BIOLOGY 280 (50335): EVOLUTION
THE UNIVERSITY OF TENNESSEE, FALL SEMESTER 2017

Lecture: Tuesday and Thursday, 11:10 AM- 12:25 pm, Strong Hall, Room 104 (3 credits)
***Biol 281 Discussion:** Mondays 1:25-2:15 PM (50336); 2:30-3:20 PM (50337), Strong Hall 237 (1 Credit)

Instructors: **Dr. Gary McCracken** (gmccrack@utk.edu)
Office Hours (538 Hesler) Tuesday or Thursday 12:30-1:30 PM (directly after class), Wednesday 3-4 PM. Other meetings by appointment – e-mail is the best method of communication
Dr. Ed Schilling (eschilling@utk.edu)
Office Hours (323 Hesler) Tuesday or Thursday 3:30-4:30. Other meetings by appointment – e-mail is the best method of communication

***Lecture/Discussion Assistant:** Jessica Dreyer (jmdreyer@vols.utk.edu) phone (865) 974-6188
Office Hours (537 Hesler) Monday and Wednesday 1-2 PM, Tuesday and Thursday 10-11 AM, or by appointment. Please cc Jessica on all e-mails to Dr McCracken to ensure a faster response.
You will receive a separate Discussion syllabus. Discussions start the week of August 28 (see your schedule for your discussion time).

Course Description: Survey of major topics in evolutionary biology, including elementary population genetics, concepts of fitness and adaptation, genetic and developmental bases of evolutionary change, modes of speciation, principles of systematic biology, paleontology and macroevolutionary trends in evolution.
(RE) Prerequisite(s): 150, 160, and 159 or equivalents.

Course Website: https://oit3.utk.edu/instructional/tools/online/canvas/default.html **(Canvas)**

Required Texts & Materials:
REQUIRED - Zimmer, C. and D.J. Emlen. 2016. Evolution: Making Sense of Life, 2nd Edition. Roberts & Company Publishers
REQUIRED - TurningPoint response "clicker" (You MUST register your clicker on Canvas). Set to Channel 8 (McCracken) or 62 (Schilling). *Other readings will be provided on Canvas

Learning Objectives.
By the end of the course, you should be able to fully explain why biological evolution is the central and organizing principle of modern biology.

- Understand how populations of organisms and their cellular components have changed over time.
- Integrate the roles of selective and non-selective evolutionary processes in effecting change within and between lineages.
- Be fluent in our modern understandings of how evolutionary innovations arise
- Explain species concepts and the likely modes by which new species arise
- Appreciate the continuity of all life on earth – the descent of species from common ancestors
- Interpret phylogenies and taxonomic relationships
- Recognize the importance of evolutionary biology in our rapidly changing modern world

You should also

- Gain a fuller understanding of how science is practiced
- Learn that science is a dynamic process rather than a static list of facts
- Appreciate the large role that science and scientific processes play in your life and society in general
- Further develop critical thinking skills
- Improve communication skills in reading, writing, and speaking

