Introduction to Human Evolution

Course:	ANTH/AFAM/GSC329	**Term:**	Fall 2003
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This course provides a natural science perspective on human evolution synthesizing the biological and cultural processes at work in shaping human adaptation. Beginning with the earliest fossil evidence for the emergence of humans, our lineage is traced to modern *Homo sapiens sapiens*.

The class begins by tracking the development of evolutionary thought in the sciences, and follows with a discussion of the mechanisms of modern evolutionary theory. We then explore the similarities and differences in biology and behavior among the Order Primates - the form, function, and adaptations of our closest living relatives are viewed in light of their relationship to human origins and human nature. The course concludes with an overview of the processes of fossilization, methods for dating fossil material, and a survey of human paleontology. Both biological and cultural processes are synthesized into a cohesive bio-cultural model for understanding our ancestry.

The goal of this course is to provide a fuller understanding of the reconstructions posited by anthropologists concerning the adaptations of our early ancestors, utilizing an acquired understanding of evolutionary mechanisms, comparative anatomy, primate ecology & behavior, the paleontological record, and cultural processes. This course therein provides a greater appreciation of our interdependence with the natural world, and with each other.

History and Mechanisms of Modern Evolutionary Theory

History of Evolutionary Thought: A discussion of the development of evolutionary theory in Western science.

- Hall, SS. 2002. 'Lost Discoveries': The Non-Western roots of science. New York Times, 12/1/02 **[8-10]**
- Jurmain R, Kilgore L, Trevathan W, Nelson H. 2003. Chapter 2: The development of evolutionary theory. Introduction to Physical Anthropology. 9th ed. Belmont, CA: Wadsworth/Thomson Learning, pp. 22-27. **[11-17]**

Darwinian Evolution and Natural Selection: An analysis of Darwin's theory, factors influencing the development of his theory, and Darwin's dilemma.

- Jurmain R, Kilgore L, Trevathan W, Nelson H. 2003. Chapter 2: The development of evolutionary theory. Introduction to Physical Anthropology. 9th ed. Belmont, CA: Wadsworth/Thomson Learning, pp. 28-39. **[17-28]**
- Darwin, C. 1958. "An historical sketch of the progress of opinion on the origin of species," The Origin of Species, New York: Mentor Books, pp. 17-25. **[29-33]**
- Gould, SJ. 1977. "Darwin's Delay," Ever Since Darwin. WW Norton & Co, pp 21-27. **[34-37]**

The Mechanisms of Evolution: A further discussion of Darwin's dilemma, the synthesis of Darwin and Mendel's theories, and an explanation of the Modern Synthesis.

- Haviland WA. 2003. Evolutionary forces. Human Evolution and Prehistory. 6th ed. Belmont, CA: Wadsworth/Thomson Learning. p. 74-80. **[38-41]**
- Gould SJ. 1999. Dorothy, it's really Oz. Time 154(8):59. **[42]**

Introduction to the Order Primates

Characteristics of the Primates: Definition of the Order Primates and trends in primate evolution.

- Order Primates reading **[44-45]**
- Napier JR, Napier PH. 1985. Chapter 1: What are primates?. The Natural History of Primates. Cambridge, MA: The MIT Press. p. 7-19. **[46-50]**
- Napier JR, Napier PH. 1985. Chapter 3: Structure and function. The Natural History of Primates. Cambridge, MA: The MIT Press. p. 30-38. **[51-57]**

Survey of the Primates: A look at members of the Order Primates, including the Linnean classification for the Order.

- Dolhinow P, Fuentes A. 1999.Taxonomy and phylogeny of the primates. The Nonhuman Primates. Mountain View, CA: Mayfield Publishing Company. p. 6-9. **[59-60]**
- Check out the photo resources at: http://www.primate.wisc.edu/pin/images.html

Form, Function, and Adaptation

Primate Locomotion: Explanation of the relationships between locomotion and ecology. Survey of primate morphology and locomotor patterns.

- Napier JR, Napier PH. 1985. Chapter 3: Structure and function. The Natural History of Primates. Cambridge, MA: The MIT Press. p. 45-55. **[63-68]**

Bipedal Locomotion: Focus on the form of locomotion utilized by modern *Homo sapiens sapiens,* including a survey of the morphology, biomechanics, and stresses of bipedality.

