

Biology 130: Biodiversity
4.0 credits
The University of Tennessee, Spring 2014

Lecture: MWF, 11:15-12:05, Science and Engineering 307.

Lecture Professor: Dr. Brian O'Meara (bomeara@utk.edu)
<http://www.brianomeara.info>
Office Hours (446 Hesler): Monday 12:20-1:20, Wed 10 - 11
Other meetings by appointment.

Lecture Teaching Assistant: Phillip Hollingsworth (phollin1@utk.edu)
Office Hours (528 Hesler): Friday 2-3

Anonymous feedback: <http://www.brianomeara.info/feedback>

You will evaluate the course near the end, but it is also important to improve it during the semester. If you see a way to do this, **please let me know**.

What you should learn in this course

There are five big ideas that will be covered both in this course and Bio140:

- **Evolution:** Populations of organisms and their cellular components have changed over time through both selective and non-selective evolutionary processes.
- **Structure and Function:** All living systems (organisms, ecosystems, etc.) are made of structural components whose arrangement determines the function of the systems.
- **Information Flow and Storage:** Information (DNA, for example) and signals are used and exchanged within and among organisms to direct their functioning.
- **Transformations of Energy and Matter:** All living things acquire, use, and release and cycle matter and energy for cellular / organismal functioning.
- **Systems:** Living systems are interconnected, and they interact and influence each other on multiple levels.

During this course you may be asked to:

Interpret and create tables, figures, phylogenies and other scientific representations
Develop hypotheses and design scientific investigations
Calculate measures of central tendency and variation and evaluate statistical differences;
comment on the quality and confidence in the data set
Read and evaluate the claims and evidence presented in scientific publications

Course Description: Unifying concepts and principles of biology, illustrated with diversity of life. Properties of life, molecular basis, origin of life, cells, genetics, introduction to kingdoms, origins of multicellularity, multicellular plants and animals, ideas about evolution, man's place in nature. Emphasis on common themes in living systems (e.g., metabolism, protein and nucleotide sequence similarities, morphology), phylogeny construction, fossils, and the major plant and animal groups. Writing and analysis of lab activities required. Intended for science majors.

How you will learn the material

You need to think deeply about information inside and outside of class for learning to occur. I will organize and present information in a logical manner to facilitate this learning, but you will have to put the time in to synthesize and link the concepts together. Class will be a mix of lecture, discussion, and brief assignments to foster learning. We may even get up and move around.

The course will tell a story about biodiversity, starting with what it is, what processes lead to and maintain biodiversity, and ending with examples of how these processes shaped the organisms on the planet. The labs will focus on investigating processes and outcomes of these processes.

Schedule: (subject to change)

Date	Class	Chapter
8-Jan	Introduction	
10-Jan	Biology and the Tree of Life	1
13-Jan	Biology and the Tree of Life	1
15-Jan	Phylogenies and the History of Life	28
17-Jan	Phylogenies and the History of Life	28
20-Jan	Martin Luther King Jr. Holiday	
22-Jan	Phylogenies and the History of Life	28
24-Jan	Evolution by Natural Selection	25
27-Jan	Evolution by Natural Selection	25
29-Jan	Evolution by Natural Selection	25
31-Jan	Evolutionary Processes	26
3-Feb	Evolutionary Processes	26
5-Feb	Evolutionary Processes	26
7-Feb	Speciation	27
10-Feb	Speciation	27
12-Feb	Exam	
14-Feb	Bacteria and Archaea	29
17-Feb	Bacteria and Archaea	29
19-Feb	Protists	30
21-Feb	Introduction to Animals	33
24-Feb	Protostome Animals	34
26-Feb	Protostome Animals	34
28-Feb	Protostome Animals	34
3-Mar	Deuterostome Animals	35
5-Mar	Deuterostome Animals	35
7-Mar	Animal Reproduction	50
10-Mar	Exam 2	
12-Mar	Fungi	32
14-Mar	Fungi	32
17-Mar		
19-Mar	Spring break	
21-Mar		
24-Mar	Green Algae and Land Plants	31
26-Mar	Green Algae and Land Plants	31
28-Mar	Green Algae and Land Plants	31
31-Mar	Plant Reproduction	41
2-Apr	Plant Form and Function	37
4-Apr	Viruses	36
7-Apr	Exam 3	
9-Apr	Introduction to Ecology	52

