Biology 150: Organismal and Ecological Biology
3 credits (2 credits lecture, 1 credit BioLit session)
The University of Tennessee, Fall 2017

Lecture: Tuesdays and Thursdays, 12:40– 1:55 pm, Strong Hall 101

Lecture Instructor: Dr. Arpad Nyari (anyari@utk.edu)
Office Hours (239/241 Walters Life Sciences): Wednesdays 3 – 5 pm
Other meetings by email appointment please

BioLit: 50 minutes per week (Tuesdays and Thursdays) in Strong Hall 242 or 232
25% of your course grade
BioLit starts week of Aug. 28 – You MUST attend the first session!
You will receive a separate BioLit syllabus in BioLit class

BioLit Instructor: Rachel Wooliver – Tuesday, room 242 (48320; 48321; 48327)
Johnathan Dickey – Tuesday, room 232 (48314; 48315; 48316)
Miranda Chen – Thursday, room 232 (48317; 48318; 48319)

Course Description: Intended for science majors, an introduction to the major biological concepts emphasizing the organismal and ecological aspects of life. Organized along themes of evolution, structure and function, information flow, exchange and storage, pathways of energy and matter, and systems. *Satisfies General Education Requirement: (NS)*

What you should learn in this course (and for a Biology degree)

By the end of the 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.
4. **Transformations of Energy and Matter**: All living things acquire, use, and release matter and energy for cellular / organismal functioning.
5. **Systems**: Living systems are interconnected, and they interact and influence each other on multiple levels.

You should also demonstrate the following **five scientific practices (FSPs)**:

1. Link lecture topics and synthesize information, particularly in reference to the FBIs
2. Develop hypotheses and predictions (ask scientific questions) based on models or data
3. Interpret scientific representations, such as graphs, phylogenies, or molecular structures, or data, and come to a conclusion (with evidence)
4. Summarize information from scientific articles or other sources
5. Predict the consequences of changes to systems or pathways

How you will learn the material

You need to think for learning to occur, and not just in class. Before class you should complete any assigned reading, videos, or MasteringBiology; these will provide the background information for what we do during lecture. Lecture time is divided between putting information into context and synthesizing the information through discussion and activities. There will be several group learning exercises during the term. 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. After class, you should review the learning objectives and make sure you can link concepts from multiple classes together. Exams will test your understanding of the concepts, not just your ability to memorize information.

