

EEB/ANTH 305 - "EVOLUTION & SOCIETY" – FALL 2016

Course Description

This course developed from our experiences as science educators attempting to accurately present scientific material in a social climate that is often skeptical of science and hostile to the concept of evolution. The goal of this course is to expose students to critical thinking about what science is and is not; the development of evolutionary biology and hostility toward it; and current topics in biology with an evolutionary aspect.

The course will use a combination of lecture and discussion to address these issues, and written papers and oral debates will be used to further the goals of critical thinking about the field of evolutionary biology and its role and relevance in contemporary U.S. culture.

Meeting Times and Place

TR 12:40-1:55 PM, BU-588 (3 credit hours¹; ANTH CRN #40242; EEB CRN #41398)

Instructors

Dr. Michael Gilchrist, Dept. of Ecology & Evolutionary Biology
439 Hesler; Office Hours: M 10:00-11:00, R 9:00-10:00 AM and by appointment.
974-3065 (department); mikeg@utk.edu

Dr. David Frank, Dept. of Philosophy, Dept. of Ecology & Evolutionary Biology.
2312 Dunford Hall; Office hours: W 2-4pm and by appointment;
dfrank4@utk.edu

Structure

The format is based heavily on class participation and is intended to be interactive, both between the instructors and students, and particularly among you, the students in the classroom and online. Our intent is to involve you in your own learning thereby making you responsible for the content and most importantly making the course content and discussion experience useful for your own lives and future.

Students will be working in groups, formed during the first class meeting. Groups will serve as the basis for a number of class activities, including online discussions, class activities, and the group projects.

¹ According to the 2016-2017 UTK Undergraduate Catalog, students should, on average, expect to spend a minimum of 3 hours of work per credit hour per week.

Course Learning Objectives

Research skills:

- Further develop student understanding of and ability to conduct and present research answering well defined and delineated questions.

Understanding the nature of science:

- Discuss scientific epistemology: what scientific knowledge is, and how scientific knowledge is obtained.
- Appreciate science as a dynamic human enterprise and explain how scientific knowledge is both durable and always subject to revision.
- Distinguish between scientific and non-scientific explanatory schema.
- Identify, analyze, and critique pseudoscientific explanations of natural phenomena.

Understanding evolution:

- Outline the development of evolutionary thought, and summarize current understanding of evolutionary mechanisms.
- Describe some of the current active research areas in evolutionary biology.

Understanding controversies over evolution in US culture:

- Explain how misunderstanding and misuse of evolutionary ideas have occurred repeatedly in US culture.
- Outline the evolution of opposition to the teaching of evolution in the United States, and describe how the strategies of opposition have changed in the context of legal decisions and changes in society.
- Formulate a response to critics' assertions that evolutionary biology is unscientific, incomplete, unable to make predictions, and is socially and culturally harmful.

Analyze science and society:

- Employing the scientific and historical perspectives you have gained, analyze contemporary biological technologies (e.g. personal genomics, genetically modified organisms, ...) and global problems (i.e. global climate change and biodiversity decline) as phenomena at the interface of science and society.

Expectations

Students are expected to master the materials presented in lecture and assigned reading to the point at which they can analyze, integrate, and synthesize information related to nature of evolution and its role in U.S. culture. In order to reach this goal it is crucial that students (a) read the the assigned material before class, (b) attend and actively participate in all

class sessions, (c) do the assigned activities and adequately prepare for class dialogs, and (d) seek help when needed through the online discussion board or their instructors' office hours

Assessment

Grading: Final student grades will be determined using the following criteria

| Point Range | Performance Level | Grade |
|-------------|-------------------|-------|
| 100-93% | Outstanding | A |
| 90-93% | Excellent | A- |
| 87-90% | Very Good | B+ |
| 83-87% | Good | B |
| 80-83% | Reasonable | B- |
| 77-80% | Fair | C+ |
| 73-77% | Satisfactory | C |
| 70-73% | Unsatisfactory | C- |
| 67-70% | Poor | D+ |
| 63-67% | Very Poor | D |
| 60-63% | Extremely Poor | D- |
| < 60% | Failure | F |

When discussing your grade with the instructors please use the *Performance Level* definition. For example, students should say "I need to perform at an outstanding level in this course" rather than "I need to get an A in this course".

Additionally, students are responsible for ensuring that they receive appropriate credit for their work. Any errors in grading or grade entry should be brought to the instructors' attention within two weeks of its posting on Bb or return of the assignment, whichever is later.

