

Philosophy 523 – Philosophy of Evolutionary Biology – Fall 2018

Elliott Sober

(3 credits; TR 11:00-12:15)

In this course, we will examine several philosophical questions concerning the theory of evolution. What do common ancestry and natural selection mean and how can hypotheses about each be tested? What does it mean to say that mutations occur “at random”? How should the concepts of fitness and adaptation be understood? Are there laws concerning natural selection? How can natural selection cause altruistic behaviors to evolve if altruists are, by definition, less fit than selfish individuals?

This class meets for two 75-minute class periods each week over the fall semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc). for about 3 hours out of classroom for every class period. This syllabus includes more information about meeting times and expectations for student work.

Learning Objectives

- Ability to think critically about arguments.
- Ability to interpret complex texts accurately and analyze them logically.
- Ability to communicate precisely and concisely in both writing and speech.
- Familiarity with central concepts in evolutionary theory and philosophical questions arising from them, such as fitness, natural selection, adaptation, drift, phylogenetic inference, cladistics, adaptationism, probability.

Requirements

Attendance in class and participation in discussion are required. There will be an in-class exam, a final, and two essays on assigned topics, which should each be 4-5 double-spaced pages, hardcopy. The two essays are to be submitted as pdf's sent to my email address ersoer@wisc.edu with the subject line “523 essay.”

Each week you should post a question on the course's web site at Learn@UW about the readings for that week. Here's the plan: If your last name begins with a letter between A and L, you should post a question about the readings that will be discussed on Tuesday; you should post your question by 1 pm on Monday. If your last name begins with a letter between M and Z, you should post your question about the readings that will be discussed on Thursday; you should post your question by 1 pm on Wednesday.

Completion of all assignments is a requirement for passing the course.

Grading

Your final grade will be based on your grades on the above requirements, as follows: In-class

exam = 20%. First Essay = 25%. Second Essay = 25%. Final = 30%. Your weekly question about the readings will not be graded, though it is required.

Here are the grading categories that will be used for each graded assignment: *A = 100-93; AB = 92-88; B = 87-83; BC = 82-78; C = 77-70; D = 69-60; F = 59-0.*

Late Policy: Essays handed in late will receive a half-letter grade penalty per day, where a day is measured from the start of class each day. For example, if a paper is due Tuesday at 1:00 p.m. and would have received a grade of A had you handed it in on time, your grade will be AB if you hand it in after 1:00 but before Wednesday 1:00 p.m. If you turn it in on Wednesday after 1:00 and before Thursday at 1:00, it gets a grade of B. Etc. I will not enforce these penalties if there is a medical excuse or a personal emergency.

Absences

You are allowed two unexcused absences during the semester, after which each absence will lower your grade. Every three unexcused absences, beyond the two that are allowed, loses half a letter grade from your final grade. If you must miss class due to illness, religious observation, or some other valid reason, please e-mail me prior to your absence; this will count as an excused absence.

Problems

Students are encouraged, in this and all classes, to discuss problems concerning the teaching of this course with the instructor. If students wish to pursue a complaint with someone else, they should contact Jesse Steinberg, Assistant to the Chair, Philosophy Department, 5185 Helen C. White Hall, phone: 263-5162.

Accommodations

Every student should have an equal opportunity to participate in and benefit from this course. To that end, if you need to make special arrangements for receiving class materials or completing assignments because of a disability, please let me know, and I will work with you and the McBurney Disability Resource Center. You can find information about the McBurney Center on their web site: <https://mcburney.wisc.edu/>

Academic Misconduct and Plagiarism

Academic misconduct in any form - including plagiarizing from a published source or a classmate - will not be tolerated. I take academic integrity violations very seriously. Penalties for such violations will be adjudicated based upon the severity of the offence, and may range from a grade reduction on the assignment to failure of the course. For information about academic integrity and associated University policies see <https://www.students.wisc.edu/doso/academic-integrity/>.

Office Hours

My office hours are W 1:30-3:30, or by appointment, in 5199 Helen C. White Hall.

Book available at University Bookstore (and on reserve at College Library)

Elliott Sober and David S. Wilson (1998). *Unto Others – The Evolution and Psychology of Unselfish Behavior*. Harvard University Press.

Schedule

Note: *There are two extra class meetings listed below in red. These are make-up sessions for two regular class sessions that are cancelled (also indicated below in red).*

Note also: *Additions to this syllabus may be made as the semester progresses at my discretion. I will notify you of all changes and will update the syllabus on the course’s dashboard as needed.*

Week 1: September 6. No class – make-up class is on Sunday October 7.

Week 2: September 11 and 13. The ABCs of Probability

E. Sober (forthcoming). “A Probability Primer.” *The Design Argument*, Cambridge University Press.

Week 3: September 18 and 20. Central Features of Darwinian Theory

Ernst Mayr (2007). “Darwin’s Five Theories of Evolution” In his *What Makes Biology Unique?* Cambridge University Press, 2007, pp. 97-115.

