

**BIOLOGY 306, EVOLUTIONARY BIOLOGY  
COURSE SYLLABUS: FALL, 2016**

**INSTRUCTOR INFORMATION**

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Office hours: Tuesdays 1:00-3:00, Wednesdays 12:30-2:20, and by appointment.

**LEARNING OUTCOMES**

At the end of the course, students will be able to:

Recognize and describe evidence for the occurrence of evolution, and explain the significance of the theory of evolution as an explanatory framework in modern biology.

Compare evolutionary biology to other branches of science with respect to levels of uncertainty and confidence in methodologies, and distinguish scientific inquiry from pseudoscience in class discussion and on written assignments.

Differentiate among evolutionary questions studied by geneticists, ecologists, systematists, and paleobiologists, and justify their methodological approaches.

Use scientific knowledge to interpret case studies and address real-life problems in evolutionary biology.

Compile, select and synthesize current knowledge of particular problems in evolutionary biology using the primary literature, and present this knowledge to peers in a poster format.

**TEXT AND OTHER MATERIALS:**

Text: Bergstrom CT, Dugatkin LA. Evolution. New York & London: WW Norton. 2016. 854 + xxiii p.

Articles and Case Studies: Additional articles and case studies are available on Canvas; please bring a copy (electronic or paper) with you to class.

Printing costs: For some assignments, you may also need to print some materials or turn in hard copies. For some classes, you may need to print copies of articles, case studies or assignments. Please budget accordingly.

**EVALUATION – SUMMARY**

Assessment	Proportion of grade
Day-to-Day (reading quizzes, homework, learning log, participation)	20%
Tests (3 midterms plus final; 3 grades used)	60%
Poster project (with or without accompanying assignments)	20%
<b>Total</b>	<b>100%</b>



#### EVALUATION – ADDITIONAL INFORMATION:

**Day-to-day:** Participation is essential not only for your learning but for other students to learn. In order to employ more effective active learning strategies, we need everyone to attend and participate almost all of the time. Attendance and/or participation will be recorded through assignments done in class or brought to class. Reading quizzes are short multiple choice quizzes covering the assigned readings in the textbook. The quizzes will usually be online but available in class only. Their role is to enable you to prepare for class by establishing a foundation of knowledge that will allow us to tackle more challenging and authentic problems in class. There is no opportunity to make up missed quizzes. Each week there will be a reflective homework assignment to engage you in metacognition, or thinking about thinking. Research on learning by cognitive scientists suggests that such reflection is critical for deeper learning. Other assignments will introduce skills in critical reading, and will provide a foundation for class discussion and for the poster project. Still others will require looking at evolution in popular culture or examine the public controversy. All of these types of assignments will be graded on completeness, clarity and evidence of careful thought and analysis. Receiving full credit is easy, but not automatic. To receive credit, you must submit homework assignments in class and on time.

**Tests:** There will be three application tests on each of three groups of four chapters in the text (Test 1: chapters 1-4; Test 2: chapters 7, 8, 13, 14; Test 3: chapters 15-17, 20). Application tests will have multiple choice and short answer questions. Almost all of these questions will call for you to apply, analyze or synthesize your knowledge. Application tests will be given online, and some questions may be based on a reading given out in advance. Only 3 exam scores will be counted so you can drop one, or complete only two if you take the final instead.

**Final:** There will be a short final exam consisting of multiple choice questions only. The highest three of your four exam scores will be used to calculate your grade. If you have taken all of the other tests, and are satisfied with your first three scores, you can opt not to take the final exam.

**Poster project:** During the final exam period, you will present a poster on a topic of your choice related to evolution. Two options will be available for completion of the poster assignment: you can complete the poster alone, with the entire grade coming from the poster alone, or you can choose to complete a series of developmental assignments that will help you manage tasks and pace yourself, with the final grade incorporating these assignments as well. The option is all or none, i.e., you cannot pick and choose among the supporting assignments. The poster assignment can also be completed in pairs using a larger number of references. Posters must be presented to the class to receive full credit. Detailed instructions will be provided separately.

