

History of Science 333: History of Modern Biology

Course Syllabus

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Office Hours:

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Overview:

Welcome to History of Science 333. The purpose of this course is twofold: first, to integrate some of the key developments in the history of modern biology into a coherent narrative, and to hone your skills as novice historians.

To facilitate these ends, History of Science 333 offers three exams and a series of regularly scheduled discussions. The exams and discussions will ask you to draw from the diverse information and arguments presented in the readings, lectures and discussions, and then to synthesize that information to create your own perspective on a historical issue. A three-hundred level course suggests you have some previous experience with college-level history courses. For those of you unfamiliar with college-level history, it may be surprising to learn that it is more than learning names, dates and places. It is much more unsettled and complex than that! Historians constantly are debating with each other over what historical information is essential and what is peripheral, and whether one interpretation of the past is more valid or useful than another. It is this sort of critical thinking that you will be expected to demonstrate on exams and other assignments.

Grading:

Your exams are take-home essays that give you one week to write four pages on one of a few essay topics. The weight of each exam is:

1st exam: 25%

2nd exam: 25%

3rd exam: 30%

In addition, 20% of your grade comes from participation in the class discussions and other written assignments. You will have the opportunity to turn in a self-evaluation at the end of in-class discussions, and at the end of the semester I will factor in your self-assessment with my own. In my assessment I will consider your level of preparation, improvement or decline over the semester, effort, use of course material and demonstrations of critical thinking and analytical sophistication.

Ethics and Decency

Don't plagiarize. The UW definition of plagiarism and its punishments are spelled out at <http://www.wisc.edu/writing/Handbook/QuoWhatDocumented.html>. To summarize: Using ideas that are unique to a particular source without crediting that source, *even if you paraphrase in your own words* constitutes plagiarism.

Be nice. I expect conflict and clash in discussion, but I expect it to be kept at an intellectual level. Insensitivity is beyond the bounds of what I will tolerate. Everyone participating in this course has the right to be treated with respect.

Individual Needs

If you have an impairment or condition that might pose an obstacle to your progress in this course, you should inform me at the start of the semester. If needed we can work with the McBurney center to find suitable accommodations.

The Guarantee

Give a full and sincere effort, and I guarantee that this course will be both educational and fun.

History of Biology 333 Lecture, Discussion and Reading Guide. Subject to slight revisions.**Tuesday, January 20**

Origins of "Modern Biology"

Thursday, January 22

Linnaeus

Lisbet Koerner, *Linnaeus: Nation and Nature*. Cambridge: Harvard University Press, 1999. pgs. 1-55.

Tuesday, January 27

Lamarck

Richard Burkhardt, *The Spirit of System: Lamarck and Evolutionary Biology*. 2nd ed. Cambridge: Harvard University Press, 1995. Introduction and Chapter 1, pgs. 1-45.

Thursday, January 29

Early Nineteenth-Century Anatomy and Morphology: Cuvier, Cuvier/Geoffroy, and Institutional Homes for Biology

Toby Appel, *The Cuvier-Geoffroy Debate: French Biology in the Decades Before Darwin*. New York: Oxford University Press, 1987. Chapter 5, pgs. 105-142 except 112-119.

Tuesday, February 3

England in the 1830s: Natural Theology

William Paley, *Natural Theology*, ed. Frederick Ferre. New York: The Bobbs-Merrill Co, 1963. pgs. 3-12.

Adrian Desmond, *The Politics of Evolution: Morphology, Medicine and Reform in Radical London*. Chicago: University of Chicago Press, 1989. Chapter 3, pgs. 102-127.

Thursday, February 5

England in the 1830s: Lyell, Malthusians and Discussion: Readings and Lectures from January 20th to Present

Thomas Malthus, *An Essay on the Principle of Population*. ed. Philip Appleman. New York: W.W. Norton and Co., 1976. pgs. 16- 26.

Charles Lyell, *Principles of Geology* in A.S. Weber, ed. *Nineteenth-Century Science*, pgs. 98-105.

Tuesday, February 10

Darwin: Birth through the Beagle

Adrian Desmond and James Moore, *Darwin: The Life of a Tormented Evolutionist*. London: W.W. Norton & Company, 1991. pgs. 149-162.

Charles Darwin, *The Origin of Species By Means of Natural Selection*. London: John Murray, 1968. Begin pgs. 71-172.

Thursday, February 12

Darwin: 1836-1859

Desmond and Moore, *Darwin*, pgs. 441-450.

Darwin, *The Origin of Species*. Finish pgs. 71-172.

Tuesday, February 17

Darwinian Reception: England

Desmond and Moore, *Darwin*, 500-518

Peter Bowler, *The Non-Darwinian Revolution: Reinterpreting a Historical Myth*. Baltimore: The Johns Hopkins University Press, 1988. pgs. 47-71

Thursday, February 19

Darwinian Reception: Germany, Russia

Bowler, *Non-Darwinian Revolution* pgs. 72-91.

Daniel Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought*. New York: Oxford University Press, 1989. Chapter. 1 pgs. 7-33.

Tuesday, February 24 Hand out Exam 1

Darwinian Reception: America

Discuss: All Darwin Readings and Lectures

Ron Numbers, *Darwinism Comes to America*. Cambridge: Harvard University Press, 1998. Chapter 1, pgs. 24-48.

