

Introduction to Human Evolution (Anth-003)
Mondays and Wednesdays, 11:00 am to 12:00 pm
Spring 2007

INSTRUCTOR

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TEACHING ASSISTANTS

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COURSE SUMMARY

The central theme of this class is the scientific study of human evolution. This is an interdisciplinary endeavor that combines many kinds of scientific evidence - from studies of primate behavior and ecology, evolutionary biology, genetics, comparative anatomy, geology, paleontology, and archaeology - that together produce a coherent picture of the emergence, development, and diversification of our species, *Homo sapiens*.

The class is divided into three interrelated sections:

Part I of the class covers the fundamental principles and processes of evolution. We will start with an overview of the development of evolutionary theory and then delve into some of the basics of genetics and heredity - what DNA is, what information it encodes and how, and how that information is passed from generation to generation. We will then talk about variation - an important prerequisite for evolution - and examine the adaptive significance of some kinds of human morphological, physiological, and genetic variation. Finally, we will overview the principles by which evolutionary biologists infer the phylogenetic relationships among sets of taxa.

In Part II, we examine the place of humans in nature, focusing specifically on our heritage as members of the primate order. We will begin by looking at the behavioral and ecological diversity seen among living primates and consider what studies of nonhuman primates can reveal about our own evolutionary past. In doing this, we will draw on modern evolutionary theory - particularly on the concepts of natural selection and adaptation - and explore how evolutionary thinking informs our understanding of morphological, behavioral, and cultural variation in both humans and other animals.

Finally, in Part III, we will examine the hard evidence of human evolution - the fossil and material culture record of human history from our earliest primate ancestors to the emergence of

modern *Homo sapiens*. Here, we will also discuss such issues as how paleontologists date and determine the ecological contexts of the materials they recover, and we examine the contribution that molecular anthropologists are increasingly making to the study of human evolution. We will finish the course by exploring some of the controversies surrounding modern interpretations of the fossil and molecular evidence and, if we have time, briefly consider the origins of putatively unique human adaptations such as language, culture, and emotions.

Throughout the course, we will focus not only on what we know about human origins and evolution, but also on how we know it. You will have the opportunity to not only learn about the various methods and approaches used by scientists studying human evolution, but to also apply some of these approaches yourselves in hands-on exercises during recitations. Some of these exercises include collecting and analyzing a variety of behavioral, morphological, and genetic data on both humans and nonhuman primates and working with the Department of Anthropology's extensive collection of fossil casts.

Attendance to lectures is essential for doing well in this course. All information discussed in class (e.g. questions from students, debate following a lecture) can be included in any of the exams.

- A Final Note -

One important thing to keep in mind throughout this course is that the study of human origins and evolution is itself an evolving discipline. For example, new fossil discoveries are made every year that force paleontologists to rethink our species' evolutionary tree. Similarly, recently developed molecular techniques now allow geneticists to better investigate the evolutionary relationships among our primate relatives and to address contentious questions about our species' recent evolutionary past, such as that concerning the relationship between Neandertal and anatomically modern *Homo sapiens*. In this course, my goal is to convey to you some of the excitement that scientists who study human origins and evolution feel for their subject and some of the breadth of their approaches. I hope you will be encouraged to delve deeper into the topics you find interesting on your own. Throughout the course, the teaching assistants and I look forward to hearing your thoughts and suggestions on the course format and on the materials we cover.

READINGS

There are two required books and there will be some additional readings mainly to spark your interest in the study of human evolution.

Author: Jurmain; **Title:** Introduction to Physical Anthropology; **Publisher:** Thomson Wadsworth; **Edition:** Tenth; **ISBN:** 0-534-63902x

This is a basic textbook that provides a nice overview of many of the topics we will be discussing in the course. In the course syllabus, I have indicated the chapters of the textbook that are relevant to each lecture.

Author: Johanson; **Title:** Lucy. The beginnings of human; **Edition:** 1981

This is a very interesting book that you need to finish reading before we begin Part III of the class.

Additionally, I will also be assigning various readings from sources other than the textbook over the course of the semester. These will be posted as PDF files on the course website linked from the syllabus so that you can download them for printing and reading.

