Biology 311/511, General Principles of Organic Evolution, Spring 2017

Course overview

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Statement on Evolution by the Society for the Study of Evolution (www.evolutionsociety.org)

"Evolution" refers both to a set of scientific facts and to a theory explaining such facts. "Evolution" refers to the scientific fact that biological organisms have changed through time, and that all life, including humanity, has descended with modification from common ancestors. Evolution is as well documented as are other currently accepted scientific facts. The theory of evolution is a comprehensive and well-established scientific explanation, based on natural processes, of the fact of biological evolution.

Course description

An overview of organic evolution as the unifying principle of biology, with coverage of the various theories of evolution, origins of evolutionary thought, population genetics, systematics, and paleobiology.

Class goals

Following this course you should be able to:

- Summarize the history of evolutionary biology (from early theories to the modern synthesis and the incorporation of molecular evolution) and determine its significance as a unifying concept in biology.
- Explain evolutionary processes, describe evolutionary mechanisms, and recognize resulting patterns.
- Specify the questions that evolutionary biologists study, discuss the methods used to study them, identify the fundamental lessons learned, and generalize what still remains unresolved.
- Demonstrate your reading, writing, and research skills, particularly your ability to organize, summarize, and communicate your ideas pertaining to evolutionary biology to scientists and non-scientists alike.

Important information

This course is a blend of lectures, readings, and discussions. Readings will be from the required text (Evolution, 2nd Ed., D.J. Futuyma, 2009) as well as the relevant literature (which will be provided as needed). *I recommend that you at least read the chapter summaries prior to class*.

Lecture notes are your responsibility. Everything presented and discussed in lecture is fair game for exams even if I do not write it on the board. I may only say things that are important in order to improve your ability to distill facts from oral presentations.

Assignments are due *AT THE BEGINNING OF CLASS* on the appointed day. Late assignments lose 10% each day they are late (including the day they are due). Assignments turned in at the END of class are "late". Something turned in late loses 10% the first 24h, 20% the second 24h, etc. There will be no make-up work unless the absence was excused and/or documented. There is no extra credit planned at this time.

Course evaluation:

Your grade in this course will be based on the following components (totaling 750 pts.):

Attendance/ participation	Quizzes	Homework	Exams (3)	Final Exam
50 pts.	100 pts.	100 pts.	300 pts. (100 ea.)	200 pts.

Attendance / Participation (50 pts, 7%)

YOUR COMMITMENT TO YOUR CLASSES SHOULD BE AMONG THE MOST IMPORTANT THINGS IN YOUR LIFE RIGHT NOW. You are expected to attend all lectures and exams. If you will miss a class to participate in college-sanctioned events, you must notify me in advance and complete the work, including exams, before the scheduled class/due-date. Absences relating to religious beliefs will be accommodated according to UWS 22.03. In either case, your instructor should be notified within the first three weeks of the beginning of class regarding the specific dates that you will be absent. For more information see: *http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap22.pdf*

Quizzes (100 pts, 13%)

Quizzes are meant to stress problems and topics that are likely to appear on the upcoming exam. You should treat the questions as if they are a practice for the exam. They will be focused on concepts most recently discussed in lectures.

Homework (100 pts, 13%)

Periodic assignments include problem sets related to topics from class as well as short writing assignments related to literature we will read and discuss in class.

Exams (300 pts, 40%)

This class has three exams meant to assess comprehesion and reasoning ability. Approximately one week prior to each exam, I will provide 10-12 questions of which I will pick 4-6 for the exam. You may work with your peers on your answers, but you are expected to answer questions on your own during exams.

Final Exam (200 pts, 27%)

The final exam is comprehensive in that anything covered over the course of the semester related to the course topic is fair game for the final exam. Unlike term exams, you may not work with your peers on your answers for the final.

Final Grades

Your final grade is based on the percentage of points that you earn.

$\geq$93% = A, $\geq$90% = A–, $\geq$87% = B+, $\geq$83% = B, $\geq$80% = B–, $\geq$77% = C+, $\geq$73% = C, $\geq$70% = C–, $\geq$67% = D+, $\geq$60% = D, <60% = F

In-Class Behavior

You are expected to be respectful & considerate of your fellow students' learning environment. In addition, you are expected to focus on the topics of the day in lectures. Thus, certain electronic devices are considered by me to be distractions & not allowed in the classroom. Primary among these are cell phones & computers. *All cell phones* are to be silenced & put away during class. No texting, no calls, no exceptions (I may not say anything at the time, but you should expect your participation grade to be affected negatively if you violate these guidelines). Unless you have a documented learning disability that requires a laptop to take notes, there are to be no computers during lectures. During lectures we may engage in periodic discussions of relevant issues. You are not required to *agree* with every opinion expressed by your peers or me (in fact, healthy skepticism is to be expected of any good scientist), but you should respect the right of others to hold different opinions & perhaps even learn from their viewpoints. You are expected and encouraged to ask questions & participate in discussions where appropriate (remember part of your grade depends on class participation).

