

COURSE OUTLINE

Instructor: Rolf Quam

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Class: Tuesday 8:30-11:30 am; Science I, Rm. 112

Office Hours: MWF 11:00-12:00 am and by appointment

Course Content and Objectives

This graduate seminar will cover major topics in current evolutionary theory. Topics to be discussed include but are not limited to: historical development of evolutionary thought, Darwinian evolution, mutation, genetic drift, gene flow, natural selection, taxonomy and reconstructing evolutionary relationships, punctuated equilibrium, species concepts and speciation processes, competition and cooperation, multilevel selection, extinction and some current debates in paleoanthropology.

Required Reading

Futuyma, DJ (2005) *Evolution*. Sinauer Associates, Inc. Sunderland, MA.

Sober, E (2006) *Conceptual Issues in Evolutionary Biology. Third Edition*. MIT Press. Cambridge, MA.

Mayr, E (1991) *One Long Argument. Charles Darwin and the Genesis of Modern Evolutionary Thought*. Harvard University Press. Cambridge, MA.

Articles to be assigned throughout the semester.

The EvoS Program

Prof. David Sloan Wilson in the Biological Sciences department has organized a unique program in Evolutionary Studies at Binghamton University. Some features of the *EvoS Program* are a lecture series, and both undergraduate and graduate courses and certificate programs. You are encouraged to attend lecture series on Friday afternoons and to browse the webpage (<http://bingweb.binghamton.edu/~evos/intro.htm>).

Course Requirements

Short In-Class Report (15%)

Each student will be responsible for presenting one 30 minute in-class report and leading discussion on reading assignments. Topics will be decided during the first class meeting.

Long In-Class Report (35%)

Each student will choose a topic, in consultation with the professor, and provide a more detailed Power Point presentation of the subject matter in class and lead a discussion on the chosen topic. The student is responsible for developing the reading assignments for their topic.

Each student report is expected to be around 45-60 minutes total, including discussion. Several class periods have been set aside toward the end of the semester for student reports.

Final Examination (35%)

There will be a take-home final examination at the end of the semester.

Class Participation (15%)

The most successful seminars (that is those that are both enlightening and enjoyable) are successful because of active participation by all their members. This requires that we all keep up with the readings, maintain a sense of professional responsibility and attempt to participate actively in seminar discussions. To promote this, each student is required to bring two (or more) questions or points for discussion to each class.

Academic Honesty

The University strongly believes in the principles of academic honesty as the cornerstone of intellectual integrity. Assignments submitted for grading are expected to represent the student's own work and should clearly acknowledge any sources (published or unpublished) which were relied upon when forming opinions expressed in the work submitted. The University has detailed guidelines defining academic honesty in the university setting (<http://harpur.binghamton.edu/campus/honesty.htm>) and the consequences which can result if a case of academic dishonesty is discovered. If students have any questions about what precisely falls under the definition of academic honesty, they should consult the official University information or with the professor.

Course Outline

<i>Week</i>	<i>Topic</i>	<i>Readings</i>
1 (1/27)	Introduction and brief historical background	Futuyma Ch. 1
2 (2/3)	Historical background and Darwin's Theory of Natural Selection (M. Little)	Futuyma Ch. 1 Mayr Ch. 1, 2, 4-7
3 (2/10)	Evolution after Darwin – The Modern Synthesis The forces of evolution	Futuyma Ch. 1, 8, 10, 11 Mayr Ch. 8-10
4 (2/17)	Taxonomy and reconstructing evolutionary relationships	Futuyma Ch. 2, 3 Mayr (1981) Scotland (1992) Ebach et al. (2008) <u>Trinkaus (1990, 1991)</u> <u>Bamshad & Commuzzie (1991)</u>
5 (2/24)	Species concepts and speciation	Futuyma Ch. 15, 16 Mayr Ch. 3 Eldredge (1993) <u>Sober Ch. 18</u>

6 (3/3)	Punctuated Equilibrium: The tempo and mode of evolution reconsidered	Futuyma Ch. 3-5 Eldredge & Gould (1977) Gould & Eldredge (1992) <u>Eldredge et al. (2005)</u>
7 (3/10)	Adaptation	Sober Ch. 5 Levins & Lewontin Ch. 2 Forber (2008a) – Introduction <u>Forber (2008b) – Spandrels....</u>
8 (3/17)	Laws in Evolutionary Theory	Mcintyre (1997) Press (2009) Collin & Miglietta (2008) <u>Sober Ch. 11</u>
9 (3/24)	Competition and cooperation Student report topics and bibliography due	Futuyma Ch. 14, 18 <u>Sachs et al. (2004)</u>
10 (3/31)	Multilevel selection (D.S. Wilson)	Sober Ch. 3, 4
11 (4/7)	Spring Break – No Class	
12 (4/14)	Extinction	Ridley Ch. 23 Etter (2007) Arens & West (2008) <u>Jablonski et al. (2005)</u>
13 (4/21)	Student Reports	Assigned articles
14 (4/28)	Student Reports	Assigned articles
15 (5/5)	Contemporary Issues in Paleoanthropology Take-Home Final Distributed	Tattersall (2000) Foley (2001) Holliday (2003)
(5/12)	Take-Home Final Due by 5 pm	