- Shreeve J. 2000. Sunset on the Savanna. In: Almquist AJ, editor. Contemporary Readings in Physical Anthropology. Upper Saddle River, NJ: Prentice Hall. p. 28-36. **[69-72]**

Diet and Dentition: Survey of tooth morphology and the role of the dentition in primate adaptation.

- Napier JR, Napier PH. 1985. Chapter 3: Structure and function. The Natural History of Primates. Cambridge, MA: The MIT Press. p. 39-43. **[75-78]**

Primate Behavior as Models for Human Evolution

Baboon Behavior: Analysis of Anubis and Hamadryas baboon social structure. Particular attention will be given to how these behaviors are used to in models of hominid evolution.

- Jolly A. 1985. Chapter 15: Growing up in a troop. The Evolution of Primate Behavior. New York: Macmillan Publishing Company. p. 327-342. **[79-87]**
- Smuts B. 2003. What are friends for? In: Angeloni E, editor. Physical Anthropology 03/04. 12th ed. Guilford, CT: McGraw-Hill/Dushkin. p. 54-58. **[88-92]**

Gorilla Behavior: Analysis of mountain Gorilla social structure. Particular attention will be given to how these behaviors are used to in models of hominid evolution.

- Relethford JH. 2003. Chapter 9: The biology and behavior of the living primates. The Human Species. 5th ed. Boston: McGraw-Hill. p. 246-260. **[93-99]**

Primate Behavior as Models for Human Evolution

Chimpanzee Behavior: Analysis of common and pygmy chimp social structure. Particular attention will be given to how these behaviors are used to in models of hominid evolution.

- Relethford JH. 2003. Chapter 9: The biology and behavior of the living primates. The Human Species. 5th ed. Boston: McGraw-Hill. p. 261-267. **[100-3]**
- Motavalli J. 2003. Rights from wrongs. E: The Environmental Magazine 14(2):26-33. **[104-7]**

Ape Language Studies: Discussion of information gained through primate language studies.

- Calvin WH. 1994. The emergence of intelligence. Scientific American, 271(4) **[112-14]**
- Begley S. 2002. Aping language. In: Angeloni E, editor. Physical Anthropology 02/03. 11th ed. Guildrod, CT: McGraw-Hill/Dushkin. **[112-14]**

Scenario for Human Origins: Exploration of behavioral and phylogenetic attributes of our last common ancestor with the Great Apes.

- Simons EL. 1972. Chapter 10: What made man? Primate Evolution. New York: The Macmillan Company. p. 275-282. **[115-19]**
- Small M. 2002. What's love got to do with it? In: Angloni E, editor. Physical Anthropology 02/03. 11th ed. Guilford, CT: McGraw-Hill/Dushkin. p. 104-107. **[120-23]**

Primate Paleontology

Fossils and Fossilization: The process of fossilization is discussed, as are methods used for dating archaeological remains.

- Lewin R. 1993. Chapter 8: Science of burial. Human Evolution, 3rd ed. Boston: Blackwell Scientific Publications. p. 41-43. **[124-26]**
- Lewin R. 1993. Chapter 5: Dating methods. Human Evolution, 3rd ed. Boston: Blackwell Scientific Publications. p. 25-30. **[127-30]**

Early Primate Evolution: Discussion of Paleocene, Eocene, and Oligocene primates.

- Hartwig, WC. 1999. Primate Evolution. In The Nonhuman Primates, ed by P Dolhinow, A Fuentes. Mountain View, CA: Mayfield Publishing Company. 10-17. **[133-36]**
- Assorted pages related to Oligocene Apes from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[137]**

The Miocene Muddle: A discussion of Miocene apes and the controversies involved in their classification.

- Begun DR. 2003. Planet of the apes. Sci Am 289(2):74-83. **[138-42]**
- Assorted pages related to Miocene Apes from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[143-47]**
- Coleman L, Coleman J. 1999. Cryptozoology A to Z. New York: Fireside. p. 15-22. **[148-53]**

Human Paleontology

Ardipithecus: An analysis of hominoid, hominid, and human differences.

- Lemonick MD, Dorfman A. 2001. One giant step for mankind. Time 158(3):54-61. **[155-58]**
- *Ardipitheus ramidus* exerpt from: Tattersall, I, J Schwartz. 2001. Extinct Humans. Boulder, Colorado: Westview Press. **[154]**

Australopithecines: Discussion of significant Australopithecine finds.

