

BIOL 101: Evolution & Ecology

Spring 2014

Instructors:

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Class meets: MWF 11:00 – 11:50 am, 105 Kellas

Course texts: Simon EJ, Reece JB, Dickey JL. 2010. Campbell Essential Biology, 4th ed. Pearson, New York, NY (ISBN: 0321602064).
Zimmer C. 2014. The Tangled Bank: An Introduction to Evolution, 2nd ed. Roberts & Company, Greenwood Village, CO (ISBN: 9781936221448).

Course description: Evolution and Ecology helps students understand major biological concepts through the lens of evolutionary principles. This course emphasizes concepts over details and scientific reasoning over terminology. Topics include natural and sexual selection, genetics, evolution of sex and mating strategies, population ecology, community ecology, and macroevolution.

Student learning outcomes: 1) ability to identify major evolutionary & ecological concepts, 2) understanding that scientific investigation progresses systematically with hypotheses, theories, and models being formed, tested, challenged, revised, and discarded when necessary, 3) understanding of the limits of scientific investigations, and science's impact on society and human existence.

Rules of the game:

1. **Overall structure:** Our class meetings will generally follow a lecture format, though we hope and expect that these lectures will be interactive, with you asking questions pertinent to the day's lecture topic, and answering questions that we pose to you. We strongly believe that participation and discussion will improve your understanding of the material. It is up to you to master the material presented in the course, so be active in your education. Seek assistance when needed. We will do our best to facilitate your learning the material, and we hope you find the subject matter intellectually stimulating, entertaining, and enjoyable.
2. **Text readings:** All reading assignments are highly recommended. Ideally, you should read the material before the corresponding class.
3. **Extra credit:** We do not offer "extra credit" work to make up for low exam grades.
4. **Academic integrity:** We will closely adhere to SUNY Potsdam's Academic Honor Code, which you signed after arriving on campus. If you are found cheating on an exam, your exam will be confiscated, you will receive a zero on the exam, and your action will be reported to the Student Conduct office. It is better to earn a low score based on what you know than a zero for cheating and compromising your integrity.
5. **Communication:** The best time to communicate with us is after class or during office hours. Email should be reserved for brief communications. Use our email addresses above, and please use the rules of etiquette for email that we posted on the Moodle site. If you do not use these rules, you probably will not get a reply.

6. **Studying:** How should you study for this course? Go over your notes after each lecture while the material is still fresh in your mind. Although some memorization is invariably necessary when learning a new "language", the goal of learning is to understand the information, not to simply memorize a bunch of disconnected facts. A major purpose of studying is to discover what you don't understand so that you can do something about it. Don't just passively read the notes, think about them and ask yourself questions about them. Do you understand what was said? Does it make sense and why? Compare and contrast the new information with things that you have already learned. Some people find study groups very helpful for the learning process. The Student Success Center (102 Sisson Hall) will organize these and hire a tutor (no charge to you) if ≥ 3 BIOL 101 students contact them. Keep up regularly. You can't cram all of the information into your brain the night before an exam, and we may not be available to answer your questions at the last minute. As a rule of thumb you should spend a minimum of 2 hours studying outside of class each week for every credit hour.
7. **Your grade:** Is based on 3 exam scores (30% each) and class attendance (10%).

Exams: (1) We will have 4 exams. The final exam is just the last exam, and as such is not cumulative. (2) We will drop the grade of your lowest exam; i.e., it will not be included in your final grade. (3) Failure to appear at exam time without 24 hours prior notice to instructor with an appropriate excuse, or an appropriately documented emergency, will result in zero points for that exam. *Make-ups will not duplicate regular exams and will be harder.* To be fair to everyone in the class, there are no exceptions to this policy. (4) The exams will consist of multiple choice, fill in the blank, and true/ false questions. The exams will primarily focus on the topics we cover in class, although some questions may be drawn from material exclusively from the reading. (5) You can bring a 3" x 5" card to each exam with anything written on it that you'd like. The only stipulations are you cannot bring a magnifying glass etc. to the exam, and your name must be legibly written on the card. (6) All electronic devices are prohibited during exams, including cell phones.