Lecture Schedule ****This schedule is tentative and subject to change!**** (readings listed here are Freeman SECTIONS; other readings may be assigned)	**BioLit Discussion Schedule**	**Week**
Aug. 24 – Course Introduction	**No BioLit**	**1**
Aug. 29 – The Scientific Method (1.6, Bioskills) Aug. 31 – Scales of Study in Biology (51.1, 52.4 (not island biogeography), 54.1, 54.3)	Unit 1: Introduction to BioLit; What is a hypothesis?	**2**
Sep. 5 – Genes and DNA (1.4, 4.2, 16.2-16.4) Sep. 7 – Individuals and Populations (12.1, 12.2, 13.1, 13.2, 14.2, 14.4)	Unit 1: Duodenal infusion of donor feces for recurrent *C. difficile*	**3**
Sep. 12 – Populations and Change Over Time (1.3) Sep. 14 – Natural Selection (ALL of Chapter 22, 23.1, 23.3)	Unit 1: Herbivore release through cascading effects	**4**
Sep. 19 – Other Evolutionary Mechanisms (23.2, 23.4-23.6) Sep. 21 – Speciation (24.1-24.3, 25.3)	Unit 1: Rapid temporal reversal in predator-driven natural selection	**5**
Sep. 26 – EXAM 1 – Scientific method through Evolutionary Mechanisms Sep. 28 – Time / Phylogenies (1.5, 25.1, 25.2, 25.4, Bioskills 13)	**--- Unit 1 Quiz ---**	**6**
Oct. 3 – Population Ecology (49.1, 51.3 – 51.5) Oct. 5 – **Fall Break**	**No BioLit**	**7**
Oct. 10 – Community Ecology (52.1 – 52.2) Oct. 12 – Energy and Ecosystems (53.1 – 53.3)	Unit 2: Influence of phylogeny on fungal community assembly and ecosystem functioning	**8**
Oct. 17 – Island and Global Biogeography (49.2 – 49.5, 52.4) Oct. 19 – Prokaryotes and Disease (7.1, 7.2, 26.1 – 26.4, 33.1)	Unit 2: How aggressive ant-guards assist seed-set in Acacia flowers	**9**
Oct. 24 – EXAM 2 – Speciation through Global Biogeography Oct. 26 – Evolution of Eukaryotes (27.3)	Unit 2: A trophic cascade triggers collapse of salt-marsh ecosystem with intensive recreational fishing	**10**
Oct. 31 – Diversification and Movement to Land (27.1, 27.2, 27.4) Nov. 2 – Fungi (29.1 – 29.4)	**--- Unit 2 Quiz ---**	**11**
Nov. 7 – Plants (28.1 – 28.4) Nov. 9 – Animals – Protostomes (21.3, 30.1 – 30.4, 31.1 – 31.3)	Skills of poster design	**12**
Nov. 14 – EXAM 3 – Prokaryotes through Plants Nov. 16 – Animals – Deuterostomes (32.1 – 32.4)	Skills of literature searches	**13**
Nov. 21 – Animals – Humans (32.1 – 32.4, 32.5, pages 702-703) Nov. 23 – **Thanksgiving Break**	**No BioLit**	**14**
Nov. 28 – Loss of Biodiversity (54.2) Nov. 30 – Conservation of Biodiversity (54.4)	**Final Poster Presentation**	**15**
Dec. 5 – Final exam review (optional)	**No BioLit**	**16**
FINAL = EXAM 4 (Animals through Conservation) + Cumulative Final, Tuesday, Dec. 12, 10:15 am – 12:15 pm *As per the registrar's website: "Final exams must be given during the final exam period at the scheduled time, although alternative uses of the scheduled exam period may be designated by the instructor. 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."*		

Important Dates:

Sep. 1 – Last day to drop without a "W"
Sep. 5 – Last day to adjust hours for financial aid
Nov. 14 – Last Day to Drop with a "W" (WP/WF)
Dec. 5 – Last Day for a University Withdrawal

Technology: While in class, use electronic devices only for class purposes… using them for other tasks has been found to decrease course grades. **During exams, any electronic device seen within your sight will result in a grade of zero**.

Support for learning

REQUIRED Texts and Materials:

Text: Freeman et al. 2014. Biological Science. 6th ed., Pearson. ISBN-10: 0321976495.
We are trying Inclusive Access with opt out, covered on the first day. Opt Out by **September 1st, 2017**.

MasteringBiology Access: You will need access to MasteringBiology to complete online assignments. Access comes with the purchase of a new book or with an e-text through the Pearson website. To access the page for this course on the Pearson website, follow the instructions on the pdf on Canvas, or search for the text on the Pearson website and then for the section ID: **MBNYARI34799**

Course website: Go to "https://utk.instructure.com/" to login to Canvas. Here, you will be able to access all course-related materials, including for lectures and BioLit. The modules will be used regularly for communication and posting lecture syllabus, extra readings, assignments, course grades, etc.

Communications:

- You need to regularly check your utk e-mail account for weekly announcements related to this course. If you are not receiving those e-mails, there is something wrong with your account!
- If you need to meet and can't make office hours, use your UTK e-mail to schedule a meeting.
- Please allow up to 2 working days (I am away some weekends) for responses to your e-mails.

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, assignments) is very important to the learning process. It lets you and I know what you understand and what you do not. I assess often because it encourages you to keep up with your studying and helps you learn – every time you have to re-process information you learn more! The exams will all be a mixture of multiple choice and short answer. I include written responses and assignments because this type of assessment encourages you to explain and connect ideas. It helps you learn.