COURSE SCHEDULE for FALL SEMESTER 2017

Date	Lecture	Reading
Aug 24 (R)	Introduction / pre-Test	Pp. 3-25
Aug 29 (T)	The Temple of Jupiter Seraphis: facts in need of framework	Pp.29-48
Aug 31 (R)	Darwin's insight and the post-Darwinian scientific debates	Pp.51-88
Sep 05 (T)	The Evolutionary Synthesis	Pp.127-155
Sep 07 (R)	Phylogeny and taxonomy	Pp.93-124
Sep 12 (T)	Exam #1	
Sep 14 (R)	Genes in populations 1– null models	Pp.159-172
Sep 19 (T)	Genes in populations 2- violating models, population size, genetic drift.	Pp.159-200
Sep 21 (R)	Genes in populations 3 - violating models, inbreeding, selection	Pp.159-200
Sep 26 (T)	Alleles to organisms – the concept of fitness	Pp.203-228
Sep 28 (R)	Natural Selection	Pp.203-228
Oct 03 (T)	Selection in the wild	Pp. 231-264
Oct 05 (R)	***Fall Break***	
Oct 10 (T)	Levels of natural selection	Pp. 552-562
Oct 12 (R)	Exam #2	
Oct 17 (T)	TBA	
Oct 19 (R)	Molecular Evolution	Pp 267-303
Oct 24 (T)	Adaptation	Pp. 303-340
Oct 26 (R)	Sex, sexual selection, mating systems	Pp. 345-378
Oct 31 (T)	Speciation – concepts & mechanisms	Pp.413-449
Nov 02 (R)	Speciation – rates and patterns	Pp. 413-449
Nov 07 (T)	Macroevolution	Pp. 451-468
Nov 09 (R)	Biogeography	Chapter XII, *The Origin of Species*
Nov 14 (T)	Exam # 3	
Nov 16 (R)	Centrifugal speciation in a radially symmetrical mammal Dr. M.J. H-Stumpke (Piltdown University)	TBA
Nov 21 (T)	Cosmology and the early history of life	Pp.54-88
Nov 23 (R)	***Thanksgiving holiday – No Class***	
Nov 28 (T)	The History of Biological Diversity	Pp. 453, 469-485
Nov 30 (R)	Mammalian radiations, primates	Pp. 573-588
Dec 05 (T)	Human Evolution	Pp. 588-618
Dec 06 (W)	***University Study Day***	
Dec 08 (F)	Final Exam (Cumulative – covering all course material)	10:15AM – 12:15 PM

All reading unless specified otherwise is from: Zimmer, C. and D.J. Emlen. 2016. *Evolution: Making Sense of Life* (2nd Ed.), Roberts and Company Publishers, Inc

How to succeed in this course:

DO THE ASSIGNED READING AHEAD OF TIME (BEFORE CLASS). DO ANY ASSIGNED HOMEWORK (BEFORE CLASS). These practices will help you learn the concepts of the course prior to coming to class. During class we will work through examples, apply what you have learned to new situations, and practice using the concepts. The real learning in the course is about understanding and applying the basic concepts and linking them together into a holistic understanding of the material. Exams will be more conceptual than factual.

Canvas course website: http://online.utk.edu/ (Click "Login to Online@UT" to get to Canvas). The lecture site 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!
- I am happy to answer your e-mail questions, but allow up to 24 hours for a response. Longer response time should be expected on weekends. Again, please cc Jessica Dreyer on all e-mails to Dr. McCracken.
- Please check Black Board before sending e-mails regarding course content.

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 learning:

Learning assessment is important for two reasons. First, you have to receive a grade for the class and the grade you earn will be determined by how well you perform on assessments. Second (*and more importantly*), assessment helps you integrate knowledge. Studies have shown that the more often students are assessed and the more different ways they are assessed, the more likely they are to understand the material. Assessments will be done using a variety of methods including exams, in-class quizzes, in-class group assignments, online homework, and a term paper.

Exams / Quiz / Assignment Policies:

- The Final Exam will be cumulative, covering all course material.
- NO make-up clicker quizzes or in-class assignments will be given; there will be "extra" points built into the course to allow for missing classes, forgetting your clicker, etc.
- NO make-up exams will be given without a documented valid excuse (e.g., family emergency, medical emergency, etc).
- All work should be done independently (unless group work is explicitly 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.**
- **During exams any electronic device seen on your desk or within sight will result in a grade of zero**.

Term Paper: Each student will prepare a short research paper that will be due on the last day of class. This paper is described on an attached sheet and on Black Board.

Course Grades:

Exam 1 :	50 points
Exam 2:	75 points
Exam 3:	75 points
Final Exam:	125 points
HW, quizzes:	100 points
Term Paper:	75 points
Total	500 points

Grade Scale

A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	less than 60%

Other course 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/).

