ANTH 12. Human Evolution and Prehistory (NS) Dr. John B. Gatewood
Fall, 2016 Williams Hall, Room 283
758-3814 / JBG1

OVERVIEW

This is an introduction to physical anthropology. The main objective is to develop a theoretical basis from which you can interpret articles, news reports, museum collections, and films concerning human evolution and the lifeways of early humans. Within your lifetime, if not in the next decade, many of the details concerning primate behavior, the fossil record, and prehistoric cultures will change as excavations and research continue, but the interpretative frameworks you learn now should remain valid much longer.

The course begins with basic concepts in the synthetic theory of evolution. This is the dominant framework in biological anthropology for understanding humankind's relationships with other life forms and with diverse environments.

The second part of the course focuses on humankind's closest living relatives – the primates. We shall be concerned with the taxonomic relations among the living primates, their geographical distributions, their morphologies, and their distinctive adaptations including especially their social behavior.

The third and largest segment is a chronological overview of human evolution and cultural developments. It begins with a sketch of the primate fossil record, beginning about 65 million years ago and concentrating on that line leading to ourselves. Special attention will be given to the australopiths (the earliest known hominids) and the divergence of genus Homo from them between 5 and 3 million years ago. We then follow the human pedigree to the period of human dispersal around the world and the increasing reliance on culture as our primary means of adapting to the environment. By at least 40,000 years ago, our ancestors completed the transition and had become a fully cultural species.

The final segment deals with physical diversity among contemporary humans. For example, what is the meaning and significance of "race"?

MATERIALS

Required:

Campbell, Bernard G.; Loy, James D.; and Cruz-Uribe, Kathryn (2006) *Humankind Emerging, 9th Edition*. Boston: Pearson Education, Inc. [ISBN: 9780205423804]

Kurtén, Björn (1995) *Dance of the Tiger: A Novel of the Ice Age*. Berkeley: University of California Press. First Swedish edition published in 1978. [ISBN: 9780520202771]

Auel, Jean M. (1984) *The Clan of the Cave Bear*. New York: Random House. (First published in 1980.) [ISBN: 9780553250428]

Hand calculator that can store numbers in memory and extract square roots.

REQUIREMENTS

Your grade in the course will be determined by your performance on four non-cumulative hour exams and one short paper assignment. The exams correspond roughly to the main segments of the course and are combinations of multiple choice and essays. The first exam's format is slightly different because it includes several genetics problems. All exam dates will be announced in advance (see course schedule, below), with the fourth one being given during the first sixty minutes of the time-slot assigned us in the "Final Exam" period. Detailed instructions for the paper assignment will be distributed separately during the semester. Lastly, we will have several brief, in-class "quizzes" on randomly chosen days during the semester. Those who are present to take those quizzes will earn some extra credit points.

EXAM POLICY. You are responsible for taking all four exams during their regularly scheduled times. Any exception to this policy must be **approved by me, John Gatewood, **IN ADVANCE**** of the exam. Failure to take an exam as scheduled (or as re-scheduled by me beforehand) will result in an automatic "F" in the course, irrespective of what grades you may have earned on other requirements. If some emergency should occur that will prohibit you from taking an exam, be sure to speak with me directly, either in person or by phone, but do not just leave a message or send an e-mail and think that is sufficient.

ATTENDANCE POLICY. Attendance is required, and I think you will find that coming to class regularly is most helpful in understanding course materials. Please **turn off cell phones and any other electronic devices** when in the classroom. Take notes the old-fashioned way – with pen and paper.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES. If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, Williams Hall, Room 301 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

COMMUNITY OF LEARNING. Lehigh University endorses The Principles of Our Equitable Community (http://www4.lehigh.edu/diversity/principles). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

CLASS PERIODS BY CALENDAR DAYS

Monday	Tuesday	Wednesday	Thursday	Friday
Aug 29	—	Aug 31	—	Sept 2
Sept 5	—	Sept 7	—	Sept 9
Sept 12	—	Sept 14	—	Sept 16
Sept 19	—	Sept 21	—	Sept 23
Sept 26	—	Sept 28	—	Sept 30
Oct 3	—	Oct 5	—	(* Oct 7 *)
Oct 10	—	Oct 12	—	Oct 14
—	—	Oct 19	—	Oct 21
Oct 24	—	Oct 26	—	Oct 28
Oct 31	—	Nov 2	—	Nov 4
Nov 7	—	Nov 9	—	Nov 11
Nov 14	—	Nov 16	—	Nov 18
Nov 21	—	—	—	—
Nov 28	—	Nov 30	—	Dec 2
Dec 5	—	Dec 7	—	Dec 9

* Note: There will be no class on October 7; Prof. Gatewood will be out-of-town.