GRADE IS OUT OF 1,000 POINTS:

Lecture: (75% of grade; 750 points)

Exams — 450 points
- Exam 1 (70 points), Exams 2 and 3 (90 points each)
- Final exam = Exam 4 (90 pts) + Cumulative Final (110 pts)

Quizzes and Assignments (total points will be scaled to 300 regardless of actual total) — 300 points
- Mastering Biology (about 100 or more points)
- Learning Catalytics and In-class Assignments (about 5 points per class)
- Written assignments

BioLit: (25% of grade; 250 points) – see BioLit syllabus — 250 points

Exams / In-class work / Assignment Policies:

- NO make-up mastering biology or in-class assignments will be given; there will be about 20 "extra" points built into the course to allow for missing classes, getting sick, etc.
  - Written assignments turned in after the due date will lose 25% of the points per 24 hours after the deadline.
- NO make-up exams will be given without a valid excuse (e.g., family emergency, medical emergency, etc). The excuse MUST be documented.
  - **VERY IMPORTANT**: If you are going to miss an exam, you MUST contact me prior to the start of the exam. Send me an e-mail or leave a note on my door – whatever – and make sure you include your name and e-mail so I can contact you.
  - Make-up exams may be short answer, fill-in-the-blank, or essay and will be scheduled at the instructor's convenience and by their permission only.
- All work should be done independently (unless group work is permitted, and then you may ONLY work within your group on the assignment); plagiarism software will be used to check written assignments for copying from classmates or other sources. **Plagiarism will result in stiff penalties – please see section below.**

Final letter grades will be determined by the total percentage of 1,000 points accumulated as follows:

90 – 100 = A
87 – 89 = B+
80 – 86 = B
77 – 79 = C+
70 – 76 = C
67 – 69 = D+
60 – 66 = D
≤ 59 = F

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 (including a classmate) 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."***
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> (*Undergraduate Catalog*)

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 BioLit 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: 100 Dunford Hall; 974-6807 or 865-622-6566 for video phone; Email: ods@utk.edu; Website: http://ods.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
    - 812 Volunteer Boulevard, Greve Hall, room 324
    - 865 974-6641, Email: studentsuccess@utk.edu

Technical Assistance:

Canvas, clickers, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00) or online at http://help.utk.edu/
- OIT Walk-In Help Desk: Commons, 2nd floor Hodges Library

Turning Technologies (clickers): 866 746 3015

Student Health Center: http://studenthealth.utk.edu/

1800 Volunteer Boulevard
865 974-3648

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

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

OTHER RESOURCES FOR STUDENTS:

- One Stop: http://onestop.utk.edu (Hodges Library, Ground Floor, 8a-5p M-F)
- Undergraduate Catalogs: http://catalog.utk.edu (Listing of academic programs, courses, and policies)
- Hilltopics: http://hilltopics.utk.edu (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: https://bannerssb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched (Schedule of classes)
- Academic Planning: http://www.utk.edu/advising (Advising resources, course requirements, major guides)
- Library: http://www.lib.utk.edu (Access to library resources, databases, course reserves, and services)
- Center for Career Development: http://career.utk.edu (Career counseling and resources; HIRE-A-VOL job search system)

Some advice on success in Biology 150

1. This seems obvious, but… attend class and take notes.
2. Use the learning objectives as a study guide – know how to answer them completely, because the exam is testing your understanding of those ideas.
3. Do the pre-class work, and take notes on it. You will be lost in class without this background. And those mastering quizzes are easy points. You will literally drop a letter grade in the class if you don't do them.
4. Go to office hours and the study sessions. Ask me to clarify the information for you!
5. Do not skip BioLit. It is 25% of your grade and the skills you will learn are critical to doing science, not only Biology!
6. Study regularly and don't cram for the exam. It rarely works.
7. Form a study group, but only if you are actually studying in it; if you study alone, create written summaries of the notes and ideas from class and the learning objectives, don't just re-read or highlight the textbook. That rarely works either. Try to EXPLAIN the information to yourself, or write out an explanation without looking at your notes.