Students performance in the course will be based on the following activities.

Writing Assignments: There will be four (4) writing assignments whose preliminary due dates are:

| Essay | Draft Version (Weight) | Final Version (Weight) |
|-------|------------------------|------------------------|
| 1 | Sept 8 (3%) | Sept 15 (6%) |
| 2 | Oct 4 (4%) | Oct 11 (8%) |
| 3 | Oct 25 (4%) | Nov 1 (9%) |

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|---|------------|-------------|
| 4 | Dec 1 (4%) | Dec 8 (12%) |
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Essay 1) is limited to 3 pages, Essays 2) and 3) are limited to 4 pages, and Essay 4) is limited to 5 pages. Essays should be use double-spacing, 12 pt Times New Roman or 11 pt Computer Modern fonts, 1- inch margins. Citations and references should be formatted according to the Chicago Manual of Style (see Turabian (2010) Ch 17 & 18 for more details). Together, Essays 1-4 count for 50% of our course grade. Grades for draft versions will be determined via peer and instructor evaluation. Grades for final versions will be determined via instructor evaluation.

Essays should involve your critical synthesis of a topic that concerns issues in three general areas that are relevant to the material in this course. Further details on essay evaluation are available on Bb.

Quizzes: Quizzes will be administered at the beginning of ~1/2 of the class meetings. They will be drawn from study questions for the readings. Quizzes will count for 20% of your course grade.

Team Presentations: On most days without a quiz, teams will give a short verbal presentation (i.e. no slides) justifying their team's answer to a question posed by the instructors. The presentations should take approximately 8 minutes with 2 additional minutes for questions. Team presentations will count for 30% of your grade. Individual team members' grades will be adjusted based on zirs CATME peer evaluations.

Team Formation & Evaluation: Four team's will be formed using CATME (catme.org), an online peer evaluation system. CATME will also be used for peer evaluation in order to ensure students receive appropriate credit for their work on team projects. In order to remain enrolled in the course, students must complete the team formation survey by 9am Monday August 22nd. Invitations will be sent via email to each student's UTK account.

Assigned Materials

Readings and other materials will be assigned regularly throughout the semester and will be posted to the "Course Materials" section of our Bb site. Students are expected to read the assigned material and complete the accompanying study questions *before* the relevant class meeting. Team activities will frequently be assigned in class and included as part of the presentation grades.

Miscellanea

Blackboard Announcements will be the main means of alerting student to course activities and changes. Students are expected to check for these announcements on a frequent basis.

Email is appropriate for questions or issues specific to an individual student. When emailing your Instructor, please ensure that the phrase "E&S305" is included at the start of the

subject line or else it risks not being read. Email is not appropriate for asking your instructors general questions related to evolution or the structure of the course. Instead, students should post such question on the course discussion board.

The syllabus is subject to change at the instructors' discretion. Updated versions will be announced in class and posted on Bb.

Disability Accommodations

Any student who feels ze may need an accommodation based on the impact of a disability should contact either of us privately to discuss your specific needs. Please contact the Office of Disability Services at 865-974-6087 in Hoskins Library to coordinate reasonable accommodations for students with documented disabilities.

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 ANTH/EEB305 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.

Course Schedule and Readings

(subject to modification at the instructors' discretion)

| Date | Unit | Topic | Readings, activities, and assignments |
|------------|-------------------------------|--|---|
| Th Aug 18 | What is Science? | Nature of science. | Asimov, I. "The Relativity of Wrong." Turabian worksheet. Register for CATME site. |
| T Aug 23 | | Nature of science. Research. | Chalmers, Intro, ch. 1-3 "Science as knowledge derived from the facts of experience." Turabian, Intro, 1-3. |
| Th Aug 25 | | Evaluating Research Resources | Turabian, 4-5 & 17-18. Trip to the library. |
| T Aug 30 | | Nature of science: Laws, Theories, & Induction | Turabian 6, 7, Chalmers Ch 4, and McComas (1998). In class activity. |
| Th Sept 1 | ESPN holiday: No Class | | |
| T Sept 6 | | Nature of science | Turabian 8-10. Team Presentation. |
| Th Sept 8 | | Nature of science | First draft reviews. Turabian 21-23. Peer review of paper. |
| T Sept 13 | Evolutionary Biology | Evolutionary biology | Zimmer, Ch 1 & 6; Sarkar Ch 2 & 4; |
| Th Sept 15 | | Evolutionary biology | First paper on nature of science due. Zimmer Ch 4 Asher (2012) Ch 7: Whales are No Fluke In class activity on evolution & presentation prep |
| T Sept 20 | | Evolutionary biology | Herron and Freeman Ch 3 & Ch 7.2. |