11-Apr	Behavioral Ecology	53
14-Apr	Population Ecology	54
16-Apr	Community Ecology	55
18-Apr	Spring recess	
21-Apr	Community Ecology	55
23-Apr	Ecosystems and Global Ecology	56
25-Apr	Biodiversity and Conservation Biology	57
6-May	Final exam 10:15-12:15	

Technology: The use of laptops , phones, or other electronic devices in class is banned unless the instructor specifically gives permission to use them. Provisionally, you will be allowed to use them, but this may be revoked. **During exams and quizzes, any electronic device seen on your desk or within sight will result in a grade of zero.**

Support for learning

Texts and Materials:

- Text: Freeman, Scott. 2013. Biological Science (5th ed). Pearson Publishing. This book is available at the bookstore. You can also purchase it as an e-Book from Pearson publishing directly (www.masteringbiology.com). Used copies should also be available on-line.
- REQUIRED – Mastering Biology – free with purchase of a new textbook you can also purchase the software directly from Pearson as either Mastering with or without the e-Book. The course is MBOMEARA71070
- REQUIRED - TurningPoint response “clicker” (“ResponseCard” - Instructions for registration and use are found on the lecture Blackboard site). *At the UT Bookstore*
- Other readings will be assigned and posted on Blackboard

Textbooks are expensive. We will actually be using this one, so it is important to get. The clickers will be used on numerous in-class questions. Mastering biology represents 225 of 750 lecture points.

Course website: <http://online.utk.edu/> (Blackboard). The lecture site will be used regularly for communication and it will also house the lecture syllabus and extra assigned readings.

Communications:

- If you need to meet and can't make office hours, please use your UTK e-mail (spam filters may exclude other addresses) to schedule a meeting.
- I am happy to answer your e-mail questions, but allow up to 24 hours for a response. Also, once I leave the office I may not check my e-mail until the following work day, or the first day back after a weekend.
- Even better than email is posting questions to the course discussion board, on BlackBoard. I still get an email about it but someone else may answer you sooner. It also helps me because questions can be answered once there and read by everyone.

Study Rooms:

417 Hesler is a quiet study room for majors in Biology. It can also be reserved for group study. There is also a student study room in Neyland Biology Annex, room 103.

Assessment of your learning

Assessment (quizzes, exams, and assignments) is very important to the learning process. It lets you and I know what you understand and what you do not. I quiz often because it encourages you to keep up with your studying and help you learn – every time you have to re-process information you learn more.

Although much of the assessment in this course will be by multiple choice, I will also use short answer and written assignments because this type of assessment helps you learn in a different way. You must be able to explain your understanding of a topic versus just being able to pick it out of a list.

Before each lecture, I will post a set of potential exam questions from that lecture. The exams will have some of these questions (there will also be some questions you have not seen before).

Mastering Biology, online, is a key part of your assessment. There are assigned reading quizzes for EVERY chapter. You must do them at least the day before we first cover that chapter in class (see the syllabus). On the mastering biology website, the assignment due day is set for a few minutes after midnight of the listed day. The first three assignments, though, are all due by Jan 20 at 12:05 am. Note that the listed due date is Jan 20, but the due time is just after midnight; i.e., you should do them the day before, because 8 am Jan 20 is too late and will be penalized.

Lecture: (750 points):

Assessment	Max score	Percentage of lecture grade
Exam 1	100	13%
Exam 2	100	13%
Exam 3	100	13%
Final	150	20%
Mastering Biology	225	30%
Clickers/Other	70 (assigned 90)	9%
Lampyr writing	5	1%

Note that the clicker/other points are graded out of 70, though 90 points will be assigned. You may get a maximum of 70 points for this, so it's not extra credit, but it does let you miss a few classes (due to things like flu) without it affecting your grade by missing clicker points.