Attendance: Attending class will greatly improve your comprehension of the material and is therefore strongly recommended. We will pass around a sign-in sheet each class. It is your responsibility to sign the sheet. Signing the name of another student is considered cheating (as is having someone sign for you), and if caught, will result in a zero in this portion of the grade for you and/or the person you are signing for. Everyone will get four "free" absences; every absence thereafter will result in a 10% reduction in this portion of your grade.

Final grades: Will be based on the following percentages:

≥ 90.00	4.0 = A (Excellent)
≥ 86.67 and < 90.00	3.7
≥ 83.33 and < 86.67	3.3
≥ 80.00 and < 83.33	3.0 = B (Good)
≥ 76.67 and < 80.00	2.7
≥ 73.33 and < 76.67	2.3
≥ 70.00 and < 73.33	2.0 = C (Satisfactory)
≥ 66.67 and < 70.00	1.7
≥ 63.33 and < 66.67	1.3
≥ 60.00 and < 63.33	1.0 = D (Minimum)
< 60.00	F

Special requests:

1. Arrive to class on time.
2. Please sit in the back row of the classroom if you choose to:
 - text
 - sleep
 - play games/surf the web on an electronic device

Schedule:

Note: this schedule is subject to change because some topics may take longer or shorter to cover than initially anticipated.

The reading abbreviations are: **CEB** (Campbell Essential Biology) & **TB** (Tangled Bank).

Wk	Date	Topic	Reading
1	1/20	Course introduction	TB Ch 1
	1/22	What is science?	TB Ch 2 (pp35-42)
	1/24	The chemistry of life	CEB Ch 2
2	1/27	The chemistry of life	
	1/29	DNA, RNA, proteins: Evolution's molecules	TB Ch 5 (pp101-108), CEB Ch 3 (pp46-51)
	1/31	The origin of life	CEB Ch 14 (pp296-8)
3	2/3	The origin of life	
	2/5	The origin of life	
	2/7	Principles of inheritance	TB Ch 5 (pp115-122), CEB Ch 9
4	2/10	Principles of inheritance	
	2/12	Creation of genetic variation	TB Ch 5 (pp112-113), Ch 6 (pp126-129)
	2/14	Creation of genetic variation	
5	2/17	February Recess – University Closed	
	2/19	Exam 1 (covers 1/20 – 2/10)	
	2/21	No class; watch "NOVA: Judgment Day"	
6	2/24	Human population growth	CEB Ch 19 (pp408-11, 417-21)
	2/26	Human population growth	
	2/28	What is evolution?	CEB Ch 13 (pp256-9)
7	3/3	Mechanisms of evolution: Genetic drift	TB Ch 6 (pp130-134), CEB Ch 13 (pp260-62)
	3/5	Mechanisms of evolution: Natural selection	TB Ch 6 (pp134-157)
	3/7	Sexual selection	TB Ch 9 (pp219-234), CEB Ch 13 (p264)
8	3/10	Human evolution	CEB Ch 17 (pp361-7)
	3/12	Human evolution	
	3/14	Exam 2 (covers 2/12 – 3/12)	
9	3/17	Charles Darwin & <i>The Origin of Species</i>	
	3/19	Speciation	
	3/21	Speciation	
10	3/24	Spring Recess – University Closed	
	3/26	Spring Recess – University Closed	
	3/28	Spring Recess – University Closed	
11	3/31	The history in our genes	
	4/2	Phylogenetics & the tree of life	
	4/4	Phylogenetics & the tree of life	
12	4/7	Biodiversity & extinction	
	4/9	Biodiversity & extinction	
	4/11	The fossil record	
13	4/14	Evolution of sex & mating strategies	
	4/16	Evolution of sex & mating strategies	
	4/18	Exam 3 (covers 3/17 – 4/16)	

14	4/21	Evolutionary medicine
	4/23	Evolutionary medicine
	4/25	Community ecology
15	4/28	Community ecology
	4/30	Ecosystem ecology & the biosphere
	5/2	Ecosystem ecology & the biosphere
16	5/5	Climate & climate change
	5/7	Climate & climate change
	5/9	Climate & climate change
17	5/15	Exam 4 (10:15 am – 12:15 pm) (covers 4/21 – 5/9)