Ken Waters (2003). “The Arguments in Darwin’s *Origin*.” In J. Hodge and G. Radick (eds.), *Cambridge Companion to Darwin*, Cambridge University Press.

Elliott Sober (2009). “Did Darwin Write the *Origin* Backwards” (first three sections) *Proceedings of the National Academy of Science USA* 106: 10048-10055.

Week 4: September 25 and 27. Fitness and Probability

Alan Hajek (2011). “Interpretations of Probability.” *Stanford On-Line Encyclopedia of Philosophy*.

Susan Mills and John Beatty (1979). “The Propensity Interpretation of Fitness.” *Philosophy of Science* 46. 263-286.

Elliott Sober (2013). “Trait Fitness is not a Propensity, but Fitness Variation Is.” *Studies in History and Philosophy of Biological and Biomedical Sciences* 44: 336-341.

Week 5: October 2 and 4. The Randomness of Mutation

R. Lenski, and J. Mittler (1993). “The Directed Mutation Controversy and Neo-Darwinism.” *Science* 259: 188-194.

Emily Singer, “Under Pressure, Does Evolution Evolve?” *Quanta*. January 15, 2014.

Elliott Sober (2014). “Evolutionary Theory, Causal Completeness, and Theism - The Case of ‘Guided’ Mutation.” In D. Walsh and P. Thompson (eds.), *Evolutionary Biology – Conceptual, Ethical, and Religious Issues*, 2014. Cambridge University Press, pp. 31-44.

Extra Meeting on Sunday October 7 (evening): Review for Exam

Week 6: October 9. First Exam

Week 6: October 11. Natural Selection and Drift

Roberta Millstein (2002). “Are Random Drift and Natural Selection Conceptually Distinct?”
Biology and Philosophy 171: 33-53.

Ken Reisman and Patrick Forber (2005). “Manipulation and the Causes of Evolution.”
Philosophy of Science 72: 1115-1125.

Weeks 7&8: October 16, 18, 23, 25 Altruism and the Units of Selection Controversy

E. Sober and David S. Wilson (1998). *Unto Others – the Evolution and Psychology of Unselfish Behavior*. Harvard University Press. Introduction and Chapters 1-5

Week 9: October 30. First writing assignment due (to be submitted by email – see above).

Week 9: October 30 and November 1. Are there laws of evolution?

John Beatty (1995). “The Evolutionary Contingency Thesis.” In G. Wolters and J. Lennox (eds.),
Concepts, Theories, and Rationality in the Biological Sciences, 45-81.

E. Sober (2011). “A *A priori* Causal Models of Natural Selection.” *Australasian Journal of Philosophy* 89: 1-19.

Week 10: November 6-8. Adaptationism

Stephen Jay Gould and Richard Lewontin (1979). “The Spandrels of San Marco – a Critique of the Adaptationist Programme.” *Proceedings of the Royal Society of London B* 205: 581-598.

W. Mitchell and T. Valone (1990). “The Optimization Research Program - Studying Adaptations by their Function.” *Quarterly Review of Biology* 65: 43-52.

Steve Orzack and E. Sober (1994). “Optimality Models and the Test of Adaptationism.”
American Naturalist 143: 361-380.

“Antagonistic Pleiotropy Hypothesis.” *Wikipedia*.

Week 11: November 13 and 15. Species

David Baum (1998). “Individuality and the Existence of Species Through Time.” *Syst. Biol.*
47(4):641–653, 1998

Joel Velasco (2008). “Species concepts should not conflict with evolutionary history, but often do.” *Stud. Hist. Phil. Biol. & Biomed. Sci.* 39: 407–414.

Week 12: November 20. no class – rescheduled for December 13.

Week 12: November 20. Second Writing Assignment Due (to be submitted via email – see above)

Weeks 13: November 27 and 29. Taxonomy and Race.

E. Sober (2000). “Essentialism and Taxonomy.” Excerpt from Chapter 6 of *Philosophy of Biology*. Westview Press, pp. 146-172.

Robin Andreasen (1998). “A New Perspective on the Race Debate.” *British Journal for the Philosophy of Science* 49: 199-225.

Joshua Glasgow (2003). “On the New Biology of Race.” *Journal of Philosophy* 100(9): 456-474

Week 14: December 4 and 6. The Epistemology of Common Ancestry

E. Sober (2015). “Likelihoods and Common Causes.” From *Ockham’s Razors*, Cambridge UP.

E. Sober and Mike Steel (2017). “Similarities as Evidence for Common Ancestry – A Likelihood Epistemology.” *British Journal for the Philosophy of Science* 68: 617–638.

Week 15: December 11. Wrap-up.

Week 15: December 13: review for final; attendance is optional.

Final: December 19, 12:25-2:25