SCHEDULE OF TOPICS AND READINGS

PART I: EVOLUTION

1. Aug 29 (M) — Course Outline and Requirements
The Discipline of Anthropology

2. Aug 31 (W) — Historical Perspective on the Concept of Evolution
Uniformitarianism vs. Catastrophism
Establishing the Antiquity of the Earth and Humankind
The Contributions of Darwin and Mendel
Readings: Campbell, et al., xv-xx and pp. 1-23

3. Sept 2 (F) — Principles of Heredity
Sexual Reproduction
Sources of Genetic Variability
Genotype and Phenotype
Readings: Campbell, et al., pp. 24-36

4. Sept 5 (M) — Principles of Heredity
Monogenic (Single-Gene) Traits
Polygenic (Multiple-Gene) Traits
Readings: Campbell, et al., pp. 17-19

5. Sept 7 (W) — Genetic Bases of Evolution
Populations: The Units of Evolution
Gene Frequencies
Hardy-Weinberg Law of Allelic Stability
Readings: Campbell, et al., pp. 36-49

6. Sept 9 (F) — Genetic Bases of Evolution
Darwinian Evolution: Selection
Practice Problems: Gene Frequency and Selection [bring calculator]
Readings: Campbell, et al., pp. 36-49

7. Sept 12 (M) — Genetic Bases of Evolution
Non-Darwinian Evolution: Mutation, Gene Flow, and Genetic Drift
Demonstration: Computer Simulation of Genetic Drift
Readings: Campbell, et al., pp. 36-49

8. Sept 14 (W) — Major Patterns in Evolution
Speciation and Extinction
Niche Overlap and the Idea of Competition among Species
Adaptive Radiations and Mass Extinctions
Punctuated Equilibria v. Phyletic Gradualism
Readings: Campbell, et al., pp. 49-57

9. Sept 16 (F) — STUDENT PRACTICE: all five kinds of genetics problems.
[bring homework assignment and calculator to class]

10. Sept 19 (M) Major Patterns in Evolution
Analogies (Convergence and Parallelism) vs. Homologies
Constructing Phyletic Trees: Cladistics vs. Numerical Taxonomy
Phylogeny and Biological Classification
Readings: Campbell, et al., pp. 58-61

11. Sept 21 (W) ► ► ► **First Hour Exam** (bring calculator) ◄ ◄ ◄

PART II: THE ORIGIN OF HUMANKIND

12. Sept 23 (F) The Taxonomic Position of Homo sapiens
The Living Primates
Characteristics and Distributions of Strepsirhines
Readings: Campbell, et al., pp. 58-71

13. Sept 26 (M) The Living Primates
Characteristics and Distributions of Haplorhines
Human Characteristics
Readings: Campbell, et al., pp. 71-89

14. Sept 28 (W) Primate Adaptive Systems
Social Behavior and Organization
Mammalian Reproductive Strategies: Female vs. Male
Mating Systems among Nonhuman Living Primates
Readings: Campbell, et al., pp. 90-110

15. Sept 30 (F) Primate Adaptive Systems
Territory and Ecology
Feeding and Dentition
Locomotion
Readings: Campbell, et al., pp. 90-110

16. Oct 3 (M) Primate Adaptive Systems
Examples of Nonhuman Primate "Culture"
Distinctive Features of Human Social Behavior
Readings: Campbell, et al., pp. 110-129