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| Th Sept 22 | | Team presentations | Team presentation on key concepts in evolutionary biology. |
| T Sept 27 | Creationism: Old and new | Evolution, creationism, and religion in the US. | Asher (2012) Ch. 1-2. Fowler (2010) Overview of the Theological & Religious Interpretations of Evolution. Larson, Summer for the Gods Intro & Ch 1. Scott and Branch (2003) Antievolutionism: Changes and Continuities. In class activity and presentation prep. |
| Th Sept 29 | | Is ID science? | Behe (1998) Molecular Machines: Experimental Support for the Design Inference. Sarkar (2007) Ch 6: Complexity is Complicated. Asher (2012) Ch 12: Biology & Probability. Talbot M. (2005) Darwin in the Dock: Intelligent Design Has Its Day in Court (or Jones (2006)). In class activity and presentation prep. Study questions with paper prep. |
| T Oct 4 | | Team presentation | Team presentation on creationism and ID. |
| Th Oct 6 | Fall break: No Class | | |
| T Oct 11 | Evolution and social policy | | Sapp, J. (2003) Chapter 4 Darwinism and Sociopolitical Thought from Genesis: The Evolution of Biology. Oxford University Press p 43-54 & notes. Sofair and Kaldjian, Eugenic Sterilization and a Qualified Nazi Analogy: The United States and Germany, 1930–1945. Selections from Cohen, Imbeciles. Allen, The social and economic origins of genetic determinism: a case history of the American Eugenics Movement, 1900-1940 and its lessons for today. Bring two copies of your rough draft for peer reviews. |
| Th Oct 13 | | Contemporary perspectives on eugenics. | Bostrom, Levy, 3 parent baby, etc. Peer reviews of second paper due. |

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| T Oct 18 | Evolution, Cooperation, & Morality | Cooperation & Selection | West et al. (2011) Sixteen Common Misconceptions about the Evolution of Cooperation in Humans. Gachter, S. (2012) A Cooperative Instinct Nature 489:374-375. Second paper due. |
| Th Oct 20 | | Evolution & Morality | Machery and Mallon (2010) Evolution of Moralities. |
| T Oct 25 | | Team Presentations on appeals to and evidence from nature | Paper Three Topic Assigned. |
| Th Oct 27 | Humans Evolution | | A selection from: Pollard, What Makes Us Human? Paabo, The Human Condition -- A Molecular Approach. Zimmer (2014, Oct 30) From Ancient DNA, a Clearer Picture of Europeans. Wade, East Asian Physical Traits Linked to 35,000-Year-Old Mutation. Zuk. Are We Still Evolving: A Tale of Genes, Altitude, and Earwax. |
| T Nov 1 | | Evolution & Infectious Diseases | A selection from: Thomas et al. (2012) Can we Understand Modern Humans without Considering Pathogens? Evolutionary Applications. Ewald (1993) The Evolution of Virulence. Scientific American. Wolfe et al. Origins of Major Human Infectious Diseases. Lafferty. Can the Common Parasite, Toxoplasma gondii, influence human culture? Mc Auliffe. How Your Cat Is Making You Crazy. The Atlantic. MIKE: Light theory on evolution of virulence paper to complement or replace Ewald? |
| Th Nov 3 | Selected topics | | Third paper draft due. Reviews in class. |
| T Nov 8 | ELECTION | Evolutionary approaches | Laland and Brown, <i>Sense and Nonsense</i> , selections. |

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| | DAY: GO VOTE! | to behavior and evolutionary psychology | Pinker, <i>The Blank Slate</i> , selections. |
| Th Nov 10 | | Evolutionary approaches to behavior and evolutionary psychology | Buller, <i>Adapting Minds</i> , selections. Lloyd, "Science gone astray: Evolution and rape." Third paper due. |
| T Nov 15 | | Team presentations: evolutionary approaches to behavior | Fourth paper topics given. |
| Th Nov 17 | | Open topic. | |
| T Nov 22 | | | |
| Th Nov 24 | Thanksgiving: No Class | | |
| T Nov 29 | | Open topic. | |
| Th Dec 1 | | | Fourth paper draft reviews. |
| Th Dec 8 | Finals Period | | Fourth paper due. |