Additional advice…

Tips for success

- **Be present** – attend all your classes (lectures, labs, and discussions – every activity in a class was included intentionally to help you learn and is therefore an important part of success in the class!)
- **Be a participant** – engage in learning in class, work with your peers to understand material, take notes in class, ask questions
- **Be perceptive** – your instructor provides clues to success via the content they focus on, activities they have you do, hints they drop in class, and the way they test. Use these cues to be successful in THAT class (which may be different from how to be successful in another class!)
- **Be prepared** – do your homework, take notes on readings (not just highlight them), try to understand things before you go into lecture class
- **Be proactive** – go to office hours and study sessions before exams, stick to a regular weekly or daily study schedule (don't cram), form a study group
- **Be purposeful** – remember your goals for attending college, make adjustments when things don't go right and don't give up

Biggest mistakes

- **Forgetting that meaningful learning takes effort** (it is creating new neural connections in your brain… of course it is hard!)
- **Thinking that intelligence is fixed** (intelligence has no limit and can always be increased over time)
- **Not changing course approach after not doing well on a quiz or exam** (see fixed intelligence above; students give up because decide they "aren't good at XX")
- **Using passive study approaches versus active testing of knowledge** (re-reading notes or highlighting doesn't build neural connections; studies show that re-writing, re-organizing, and testing yourself are the most effective ways to learn)
- **Studying for memorization instead of application** (many high school courses test for memorization (regurgitation of information) while college exams ask students to apply information to a new problem – this requires a different way of studying (see above!))
- **Thinking that grades in high school determine grades in college** (see above; the ways you are tested will be different, so your studying has to be different; it is basically a clean slate for your GPA)
- **Assuming that multi-tasking in class is no big deal** (every time you switch to a new task requires a pause in brain function, which means you can't re-capture what you missed; plus, your brain literally cannot process two streams of information at one time (no matter how awesome you think you are at it))
- **Skipping labs or not doing online homework** (just because it is a smaller part of the course grade doesn't mean it isn't significant (a loss of 10% means your highest grade is a B+))
- **Being too afraid to ask for help from peers or teachers** (seeing an idea from a different perspective can be the key to understanding)
- **Thinking that college won't be a struggle sometimes** (everyone struggles to reach their potential; that effort is valuable and worth the effort.

Dear Student,
The purpose of this Campus Syllabus is to provide you with important information that is common across courses at UT. Please observe the following policies and familiarize yourself with the university resources listed below. At UT, we are committed to providing you with a high-quality learning experience. I want to wish you the best for a successful and productive semester.

Interim Provost John Zomchick

UNIVERSITY CIVILITY STATEMENT -- http://civility.utk.edu/
"Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, gracious-ness, cordiality, affability, amiability and courteous-ness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus."

EMERGENCY ALERT SYSTEM -- http://safety.utk.edu/
The University of Tennessee is committed to providing a safe environment to learn and work. When you are alerted to an emergency, please take appropriate action. Learn more about what to do in an emergency and sign up for UT Alerts. Check the emergency posters near exits and elevators for building specific information. In the event of an emergency, the course schedule and assignments may be subject to change. If changes to graded activities are required, reasonable adjustments will be made, and you will be responsible for meeting revised deadlines.

ACADEMIC INTEGRITY
"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."

YOUR ROLE IN IMPROVING TEACHING AND LEARNING THROUGH COURSE ASSESSMENT
At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.

DISABILITIES THAT CONSTRAIN LEARNING
"Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Student Disability Services (SDS) at 865-974-6087 in 100 Dunford Hall to document their eligibility for services. Student Disability Services will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities."

Accessible Information, Materials, & Technology -- http://accessibility.utk.edu/

WELLNESS -- http://counselingcenter.utk.edu/ and http://wellness.utk.edu/
The *Student Counseling Center* is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The *Center for Health Education and Wellness* is dedicated to a community model that is embodied in the "VOLS HELP VOLS" commitment: *We are all Volunteers. We look out for each other.* The Center manages 974-HELP, the distressed student protocol, case management, the Sexual Assault Response Team, and the Threat Assessment Task Force.