Biology 102 Introduction to Biology: Biodiversity and Ecology
University of Tennessee, Spring 2016
Monday-Wednesday-Friday, 11:15 AM – 12:05 PM, Sections 44 – 53, Dabney-Beuhler 555

Instructor: Benjamin P. Keck, PhD
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Office hours: 2:00 – 3:00 pm Tuesday, Wednesday, and Thursday, or by appointment. It’s best to start with an email with a few day/times you would be able to meet, and I will respond as quickly as I can. When you email, put Bio 102 in the subject line and provide me with enough information to answer any questions. I highly encourage students to make appointments or stop by during office hours, individually or in small groups.

Course website: You will find the Biology 102 web page on the Blackboard Course Management System at https://blackboard.utk.edu/webapps/login/. Tutorials on using Blackboard are available at http://online.utk.edu/. I recommend that you check Blackboard frequently for new announcements and discussion threads. You will have one, merged course site for the lecture: biol102-sp2016merged: Bio 102: Keck MWF

Course description: For non-biology majors, introduction to the principles of biology as they relate to biodiversity and ecological processes. Topics include a survey of evolutionary theory, an analysis of major representative organisms in the Tree of Life, and ecosystem dynamics including human impact on the environment.

Goals of this course: This course is organized to meet the goals of the General Education Natural Sciences requirement. Reaching these goals will help you interpret and interact with the world around you, as well as incorporate biological ideas into your major area of study.

“As science and technology come to play an increasingly important role in contemporary life, it is essential for all educated persons to have a fundamental understanding of science and its methods. All students should be familiar with one or more scientific disciplines and the role of science in contemporary society. Such familiarity may be gained through acquisition of knowledge of a discipline's basic vocabulary, chief discoveries, and fundamental principles; exposure to a discipline's experimental techniques; and the ability to analyze issues with scientific dimensions.”

By the end of this course, you should be able to explain how the five big ideas (FBIs) in biology relate to the development, maintenance, and loss of biodiversity on the planet

1. Evolution: Populations of organisms and their cellular components have changed over time through both selective and non-selective evolutionary processes.
2. Structure and Function: All living systems (organisms, ecosystems, etc.) are made of structural components whose arrangement determines the function of the systems.
3. Information Flow and Storage: Information (DNA, for example) and signals are used and exchanged within and among organisms to direct their functioning.
5. Systems: Living systems are interconnected, and interact and influence each other on multiple levels.

You should also be proficient in the following scientific practices:

- Formulate empirically-testable hypotheses
- Interpret visual representations (figures and diagrams)
- Evaluate data and come to a conclusion (with evidence) (formulate an argument)
Required Books:

Lab Manual: Biology 101 laboratory manual, 7th ed. by Brewton and Guffey *must be purchased new*

LaunchPad Access: If you purchase a new or electronic version of the textbook it will be packaged with a LaunchPad Access Kit (the kit contains a code that will allow you access to the website). If your book is used, you may purchase access to the online site by going to the website http://www.macmillanhighered.com/Catalog/Product.aspx?isbn=1464161461. There is a pdf with information on the LaunchPad website for this course under Course Materials in Blackboard. Do not wait to ask for help with this! Homework assigned through LaunchPad is worth 60 points.

Readings and Videos: There will be several articles and links to videos available on the class Blackboard site that will be required for specific lectures. These will be announced in class and on Blackboard.

Grading: I will use the standard UT grading scale without minuses. I will adjust the final grades by lab section. There will be no extra credit. Any excuse or concern for absence or tardy work should be discussed in a timely manner. There is a total of 800 points available during the course: 600 in Lecture and 200 in Lab.

Clicker Points: 80
In Class Group Questions: 60
LaunchPad: 60
Lecture Exam 1: 80
Lecture Exam 2: 100
Lecture Exam 3: 100
Lecture Final: 120
Lab Grades: 200
Total: 800

Grading Scale by percentage of 800 points
90 – 100 = A
87 – 89 = B+
80 – 86 = B
77 – 79 = C+
70 – 76 = C
67 – 69 = D+
60 – 66 = D
≤ 59 = F

Tests: There are four exams, worth a total of 400 points. I will provide study guides/lists of keywords and ideas you should know for each exam. We will use Immediate Feedback (IF) testing for a portion (usually 20 points) of each exam. IF testing involves groups of 3-4 students working together to answer a set of questions. I’ll go over this in more detail before the first exam.

Clickers: During lectures I will ask questions that you will answer with a Turning Point Technologies device (a clicker), or a mobile device with the Turning Point Technologies app. Instructions for registering and using your clicker are found in the Course Syllabus area of the lecture Blackboard site. My clicker channel is 61. There will be about 100 points available during the term, but a maximum of 80 points will be applied to your grade. Questions will usually cover previous material along with material from readings assigned for that lecture.

In Class Group Activities: There will be two group learning exercises during the term worth 30 points each; dates below. If you miss these days you will need a valid excuse to complete a make-up assignment. Everyone in the group receives the same grade. These will be discussion-based, problem solving exercises.

Technology: You may use electronic devices in class for topical applications. Off topic use of these devices is not permitted and will result in that device living next to the podium for the remainder of class. Anyone caught using multiple clickers will lose ALL of their clicker points as will the owners of the other clickers, plus they will be confiscated and must be picked up in my office. During exams and quizzes, any electronic device seen on your desk or within sight will result in a grade of zero.
**Schedule (subject to change):** 22 January – last day to drop without “W”, 5 April – last day to drop with “W”. Readings from the textbook are listed next to the lecture topic, and you should read this before lecture. There may also be readings, videos, or podcasts assigned; these will be mentioned in a preceding lecture.