Disabilities

Students with disabilities are welcome and encouraged in this class. Students with disabilities should contact the Disability and Assistive Technology Center (*http://www.uwsp.edu/disability/Pages/default.aspx*) during the first two weeks of the semester if they wish to request specific accommodations.

Academic Integrity

Any misrepresentation of your work, including plagiarism or cheating, will result in a zero for that assignment. You should become familiar with UWSP Student Academic Standards and Disciplinary Procedures (*http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf)*.

- Copying whole passages written by someone else is plagiarism even if you right-click in Word to use the thesaurus and replace some words.
- Cobbling together sentence from various sources and presenting them as your own is plagiarism.
- Quoting passages is not appropriate in this class. **Use your own words.**

Notification of Participation in College Sanctioned Events

Individuals who must miss a class to participate in a college-sanctioned event are expected to notify me in advance and complete the work, including tests, in advance. It is your responsibility to communicate with me in advance regarding absences and determine a schedule for make-up work.

Spring 2017; Biology 311/511
Principles of Organic Evolution

Class Schedule
(This schedule is tentative)

Week	Day	Date	Lecture Topic	Futuyma Chpt.	Assignment Due Dates (due in class unless noted)
1	M	Jan. 23	History of Evolutionary Ideas	1	
1	W	Jan. 25	Evidence for Evolution	1	
1	F	Jan. 27	The Tree of Life	2	Quiz 1
2	M	Jan. 30	Phylogenetics	2	
2	W	Feb. 1	Phylogenies and Patterns	3	Homework 1
2	F	Feb. 3	Fossil Record and Evolution	4	
3	M	Feb. 6	A Brief History of Life	5	Quiz 2
3	W	Feb. 8	Origins of Life	5	
3	F	Feb. 10	Phylogeography	6	Homework 2
4	M	Feb. 13	Major Biogeographic Patterns	6	Quiz 3
4	W	Feb. 15	Biodiversity	7	
4	F	Feb. 17	Mutation	8	
5	M	Feb. 20	**EXAM 1**		
5	W	Feb. 22	Genetic Variation	8	
5	F	Feb. 24	Phenotypic Variation	9	Homework 3
6	M	Feb. 27	Heritable Variation	9	
6	W	Mar. 1	Population Genetics	9	Quiz 4
6	F	Mar. 3	Adaptation	11	Homework 4
7	M	Mar. 6	The Nature of Natural Selection	11	
7	W	Mar. 8	Modes and Models of Selection	12	Quiz 5
7	F	Mar. 10	The Outcomes of Evolutionary Change	12	Homework 5
8	M	Mar. 13	Genetic Drift	10	
8	W	Mar. 15	**EXAM 2**		
8	F	Mar. 17			
			SPRING BREAK		
9	M	Mar. 27	Neutral Theory of Evolution	10	
9	W	Mar. 29	Evolution of the Phenotype	13	Quiz 6
9	F	Mar. 31	Phenotypic Evolution	13	Homework 6
10	M	Apr. 3	Quantitative Genetics	13	
10	W	Apr. 5	Life-history Evolution	14	
10	F	Apr. 7	Life-history Evolution	14	Homework 7
11	M	Apr. 10	Conflict and Cooperation	16	Quiz 7
11	W	Apr. 12	Conflict and Cooperation	16	
11	F	Apr. 14	Evolution of Behavior	16	Homework 8
12	M	Apr. 17	Evolution of Sex	15	
12	W	Apr. 19	**EXAM 3**		
12	F	Apr. 21	Sexual Selection	15	
13	M	Apr. 24	What are Species?	17	Quiz 8
13	W	Apr. 26	Genetic Basis of Speciation	17	
13	F	Apr. 28	Modes of Speciation	18	Homework 9
14	M	May 1	Consequences of Speciation	18	
14	W	May 3	Coevolution	19	Quiz 9
14	F	May 5	Mimicry	19	Homework 10
15	M	May 8	Molecular Evolution	20	
15	W	May 10	Evolution and Development	21	Quiz 10
15	F	May 12			
	W	May 17	**TAKE-HOME FINAL EXAM**		**DUE 2:30pm**