Thursday, February 26

Mendel: Life and Work

Robin Marantz Henig *The Monk in the Garden: The Lost and Found Genius of Gregor Mendel, The Father of Genetics*. Boston: Houghton Mifflin Company, 2000.
Begin pgs. 68-173.

Tuesday, March 2 Exam 1 due

Nineteenth-Century Heredity and Development: Embryology, Neo-Darwinians, Neo – Lamarckians, Biometricians and Mutationists
Henig, *The Monk in the Garden*, finish pgs. 68-173.

Peter Bowler, *The Mendelian Revolution: The Emergence of Hereditarian Concepts in Science and Society*. Baltimore: Johns Hopkins Press, 1989. Chapter 3, pgs. 47-72.

Thursday, March 4

Mendel: Rediscovered

Henig, *The Monk in the Garden*, pgs. 179-220.

Tuesday, March 9

The American School of Genetics: Morgan and the Fly Group

Robert E Kohler, *Lords of the Fly: Drosophila Genetics and the Experimental Life*.
Chicago: University of Chicago Press, 1994. pgs. 19-52.

Thursday, March 12

Morgan/Eugenics in America

Daniel Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity*.
Cambridge: Harvard University Press, 1985. pgs. 41-69.

Spring Break, March 12th to 21st, No Classes

Tuesday, March 23

Institutional Support: The Rockefeller Foundation and Molecular Biology

Discuss: Mendel and Morgan readings and lectures

Lily E Kay *The Molecular Vision of Life: Caltech, The Rockefeller Foundation and the Rise of the New Biology*. Introduction and Chapter 3, pgs. 1-18, 79-95.

Thursday, March 25

The Evolutionary Synthesis

Ernst Mayr, *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary Theory*. Cambridge: Harvard University Press, 1991. pgs. 132-140.

Garland Allen, "Theodosius Dobzhansky, The Morgan Lab, and the Breakdown of the Naturalist/Experimentalist Dichotomy, 1927-1947." in Mark Adams, *The*

Evolution of Theodosius Dobzhansky: Essays on his Life and Thought in Russia and America. Princeton: Princeton University Press, 1994. pgs. 87-98.

Tuesday, March 30th Hand Out Exam 2

The Evolutionary Synthesis: Alternatives

Michael Dietrich "Richard Goldschmidt's 'Heresies' and the Evolutionary Synthesis."

Journal of the History of Biology. v. 28, 1995. pgs. 431-461. Ernst Mayr's response, v. 30, 1997, pgs. 31-33.

Thursday, April 1

World War II, The Cold War and Biology

Erwin Schroedinger *What Is Life? The Physical Aspect of the Living Cell & Mind and Matter.* Cambridge: Harvard University Press, 1967. "The Hereditary Code Script", pgs. 21-23 and "Is Life Based in the Laws of Physics?", pgs 81-85.

Theodozius Dobzhansky, "Polymorphism, Class, and Caste" in *Mankind Evolving: The Evolution of the Human Species.* New York: Bantam Books, 1962. pgs. 230-265.

Tuesday, April 6 Exam 2 Due

Atomic Power and Ecology

Discuss

*Joel Hagen, *An Entangled Bank: The Origins of Ecosystem Ecology.* Rutgers University Press, 1992. pgs. 100-145.

Thursday, April 8

The Double Helix

James Watson, *The Double Helix: A Personal Account of the Discovery of the Structure of DNA.* ed. Gunther S. Stent. Berkeley: University of California, 1980. Chapters 1-15, pgs 9-67.

Tuesday, April 13

The Double Helix

James Watson, *The Double Helix* chapters 16-30, pgs. 67-133.

Thursday, April 15

The Central Dogma: Deciphering the Code

Michel Morange, *A History of Molecular Biology*, trans. Matthew Cobb. Cambridge: Harvard University Press, 1998. Chapters 12-14, pgs 120-163.

Tuesday, April 20

Discuss: The Double Helix in History

Reviews, *The Double Helix* pgs. 161-193 and 213-218.

Thursday, April 22

Sociobiology

Edward O Wilson, *Naturalist*. Warner Books Edition, 1994. Chapters 15-16, pgs. 282-329.

Tuesday, April 27

Sociobiology

*Stephen Jay Gould, "Biological Potential vs. Biological Determinism" originally from *Natural History Magazine*, May, 1986, reprinted in Arthur L Caplan, ed., *The Sociobiology Debate: Readings on the Ethical and Scientific Issues Concerning Sociobiology*. New York: Harper and Row, 1978. pgs. 343-351

*Richard Lewontin, Steven Rose, and Leon J Kamin, "Sociobiology: The Total Synthesis" in *Not In Our Genes: Biology, Ideology, and Human Nature*. New York: Pantheon, 1984. Chapter 9, pgs. 233-264.

Thursday, April 29

Biotechnology

See handout.

Tuesday, May 3

The Human Genome Project

Daniel Kevles, "Out of Eugenics: The Historical Politics of the Human Genome" *The Code of Codes: Scientific and Social Issues in the Human Genome Project*. ed. Daniel Jevles and Leroy Hood. Cambridge: Harvard University Press, 1992. Chapter 1 selection, pgs 18-36.

James Watson, "A Personal View of the Project" *The Code of Codes*, Chapter 7, pgs. 164-173.

Dorothy Nelkin, "The Social Power of Genetic Information" *The Code of Codes*. Chapter 8, pgs. 177-190.

Thursday, May 6 Hand out Final Exam Questions

The Future of the History of Biology

Discuss

Final Exam May 12th/14th