**Week 1:** 13 and 15 January  
Lecture 1: Introduction: Review and Goals  
Lecture 2: Scientific Method: Data, correlations, and hypothesis testing Ch. 1, **Vaccine on Blackboard**

**Week 2:** 18, 20, and 22 January  
MLK Day  
Lecture 3: Genetics: Genes, individuals, and mutation Ch. 7.1, 8.2, 8.4, 10.5  
Lecture 4: Genetics: Recombination and reproduction Ch. 11.2 to 11.5

**Week 3:** 25, 27, and 29 January  
Lecture 5: Genetics: Populations Ch. 15.1, 15.2  
Lecture 6: Genetics: Species Ch. 15.6, 15.7, 17.5  
Exam 1

**Week 4:** 1, 3, and 5 February  
Lecture 7: Evolution: Theory **Milestones in Biology 5, Ch. 16.7**  
Lecture 8: Evolution: Phylogenetics Ch. 17.1 to 17.3, 17.7  
Lecture 9: Evolution: Plasticity of phenotype **Article or video**

**Week 5:** 8, 10, and 12 February  
Lecture 10: Evolution: Drift and Natural Selection Ch. 14.5 to 14.7, 15.3, 15.4  
Lecture 11: Evolution: Sexual Selection **Article or video**  
Lecture 12: Evolution: Reproductive isolating barriers **RIB on Blackboard**

**Week 6:** 15, 17, and 19 February  
Lecture 13: Evolution: Hybridization **Article or video**  
Lecture 14: Evolution: Vicariance and Biogeography Ch. 17.4  
Lecture 15: Evolution: Group Activity 1

**Week 7:** 22, 24, and 26 February  
Lecture 16: Evolution: Extinction and diversification **Article or video**  
Lecture 17: Evolution: Buffer day for snow days or a wrap up of evolution and review  
Exam 2

**Week 8:** 29 February, 2 and 4 March  
Lecture 18: Ecology: Populations 1 Ch. 21.1 to 21.6 and Palm Oil on Blackboard  
Lecture 19: Ecology: Populations 2 Ch. 21.7 to 21.9  
Lecture 20: Ecology: Communities 1 Ch. 22.1 to 22.5

**Week 9:** 7, 9, and 11 March  
Lecture 21: Ecology: Communities 2 Ch. 22.6 to 22.9  
Lecture 22: Ecology: Ecosystems **Article or video**  
Lecture 23: Ecology: Guest or video with assignment

**Week 10:** 14, 16, and 18 March  
SPRING BREAK!
Week 11: 21, 23, and 25 March
Lecture 24: Ecology: Climate change Ch. 23
Lecture 25: Ecology: Island and Invasion biology Article or video
Spring Recess

Week 12: 28 and 30 March, and 1 April
Lecture 26: Ecology: Urban Systems Urbanization on Blackboard
Lecture 27: Ecology: Buffer day for snow days or wrap up of ecology and review
Exam 3

Week 13: 4, 6, and 8 April
Lecture 28: Biodiversity: Origins of Life Ch. 17.8
Lecture 29: Biodiversity: Bacteria and Archaea Ch. 18
Lecture 30: Biodiversity: Plants and Fungi Ch. 19.3, 19.5

Week 14: 11, 13, and 15 April
Lecture 31: Biodiversity: Invertebrates Ch. 19.4, 19.6 Article or video
Lecture 32: Biodiversity: Fishes Article or video
Lecture 33: Biodiversity: Amphibians Article or video

Week 15: 18, 20, and 22 April
Lecture 34: Biodiversity: Reptiles Article or video
Lecture 35: Biodiversity: Avian and non-Avian Dinosaurs Article or video
Lecture 36: Biodiversity: Group Activity 2

Week 16: 25, 27, and 29 April
Lecture 37: Biodiversity: Mammals and Hominids Ch. 20
Lecture 38: Biodiversity: The Anthropocene –loss of biodiversity Ch. 24 and Elephants on Blackboard

Final Exam
Thursday the 5th of May at 10:15 AM, in normal classroom.

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, assignments, quizzes, etc). Academic dishonesty also includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology and in all of your university activities as pledged in the honor code:

"An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

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 UT Undergraduate Catalog (http://catalog.utk.edu/).

Other information

Disability Services: If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. 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/).

Tutoring: Biological Sciences 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
  - 812 Volunteer Boulevard, Greve Hall, room 324, 865 974-6641, Email: studentsuccess@utk.edu

Technical Assistance:

Blackboard, clickers, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Walk-In Help Desk: Commons, 2nd floor Hodges Library
- Turning Technologies (clickers): 866 746 3015

Counseling Center: [http://counselingcenter.utk.edu/](http://counselingcenter.utk.edu/)

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

OTHER RESOURCES FOR STUDENTS:

- One Stop: [http://onestop.utk.edu](http://onestop.utk.edu) (start here for any question you have)
- Undergraduate Catalogs: [http://catalog.utk.edu](http://catalog.utk.edu) (Listing of academic programs, courses, and policies)
- Hilltopics: [http://dos.utk.edu/hilltopics](http://dos.utk.edu/hilltopics) (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: [https://bannerssb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched](https://bannerssb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched) (Schedule of classes)
- Academic Planning: [http://www.utk.edu/advising](http://www.utk.edu/advising) (Advising, course requirements, and major guides)
- Library: [http://www.lib.utk.edu](http://www.lib.utk.edu) (Access to library resources, databases, course reserves, and services)
- Career Services: [http://career.utk.edu](http://career.utk.edu) (Career counseling and resources; HIRE-A-VOL job search system)