

A Celebration of Darwin

INT 289

MW 8:35-9:50

Organizer: Professor Kristin Sobolik
Office: 234C South Stevens
Office Hours: TTh 11-12:15 **or by appointment**
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This course celebrates the 150th anniversary of the publication of *The Origin of Species* and the 200th anniversary of Charles Darwin's birth. In *The Origin*, arguably the most important work of the nineteenth, twentieth, and twenty-first centuries, Darwin proposed the theory of Natural Selection which provides a mechanism for how biological organisms change through time. Later works by Darwin expand on this theory and provide further contextual analyses. Natural Selection is the foundational theory for all of biological science, and provides baseline discussion on evolutionary thought in the arts, humanities, social sciences, and other sciences as well.

Faculty will provide an overview on Darwin's ideas, as presented in *The Origin* or his later works, and incorporate their own and other current research around that topic illustrating that Natural Selection is still at the forefront of scientific research and thought. The discussions and subsequent presentations are open to the public. Course communication will be maintained via Firstclass and WebCT.

Outcomes: As a student in this course, you will

- understand the basic mechanics of evolution by natural selection
- understand the importance and application of evolutionary theory throughout a wide range of disciplines
- be able to apply evolutionary logic and reasoning to propose possible explanations for scientific observations
- appreciate both the history of evolution and the impact of evolution on society

Texts: *The Origin of Species*, 6th edition, Charles Darwin, 1859. Additional selected writings of Darwin and others on the topic of evolution will be made available on the course WebCT site.

Grades: Grades will be based on two exams and one essay assignment. The exams will each be worth 35% of the course grade and the essay is worth 30% of the course grade. The exams will consist of one midterm and one final each covering course readings, discussions, and presentations. The exams will be multiple-choice and short answer. The essay will involve reading and writing a response to portions of Darwin's personal letters which are available at www.drawinproject.ac.uk. The essay will be discussed in greater detail during class.

Academic Honesty: Academic dishonesty includes cheating, plagiarism, and all forms of misrepresentation in academic work, and it is unacceptable at the University of Maine. As stated in the University of Maine's online undergraduate "Student Handbook," plagiarism (the submission of another's work without appropriate attribution) and cheating are violations of the University of Maine Student Conduct Code. Academic dishonesty of any kind will result in failing the course and will be reported to the appropriate University of Maine authority.

Disability Accommodation: If you have a disability for which you may be requesting an accommodation, please contact Ann Smith, Director of Disability Services, at the East Annex, 581-2319, as early as possible in the semester.

In the Event of an H1N1 Outbreak: In the event of disruption of normal classroom activities due to an H1N1 swine flu outbreak, the format for this course may be modified to enable completion of the course. In that event, you will be provided an addendum to this syllabus that will supersede this version. Communication will be maintained via Firstclass and WebCT.

Course Calendar:

Mon, August 31

Historical Context

Faculty: Larry Smith, Assoc. Prof. of Psychology

Wed, September 2

Darwin, the Reluctant Revolutionary?

Faculty: Larry Smith, Assoc. Prof. of Psychology

Readings: Bowler, P. J. (2009, January 9). Darwin's originality. *Science*, 323, 223-226.

Wed, September 9

Historical and Cultural Impact

Faculty: Francois Amar, Assoc. Prof. of Chemistry

Readings: *The Selfish Gene*, Richard Dawkins, Chpt. 12;

Carroll edition of *On the Origin of Species*, pp. 471-474, pp 481-484, pp. 595-605, Chpt. 3.

Mon, September 14

Darwinism, Religion, and Social Darwinism in the 19th Century

Faculty: Howard Segal, Prof. of History

Readings: The Texas-Size Debate Over Teaching Evolution, by Christopher Hitchens, *Newsweek* April 6 2009, pp. 51-52; A Marriage of Science, Religion, by Deborah Heiligman, *Bangor Daily News* Jan 31- Feb 1 2009; *Darwinism Comes to America* (excerpts), ed. by George Daniels, 1968.

Wed, September 16

Essay Assignments Discussed

Mon, September 21

Natural Selection

Faculty: Michael Kinnison, Assoc. Prof. of Biological Sciences

Readings: *The Origin*, Chpt. 4, pp. 144-166 of Carroll edition.

Wed, September 23

Unnatural Selection

Faculty: Michael Kinnison, Assoc. Prof. of Biological Sciences

Readings: *The Origin*, Chpt 1, pp. 144-166 of Carroll edition; *The Origin*, Chpt. 3, pp. 136-143 of Carroll edition; Palumbi 2001, Humans as the world's greatest evolutionary force, *Science* 293:1786.