17. Oct 5 (W) Fossil Record
Dating Methods
Time Scales
Readings: Campbell, et al., pp. 130-134

18. Oct 7 (F) - - - [NO CLASS] - - -

19. Oct 10 (M) Fossil Record
Early Primates
Readings: Campbell, et al., pp. 134-142

20. Oct 12 (W) Fossil Record
Early Anthropoids
Readings: Campbell, et al., pp. 134-142

21. Oct 14 (F) Fossil Record
Early Hominoids
Apes to Hominins: Anatomical Criteria
Readings: Campbell, et al., pp. 142-159

22. Oct 19 (W) ► ► ► **Second Hour Exam** ◄ ◄ ◄

23. Oct 21 (F) Australopiths in South Africa, East Africa, and the Sahul
History of Discoveries
General Characteristics
More Recent Finds and New Interpretations
Readings: Campbell, et al., pp. 160-182 & 183-220

24. Oct 24 (M) The Advent of *Homo*
History of Discoveries
Early Hominine Lifestyles
Readings: Campbell, et al., pp. 221-238

25. Oct 26 (W) The Evolution of Hominin Behavior
Theories of Bipedalism
Early Technology
Brain Expansion
Readings: Campbell, et al., pp. 239-261

26. Oct 28 (F) Proto-Human Social Organization and the Divergence between Australopiths and Genus *Homo*
Readings: Campbell, et al., pp. 239-261

PART III: THE EVOLUTION OF HUMANKIND

27. Oct 31 (M) *Homo erectus*
History of Discoveries
General Characteristics
Readings: Campbell, et al., pp. 262-287

28. Nov 2 (W) *Homo erectus*
General Characteristics (continued)
Readings: Campbell, et al., pp. 262-287

29. Nov 4 (F) *Homo erectus*
Environment and Technology
Scavenging vs. Hunting
New Social Developments
Intraspecies Aggression
Readings: Campbell, et al., pp. 288-310

30. Nov 7 (M) The Evolution of Language and the Brain (continued)
Readings: Campbell, et al., pp. 331-356

31. Nov 9 (W) The Evolution of Language and the Brain (continued)
Readings: Campbell, et al., pp. 331-356

32. Nov 11 (F) ► ► ► **Third Hour Exam** ◄ ◄ ◄

PART IV: MODERN HUMANITY

33. Nov 14 (M) *Homo heidelbergensis*
General Characteristics
Evidence for Hunting
Culture and Society
Readings: Campbell, et al., pp. 311-330
(START reading Kurtén's and Auel's novels)

34. Nov 16 (W) The Neandertals
Anatomical Characteristics
Distribution
Readings: Campbell, et al., pp. 357-388
(reading Kurtén's and Auel's novels)

35. Nov 18 (F) The Neandertals
Cultural Developments
Readings: Campbell, et al., pp. 357-388
(reading Kurtén's and Auel's novels)

36. Nov 21 (M) The Evolution of Modern Humans
Anatomically Modern Homo Sapiens
Lithic Technologies and Sequences
Regional-Continuity vs. Rapid-Replacement Models
Readings: Campbell, et al., pp. 389-416
(reading Kurtén's and Auel's novels)

37. Nov 28 (M) The Evolution of Modern Humans
Molecular Genetics Evidence
Settlement of the Americas and Australia/New Guinea
Upper Paleolithic Technology, Magic, and Art
Readings: Campbell, et al., pp. 417-437
(FINISH reading Kurtén's and Auel's novels)

38. Nov 30 (W) The Human Condition
Domestication of Plants and Animals
Cites, States, and Civilizations
Readings: Campbell, et al., pp. 438-446

39. Dec 2 (F) Contemporary Biological Variation
Methods for Studying Traits
Some Simple Physical Variations
Clinal Distributions
Readings: Campbell, et al., pp. 446-454

40. Dec 5 (M) The Concept and Meaning of Race
Contrasting Views of Race
Peculiar Logic of Forensic Anthropologists
Readings: Campbell, et al., pp. 454-460

41. Dec 7 (W) The Concept and Meaning of Race
Biological Race vs. Social Race vs. Ethnic Identity
Race and IQ
Readings: Campbell, et al., pp. 460-466

42. Dec 9 (F) **• • • Paper Assignment due • • •**
Course Summary & Student Evaluations

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REMINDER ... The fourth hour exam (which is non-cumulative) will be during the Final Exam period. The time, place, and date will be assigned by the Registrar toward the end of the semester.