Lab: (250 points) – see lab syllabus.
Exams / Quiz / Assignment Policies:

- NO make-up quizzes or assignments will be given; there are 20 “extra” points built into the course to allow for missing classes, forgetting your clicker, etc.
- NO make-up exams will be given without a valid excuse (e.g., family emergency, medical emergency, etc). The excuse MUST be documented. I know this is a hassle, but it cuts down on false claims. Note that I do not need details: a note from a nurse saying “Student X was absent for well-justified medical reasons” suffices – protect your privacy.
- Make-up exams may be short answer, fill-in-the-blank, or essay.
- Assignments turned in after the due date will lose 25% of the points per 24 hours after the deadline. This includes Mastering Biology assignments.

The intention is that final letter grades will be determined by the total percentage of 1000 points accumulated as follows:

A	[93 – 100]%	C	[73 – 77)%
A-	[90 – 93)%	C-	[70 – 73)%
B+	[87 – 90)%	D+	[67 – 70)%
B	[83 – 87)%	D	[63 – 67)%
B-	[80 – 83)%	D-	[60 – 63)%
C+	[77 – 80)%	F	<60%

However, note that this may be scaled up or down at the end so that grades in this instance of the course are comparable to those with other instructors in other semesters. Essentially, a student with a B+ from this course should have emerged with the same amount of knowledge as a student from a different instance of this course.

Academic integrity:

Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE on ANY work submitted for a grade (exams, papers, quizzes, etc). Using a clicker for a friend who will miss class is strictly forbidden: it is tantamount to taking someone else's test. Both involved students will be penalized.

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the lab portion of the class.

You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the 2013-2014 Undergraduate Catalog (<http://catalog.utk.edu/>).

Other course information

Tennessee Education Lottery Scholarship Recipients: All courses for which you are enrolled count toward your attempted hour total. You must receive approval from the Office of Financial Aid & Scholarships when withdrawing from UT or changing your enrollment status from full-time to part time in order to maintain good standing for the TELS program. Approvals are only issued for extraordinary circumstances, such as the death of an immediate family member, documented serious illness, or military mobilization. See Financial Aid website at: <http://web.utk.edu/~finaid>

Final exams: Finals are scheduled by the University Registrar during the university final exam period. There are no conflicting times. "Students are not required to take more than two written exams on any day. The instructor(s) of the last non-departmental exam(s) on that day must reschedule the student's exam during the exam period. It is the obligation of students with such conflicts to make appropriate arrangements with the instructor at least two weeks prior to the end of classes." "All final exams must be given during the final exam period at the scheduled time."
(http://registrar.tennessee.edu/academic_calendar/finalexams.shtml)

Disability Services: If you need course adaptations or accommodations because of a documented disability, or if you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: ods@utk.edu; Website: <http://ods.utk.edu/>).

Counseling Center: <http://counselingcenter.utk.edu/>

The Counseling Center is the University's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. Note that email cannot be used to initiate therapeutic conversations. The Counseling Center does not communicate confidential information by email. Email is only used for scheduling purposes. If you are in an emergency situation please call the Center or stop by.

1800 Volunteer Boulevard
865 974-2196, Email: counselingcenter@utk.edu

Academic Assistance:

Tutoring: The Division of Biology does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: <http://studentsuccess.utk.edu/>
- **Academic Support Unit of The Office of Multicultural Student Life** offers some tutoring services available to all students. The office offers other types academic assistance and support as well:
http://multicultural.utk.edu/as_tutoring.php

Technical Assistance:

Blackboard, clickers, or general information technology assistance: <http://remedy.utk.edu/contact/>

This syllabus is subject to change at the discretion of the instructor
Syllabus modified from one by Beth Schussler, Bio130, Fall 2011.