GRADING

Exams

There will be two midterms and one final exam, as noted in the schedule below. The midterms are worth 25% of your final grade each and the final 30% of your grade. Both exams will consist of multiple choice and short answer or short essay questions and will cover material from BOTH lectures and recitations. The final exam will be CUMULATIVE, covering material from the entire course, but with an emphasis on material presented during Part III of the course. Makeup exams will only be given in the case of EXCEPTIONAL circumstances and only if appropriate documentation is presented (e.g. a doctor letter certifying you were sick).

Recitations

The recitations each week are designed to give you the opportunity to delve into some of the concepts, techniques, and materials that we discuss in the lecture portion of the course in more detail. Recitations are not for repeating material covered in lectures. Recitations are NOT a review of lectures. During recitations you will ponder issues, discuss ideas with your peers building on the material presented in lectures.

Attending recitations is MANDATORY, attendance will be taken, and you are expected to come to them fully prepared, having read through and familiarized yourself with all of the information and exercises to be covered. Attendance implies being in recitation for at least 40 of the 50 minutes. Those arriving later than 10 minutes will not be considered as having attended that particular recitation.

Your participation in recitation, along with your performance on the exercises will determine half of your recitation grade (i.e. 10% of final grade), whereas your attendance will count towards the other half (10% of final grade).

Final Grades

Your final grade in this course will be based on the sum of your scores on all assignments. I will calculate grades on a straight percentage basis (A = 90% to 100%, B = 80 to 90%, and so on).

Assignment	Date Due	% of Grade
First Midterm Exam		25
Second Midterm Exam		25
Recitation attendance		10
Recitation participation and exercises		10
Final Exam		30
Total		100

CLASS SCHEDULE

Lecture	TOPIC	Textbook		Date	Weekday
1	Introduction to Human Evolution	1, 2	Part I	8-Jan	Monday
2	History of Life and Human's Place on Earth	5	Part I	10-Jan	Wednesday
	NO CLASS, Martin Luther King Jr. Day			15-Jan	Monday
3	The Biological Bases of Life	3	Part I	17-Jan	Wednesday
4	Heredity and Natural Selection	4	Part I	22-Jan	Monday
5	The Modern Synthesis and Human Genetics	4	Part I	24-Jan	Wednesday
6	Macroevolution	5	Part I	29-Jan	Monday
	FIRST MIDTERM			31-Jan	Wednesday
7	A Taxonomic Survey of Living Primates	6	Part II	5-Feb	Monday
8	An Overview of the Primates	6	Part II	7-Feb	Wednesday
9	Primate Socioecology	7	Part II	12-Feb	Monday
10	Primate Behavior	7, 8	Part II	14-Feb	Wednesday
11	Diversity of Primate Social Systems	7, 8	Part II	19-Feb	Monday
12	Methods in Paleoanthropology	9	Part II	21-Feb	Wednesday
13	Primate Evolution	10	Part II	26-Feb	Monday
	SECOND MIDTERM			28-Feb	Wednesday
	SPRING BREAK			5-Mar	Monday
	SPRING BREAK			7-Mar	Wednesday
14	Australopithecines	10	Part III	12-Mar	Monday
15	Australopithecines	10	Part III	14-Mar	Wednesday
16	Origins of Homo and Social System of Early Hominins	10	Part III	19-Mar	Monday
17	Evolution of genus Homo	9, 11	Part III	21-Mar	Wednesday
18	Evolution of genus Homo	11	Part III	26-Mar	Monday
19	AAPA MEETING		Part III	28-Mar	Wednesday
20	Neandertals	12	Part III	2-Apr	Monday
21	Anatomically Modern Humans	13	Part III	4-Apr	Wednesday
22	Origin and Spread of Modern Humans	13	Part III	9-Apr	Monday
23	Origin of Language and Symbolic Culture	13	Part III	11-Apr	Wednesday
24	Genetic Variation in Human Populations	14	Part III	16-Apr	Monday
25	Invited Speakers: Professors Claudia Vallengia, Tad Schurr and Janet Monge (Anthropology)		Part III	18-Apr	Wednesday
	FINAL EXAM, 9-11HS			26-Apr	Thursday