Mon, September 28

Sexual Selection

Faculty: Irving Kornfield, Prof. of Biology and Molecular Forensics

Readings: *The Origin*, Chpt. 4; *The Descent of Man, and Selection in Relation to Sex*, Vol. 2 Ch. XXI.

Wed, September 30

The Laws of Variation and the Genome

Faculty: Keith Hutchison, Prof. of Biochemistry and Molecular Biology

Readings: *The Origin*, Chpt. 5

Mon, October 5

The Genome: Changing Slow, Changing Fast

Faculty: Keith Hutchison, Prof. of Biochemistry and Molecular Biology

Readings:

Wed, October 7

Speciation and Cladogenesis

Faculty: Irving Kornfield, Prof. of Biology and Molecular Forensics

Readings: How and Why Species Multiply: The Radiation of Darwin's Finches, P.R. Grant and B.R. Grant. 2007 (excerpts).

Wed, October 14

Prokaryotic to Eukaryotic Evolution

Faculty: Mary Rumpho-Kennedy, Prof. of Biochemistry and Molecular Biology

Readings:

Thurs. October 15

Lecture by Dan Dennett, Austin P. Fletcher Professor of Philosophy, Tufts University

3 p.m. Hauck Auditorium

Mon, October 19

Midterm Exam

Wed, October 21

Evolution of Human Response to disease, vaccines

Faculty: Carol Kim, Assoc. Prof. of Biochemistry, Microbiology, and
Molecular Biology

Readings:

Mon, October 26

Evolution of Nervous Systems

Faculty: Alan Rosenwasser, Prof. of Psychology

Readings: The Origin, Chpt. 6; Evolution of the brain and behavior, chpt.
6 in *Biological Psychology*, Breedlove, Rosenzweig and Watson, 2007.

Wed, October 28

Historical Perspectives of Development

Faculty: Marie Hayes, Prof. of Psychology

Readings: Gilbert SL, Dobyns WB, Lahn BT. Genetic links between brain
development and brain evolution. *Nature Rev Genetics* 6:581-90,
2005; P Levitt, JA Harvey, E Friedman, K Simansky, EH. New
evidence for neurotransmitter influences on brain development.
Trends in Neurosciences, 1997.

Mon, November 2

Struggle for Existence, Brain Stem Structure, Human/Fetal Interaction

Faculty: Marie Hayes, Prof. of Psychology

Readings: J.McKenna, T.McDade. Why babies should never sleep alone:
review of the co-sleeping controversy in relation to SIDS,
bedsharing and breast feeding. *Paediatric Respiratory Reviews*
6(2)134-152.

Wed, November 4

Evolution of Biological Clocks

Faculty: Alan Rosenwasser, Prof. of Psychology

Readings: Temporal organization: confessions of a Darwinian clock-
watcher, *Annual Review of Physiology*, C.S. Pittendrigh, 1993.

150th Anniversary Week

Social Darwinism, Monday, Nov. 9

Darwin and the Arts, Tuesday, Nov. 10

Popular Evolutionary Images, Wednesday, Nov. 11

Lecture on Darwin, Thursday, Nov. 12

Mon, November 16

Hominid Evolution, Human Migrations, and Ancient DNA
Faculty: Kristin Sobolik, Prof. of Anthropology and Climate Change
Readings:

Wed, November 18

Struggle for Existence, Biocultural Evolution
Faculty: Jim Roscoe, Prof. of Anthropology
Readings: *The Origin*, Chpt. 3

Mon, November 23

Evolution of Warfare
Faculty: Jim Roscoe, Prof. of Anthropology
Readings:

Mon, November 30

Biocultural Evolution, Group Selection
Faculty: Constanza Ocampo-Raeder, Asst. Prof. of Anthropology
Readings:
Essay Due

Wed, December 2

Evolution of Facial Expressions
Faculty: Peter LaFreniere, Prof. of Psychology
Readings: *The Expression of the Emotions in Man and Animals*, Darwin,
preface, Introduction, Chpt. 1

Mon, December 7

Basic Emotions in Infancy
Faculty: Peter LaFreniere, Prof. of Psychology
Readings: *Adaptive Origins*, Chpt. 7

Wed, December 9

Overview of Darwin's Contributions to the Science of Evolution
Faculty: George Jacobson, Prof. Emeritus of Biology, Ecology, and
Climate Change
Reading:

Finals Week

Final Exam