- *Australopithecus anamensis, afarensis, africanus,and the robust australopithecine* excerpts from: Tattersall, I, J Schwartz. 2001. Extinct Humans. Boulder: Westview Press. **[160…74]**
- Assorted pages related to various australopithecine finds from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Illinois: Waveland Press, Inc. **[162…72]**

The Piltdown Hoax: A discussion of the Piltdown hoax & its effect on paleoanthropology.

Early Genus Homo: A survey of *Homo habilis* morphology and cultural remains of the first member of our genus.

- *Homo habilis* excerpts from: Tattersall, I, J Schwartz. 2001. Extinct Humans. Boulder, Colorado: Westview Press. **[176-78]**
- Assorted pages related to *Homo habilis* from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[179]**
- Lewin R. 1993. Chapter 23: Hunter or scavenger? Human Evolution, 3rd ed. Boston: Blackwell Scientific Publications. p.135-140 **[180-85]**
- Zimmer, C. 2003. Great mysteries of human evolution: New discoveries rewrite the book on who we are and where we came from. Discover, September:34-43. **[186-95]**

Homo erectus: A survey of the morphology and cultural context of our early ancestor.

- *Homo erectus* excerpts from: Tattersall, I, J Schwartz. 2001. Extinct Humans. Boulder, Colorado: Westview Press. **[196-97]**
- Assorted pages related to *Homo erectus* from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[198-202]**
- Shipman P. 2003. Scavenger Hunt. In: Angeloni E, editor. Physical Anthropology 03/04. 12th ed. Guilford, CT: McGraw-Hill/Dushkin. p. 127-130. **[203-206]**

Archaic Homo sapiens: A brief survey of the morphology and cultural remains.

- Early Archaic *Homo sapiens* pages from: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[207-9]**

Neandertals: Survey of the morphology and culture of *Homo sapiens neandertalensis* and a discussion of their position as our possible ancestor.

- Pages related to Late Archaic *Homo sapiens*: Larsen, CS, RM Matter, DL Gebo. 1998. Human Origins: The Fossil Record. 3rd Edition. Prospect Heights, Il: Waveland Press, Inc. **[210-17]**
- Zilhao J. 2000. Fate of the Neandertals. Archaeology 53(4):24-31. **[220-23]**
- *Homo neandertalensis* excerpts from: Tattersall, I, J Schwartz. 2001. Extinct Humans. Boulder, Colorado: Westview Press. **[218-19]**

REQUIRED TEXT: Class reader; assorted handouts during semester.

ATTENDANCE: Attendance is advised. There will be several in-class assignments during the semester which you **will not** be allowed to make-up if you miss class. *Due dates are strictly enforced.*

EXAMS: The exams are largely objective in format and each (two hourly and one comprehensive final) counts towards 25% of your grade. **There will be *NO* make-up exams.**

First Exam	October 1st
Second Exam	November 12th
Final Exam	Dec 16th; 8-10 am

ASSIGNMENTS: You will be given a series of assignments (mostly in-class) that will count for the final 25% of your grade. There are **no make-up assignments for missed in-class activities.** In addition, no extra-credit is available to compensate for missed work.

Weekly Article: Each week you will be responsible for an article published in the popular press or scientific literature dealing with some aspect of human evolution covered in class. We will spend the first 10 minutes of each Friday's class discussing your findings. The article must be of substantial detail, as illustrated in class, and must be current (published within the **previous two weeks**). Several journals and magazines - such as *Science*, *Scientific American*, *Discover, The New Scientist, The Sciences, Smithsonian, Nature* and quite often *Time, Newsweek*, etc. - provide excellent coverage of related topics. You must provide the complete reference with each article. In addition, every week approximately 5 people will be asked to discuss their articles - each student must participate at least once during the semester. **Late articles will not be accepted.**

There will be a total of 11 articles due, you can miss one without it affecting this portion of your grade. You will be expected to present at least one article to the class during the term.

In-Class Activities: There will be several in-class activities, from labs to movie questions. You will not be able to make-up missed in-class assignments, as they constitute *class participation* and are designed to facilitate discussion & class interaction. Only official University-sanctioned excuses will be accepted, and must be presented in writing **prior to** the missed activity.

FOR CLARITY: **IN-CLASS ACTIVITIES AND CLASS PARTICIPATION CONSTITUTE 25% OF YOUR FINAL GRADE, THE EQUIVALENT OF ONE EXAM. THEREFORE, MOVIE QUESTIONS, WEEKLY ARTICLES AND LABS CAN NOT BE "MADE UP" WITHOUT A UNIVERSITY RECOGNIZED EXCUSED ABSENCE.**