Counseling Center: http://counselingcenter.utk.edu/
900 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.tennessee.edu/studentsuccesscenter/
    - 1817 Melrose Avenue, and 812 Volunteer Boulevard, 865 974-6641, Email: studentsuccess@utk.edu
- **Academic Support Unit of The Office of Minority Student Affairs** offers some tutoring services available to all students, but openings are limited and are filled quickly. The office offers other types of academic assistance and support as well: http://omsa.utk.edu/services/
    - 1800 Melrose Avenue, 865 974-6861, Email: omsa@utk.edu

Technical Assistance:
Canvas, clickers, or general information technology assistance:

- http://remedy.utk.edu/contact/
- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Computer Support Service Center and Walk-In Help Desk: Commons South, 2nd floor Hodges Library
- Turning Technologies (clickers): 866 746 3015

University Policies:
By registering at the university, the student neither loses the rights nor escapes the duties of a citizen. **Enjoying greater opportunities than the average citizen, the university student has greater responsibilities. Each student's personal life should be conducted in a context of mutual regard for the rights and privileges of others.** It is further expected that students will demonstrate respect for the law and for the necessity of orderly conduct in the affairs of the community.
Students are responsible for being fully acquainted and for complying with the University catalog, handbook, and other rules and policies relating to students. Failure or refusal to comply with the rules and policies established by the University may subject a student to disciplinary action up to and including permanent dismissal from the University.

ACADEMIC INTEGRITY IS THE CORE VALUE OF LEARNING COMMUNITIES
University of Tennessee Standard of Conduct #1: "Cheating, plagiarism, or any other act of academic dishonesty, including, but not limited to, an act in violation of the Honor Statement." You are expected to abide by The University of Tennessee honor statement in Biology 280 and in all of your university activities:

"An essential feature of The University of Tennessee 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."

Penalties for academic dishonesty assessed by the instructor may range from the grade of zero for the assignment, to an F for the course. All infractions will be reported to the Office of Student Conduct and Community Standards, the Dean of the College of Arts and Sciences, and the Dean of the College in which the student is enrolled. The Office of Student Conduct and Community Standards may charge a student with violating Standard of Conduct #1 regardless of the response of the instructor to the alleged academic dishonesty. You should read and be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the 2016-2017 Undergraduate Catalog and Hilltopics.

PRINCIPLES OF CIVILITY AND COMMUNITY

The principles encourage all members of the campus community to foster a learning environment where the differences of our diverse culture are valued, respected and celebrated.

Civility is an act of showing regard and respect for others including: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Ultimately, civility is treating others as we would like to be treated. Our community consists of students, faculty, staff, alumni, parents of UTK students 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.

By affirming the value of each member of the university community, the campus asks that all its members adhere by the following principles:

• INCLUSIVITY - We are welcoming to all and hostile to none. We foster an open community in which educational goals may be pursed.
• DIVERSITY - We respect the diverse backgrounds of all members of our community and welcome the opportunity for interpersonal and group interactions.
• DIALOGUE - We value and encourage, and facilitate free exchange of diverse ideas and points-of-view along with free speech and expression. However, we discourage uncivil speech or expression that infringes upon the ability of others to express themselves.
• COLLEGIALITY - We value an environment that facilitates collegial relationships, encourages mutual understanding among diverse individuals, and leads to addressing issues and differences in an atmosphere of mutual respect and civility.
• RESPECT - We believe that a person's views, ideas, and behavior best reflect the goals of the academic community when the dignity of each individual is respected and when members of the community are considerate of the feelings, circumstances, and individuality of others.
• KNOWLEDGE - We encourage development of a civil community that values critical inquiry, debate, discovery, and innovation to better the world through teaching, research and service.
• INTEGRITY - We value academic honesty and integrity by all members of the academic community.
• LEARNING - We believe that learning is an interpersonal growth experience that fosters appreciation for diversity.
• AWARENESS - We believe it is important to recognize how others view and relate to the community and recognize that we are part of a larger community.
• RESPONSIVENESS - We encourage all community members to speak out against incidents involving bigotry and other types of incivility so the university can fulfill its responsibility of responding in a fair, timely and consistent fashion.

THE INSTRUCTOR RESERVES THE RIGHT TO REVISE, ALTER AND/OR AMEND THIS SYLLABUS, AS NECESSARY. STUDENTS WILL BE NOTIFIED IN CLASS, ON CANVAS AND/OR BY EMAIL OF ANY SUCH NECESSARY REVISIONS, ALTERATIONS AND/OR AMENDMENTS