#### SOME VERY IMPORTANT NOTES:

- Together, attendance/participation and day-to-day quizzes and homework make up as much of your grade as a test. Because these are weighted so heavily, and because the goal behind these assessments is to improve learning, the policies surrounding these are strict. Options to drop assignments are limited and require documentation.
- Although it is generally possible to make up tests, if you are unable to make up a test in a timely manner, irrespective of the reasons, you may need to make that test the one that you drop.



TENTATIVE SCHEDULE				
Week/Date		Monday	Wednesday/Friday	Topics and Readings
1	8/29	Introduction	Chapter 1; reading quiz and homework	Overview of course and of Evolutionary Biology.
2	9/5	Labor Day – no class	Chapter 2; reading quiz and homework	Historical roots of Evolutionary Biology; pre-evolutionary ideas.
3	9/12	Chapter 3; reading quiz	Homework due; critical reading assignment due	Natural selection. Case studies: beach mice, guppies
4	9/19	Chapter 4; reading quiz.	Homework due.	Phylogeny; case studies: columbines, whales
5	9/26	Test 1	Chapter 7; reading quiz	Population genetics
6	10/3	Chapter 7; homework due	Chapter 8; reading quiz; critical reading assignment due	Population genetics
7	10/10	Fall Break – no class	Chapter 8; homework due	Genetic drift.
8	10/17	Chapter 13; reading quiz	Chapter 13; homework due. Case study: snakes.	Evolutionary developmental biology. Case study: snakes
9	10/24	Chapter 14; reading quiz.	Chapter 14; homework due.	Speciation. Case study: Apple maggot flies
10	10/31	Test 2	Chapter 15; reading quiz	Extinction
11	11/7	Chapter 15; homework.	Chapter 16; reading quiz; critical reading assignment due.	Sexual selection. Case study: widow birds, widow spiders.
12	11/14	Chapter 16; homework	Chapter 17; reading quiz	Sexual selection; social behavior. Case study: ground squirrels.
13	11/21	Chapter 17; homework	Thanksgiving Break – no classes	Social behavior. Case study: manakins
14	11/28	Chapter 20; reading quiz	Chapter 20; homework	Darwinian medicine. Case study: paleo diet
15	12/5	Test 3	Peer editing	
16	12/12	Final exam	Wed., Dec 14, 3:30-6:00 (sec 02) Poster session	Fri., Dec. 16, 8:00-10:30 (Section 01) Poster session

Note: The schedule of topics may be subject to change. If so, the content coverage of exams will be adjusted, rather than the exam dates.



### SOME IMPORTANT POLICIES

**Organization:** Materials such as case studies are on MyCourses in folders labeled by week. For some assignments, you will instead find directions for finding the materials. Please consult the schedule above to determine what to prepare for class, and what to bring with you. Check your e-mail daily as well in case there are changes or updates.

**Communication:** E-mail is also usually the fastest way to get in touch with me. Because I am teaching more than 300 students this semester, please include the course number in the subject line and your name in all e-mails sent to me.

**Professional behavior in the classroom:** Your choices can affect the learning experiences of other students in the class as well as your own. Please arrive on time, stay through class, silence your phone, and use your phone, tablet and laptop only for class-related activities.

**Day-to-day assessments:** Together, attendance/participation and day-to-day quizzes and homework make up as much of your grade as a test. Because these are weighted so heavily, the policies surrounding these are strict – you must provide specific documentation to drop homework or quizzes, and excused absences are limited to 3 unless you have documentation from the Dean of Students and are missing all of your classes.

**Missing tests:** In order to make up a test you must contact me promptly, give a full explanation of the need for your absence, and take the test at the earliest possible opportunity. If making up the test promptly is not possible, this may have to be the test that you drop.

