual selection	9		
Oct 27	Sexual selection – video			10
Oct 29	Kin selection & social behavior	10		
Nov 3	Reproductive success			11
Nov 5	Extinction! - video	11		
Nov 10	Primate evolution & human origins			12
Nov 12	Culture & control of human evolution	12		
Nov 17	The mind's big bang - video			13
Nov 19	Evolution & ethics	13		
Nov 24	150th anniversary of TOS			
Nov 26	No class			
Dec 1	Explaining evolution to non-scientists + Review	14		
Dec 8	Final exam, 10:30 – 1:00 pm			