**Poster:** Because the poster is due at the end of the semester, extensions are necessarily limited and may require taking a grade of incomplete. Obtaining an extension may require documenting that you have already started the project in addition to documenting the need. Participating in the poster session is part of the assignment, and missing the poster session will require documentation of the need for the absence, or a penalty will apply.

**Appealing grades:** Any graded work may be submitted for re-evaluation along with a written appeal. The basis for your appeal will usually be either ambiguity in class or reading materials, or ambiguity in the test question or assignment directions. The appeal should contain a brief written explanation of your concerns, including your reading of the ambiguous written material, and why you believe your work meets the intended goals of the test question or assignment as you understood them. An appeal should reflect careful consideration of the answer presented in the key and any feedback received, and make a positive argument for your position. Ordinarily, appeals should be turned in within one week of receiving the graded work. After I have had an opportunity to review your appeal, we can meet during office hours or an individual appointment to discuss your concerns.

**Academic dishonesty:** Included in this category are (1) fraudulent participation, (2) cheating on exams and (3) plagiarism. All represent serious breaches of trust and will be treated accordingly. Including the name of a student who was actually absent on a work product from class discussion or taking a quiz from a remote location both constitute fraudulent participation, and will result in a loss of participation points for the day. Repeat offenders will



forfeit the entire day-to-day grade. Cheating on a test includes communication with another person inside or outside of the classroom as well as consulting the text or notes beyond what is allowed under the rules of the exam. In addition to more conventional forms of cheating on tests, **taking an online test in a location other than the classroom or Testing Center will be treated as cheating.** Plagiarism is defined here as ANY form of misrepresentation of the authorship or originality of your work. Plagiarism includes (but is not limited to) copying others' work directly (including internet sources), modifying only minimally the work of others, presenting ideas without citing the original sources, turning in a paper written by someone else or turning in the same work in more than one course. If collaborating on a poster project, both members of a group bear responsibility for academic honesty for the project. The penalty for cheating or plagiarism will be failing the class. Because academic dishonesty is defined in detail here, a claim of ignorance will not serve to excuse the behavior. **Cheating on a test or plagiarism on a major assignment will result in a failing grade for the course.**

**Limitations:** Written policies have limitations, as it is not possible to write a policy that covers every situation! If you find you are having trouble completing class work, please make an appointment to talk with me to determine how best to work with the policies to complete course work.

#### SOME VERY IMPORTANT INFORMATION ABOUT THIS CLASS

**Evolution:** The Theory of Evolution provides a central explanatory framework for understanding all of Biology today. Everything that we do in this course will relate to evolution in some manner. However, because the idea of evolution is not controversial among scientists, the majority of class time will be devoted to scientific issues within the field of Evolutionary Biology, rather than discussion of the public controversy around the theory of evolution. I welcome the opportunity to discuss your questions about all aspects of evolution (including questions about public controversy or religious belief) during office hours or individual appointments.

**Class format:** This class runs with a format somewhat different from most biology classes at Geneseo. Conventional lectures will make up a very small portion of class time, and class discussion (whole class or small group) will make up the majority. You must obtain your first exposure to new ideas outside of class through independent reading, and the class format is inherently participatory. Class discussion will address examples and applications of the concepts. Class activities and outside assignments are carefully designed to develop a deeper conceptual understanding and to build skills through the semester. Nonetheless, the new format may require some adjustment. Participation is required and graded, and it is not possible to sit on the sidelines.

## GRADES – EXPLANATION

Explanation of grades: Grades are determined using the scale presented below, generally without any adjustment or “curve.” Helping others can only help you, and cannot hurt your grade in any way. The point distribution is as follows:

Points	Letter grade
>92	A
90-92	A-
87-89	B+
83-87	B
80-82	B-
77-79	C+
73-77	C
70-72	C-
60-69	D
<60	E