

# ANTH-1210: HUMAN EVOLUTION

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## Cuyahoga Community College

**Viewing: ANTH-1210 : Human Evolution**

**Board of Trustees:**

January 2021

**Academic Term:**

Fall 2021

**Subject Code**

ANTH - Anthropology

**Course Number:**

1210

**Title:**

Human Evolution

**Catalog Description:**

Survey of the human evolutionary past. Biological Anthropology course that focuses upon evolutionary theory and principles, archaeology, living primates, the fossil record, human ancestors, and modern human variation.

**Credit Hour(s):**

4

**Lecture Hour(s):**

3

**Lab Hour(s):**

3

## Requisites

**Prerequisite and Corequisite**

ENG-0995 Applied College Literacies, or appropriate score on English Placement Test; or departmental approval.

Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

## Outcomes

**Course Outcome(s):**

Apply the basic concepts of evolutionary theory

**Objective(s):**

1. Identify and describe the four forces of evolution.
2. Apply definitions of evolution and natural selection.
3. Discuss ideas of scientific method, including hypothesis formation, hypothesis testing, scientific theory.
4. Evaluate new and changing evolutionary hypotheses for theoretical coherence.
5. Apply evolutionary hypotheses and models, such as honest advertisement, Red Queen effect, Trivers-Willard Hypothesis, etc., to relevant biological examples.

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**Course Outcome(s):**

Utilize basic genetic concepts

**Objective(s):**

1. Use the basic principles of genetics.
2. Integrate modern understandings of genetics, inheritance, and variation into evolutionary processes.

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**Course Outcome(s):**

Use comparative methods to analyze and assess fossil hominins' anatomy and behavior

**Objective(s):**

1. Learn the major groups of fossil hominins.
2. Assess hypotheses for adaptations relevant for hominins.

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**Course Outcome(s):**

Use social, biological, and physical characteristics of organisms, especially living primates, as analogues to comprehend and evaluate hypotheses about organisms in the present and the past.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Examine the impact of behaviors, including cultural behaviors, in the human evolutionary past.
2. Apply phylogenetic principles to living and fossil organisms.
3. Recognize the major groups of living primates (including humans).
4. Demonstrate the evolutionary relationships between living and extinct primate species.

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**Course Outcome(s):**

Interpret how archaeological and geological evidence affects scientific understandings and interpretations of human evolution

**Objective(s):**

1. Identify archaeological and geological principles that impact environmental and climactic reconstructions of the past.
2. Review the relevant absolute and relative dating techniques for varying archaeological and geological contexts.

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**Course Outcome(s):**

Examine modern human variation in connection with current topics, issues, and problems experienced by humans today, such as race and racism, infectious diseases, and others.

**Objective(s):**

1. Differentiate between microevolution and macroevolution.
2. Critically evaluate biological versus cultural concepts of race.
3. Apply evolutionary theory to understandings in modern medicine, such as those affecting understandings of infectious disease, symbiotic bacteria within/upon human bodies, antibacterial resistance, and others.

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**Methods of Evaluation:**

- A. Examinations
- B. Quizzes
- C. Worksheets
- D. Lab work/reports

**Course Content Outline:**

1. Evolutionary theory with a focus upon natural selection
  - a. Four forces of evolution
  - b. Definitions of evolution and natural selection
  - c. Scientific method, including hypothesis formation, hypothesis testing, scientific theory
  - d. Evolutionary hypotheses and models, such as honest advertisement, Red Queen effect, Trivers-Willard Hypothesis, etc.
  - e. Integrate new hypotheses in the field for students to evaluate (this changes from year to year)
2. Genetics
  - a. Basic principles of genetics
    - i. DNA structure and function
    - ii. Protein synthesis and protein function
    - iii. Meiosis and mitosis
    - iv. Sources of genetic variation
  - b. Impacts of inheritance, and variation in evolutionary processes
3. Living primates (including humans) anatomy, biology, and behavior

- a. Major groups of living primates
    - i. Apes (including humans)
    - ii. Old World Monkeys
    - iii. New World Monkeys
    - iv. Tarsiers
    - v. Prosimians
  - b. Evolutionary relationships between living species (and fossil primates, if desired)
  - c. Behavioral reconstructions in the human evolutionary past.
  - d. Phylogenetics of living organisms
4. Fossil hominins
- a. Major groups of fossil hominins, which may include (these categories change as new discoveries and findings are made)
    - i. Pre-Australopiths
    - ii. Australopiths
    - iii. early *Homo*
    - iv. *Homo ergaster/erectus*
    - v. *H. heidelbergensis*
    - vi. Neandertals and Denisovans
    - vii. *H. floresiensis* and other recent, small hominins ("hobbits")
    - viii. Fully modern humans
  - b. Anatomical and behavioral characteristics of major groups of hominins
  - c. Their geographic ranges and temporal designations
    - i. Hypotheses for adaptations relevant for hominins
    - ii. Hypotheses about bipedalism
    - iii. Hypotheses about hominins' brain size
    - iv. Hypotheses about behavioral characteristics in the genus *Homo*, such as extensive hunting, cooperation and sharing, pair bonding
5. Archaeological and Geological principles and practices
- a. Environmental and climactic reconstructions of the past
    - i. taphonomy
    - ii. proxy indicators
    - iii. tectonics
  - b. Absolute and relative dating techniques, such as
    - i. stratigraphy
    - ii. cross-dating/biostratigraphy
    - iii. potassium-argon dating (K-Ar)
    - iv. radiocarbon dating (C-14)
6. Modern Human Variation
- a. Microevolution vs. macroevolution
  - b. Biological versus cultural concepts of race
  - c. Evolutionary understandings in modern medicine, such as those affecting understandings of infectious disease, symbiotic bacteria within/upon human bodies

**Resources**

Clark Spencer Larsen. (2019) *Our Origins*, W. W. Norton & Co.

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"Science"

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"Nature"

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"Journal of Human Evolution"

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"American Journal of Physical Anthropology"

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*PLOS One*,

### Resources Other

1. Skeletal casts of modern humans, living primates, fossil hominins and primates, and any other relevant animals.
2. Documentaries
  - a. *The New Chimpanzees*. National Geographic
  - b. *Evolution* series, PBS
  - c. *Becoming Human* documentary series, PBS
  - d. *Race: The Power of an Illusion*, PBS/California Newsreel
3. Websites
  - a. Becoming Human website: <http://www.becominghuman.org/>
  - b. University of Minnesota virtual renditions of various fossil and living primates: <http://anthropologylabs.umn.edu/digital/library.html>
  - c. Sketchfab--Virtual renditions of many things--search for genus and species of desired specimens: <https://sketchfab.com/>
  - d. African fossils virtual renditions: <https://africanfossils.org>
  - e. Website to help students master basic genetic concepts: <http://learn.genetics.utah.edu/>
  - f. PBS Eons--multiple videos relevant to geology, paleontology, and evolution: <https://www.pbs.org/show/eons>
  - g. Phys.org: <https://phys.org/>
  - h. February 2009 TED talk by Nina Jablonski: [https://www.ted.com/talks/nina\\_jablonski\\_skin\\_color\\_is\\_an\\_illusion#t-90191](https://www.ted.com/talks/nina_jablonski_skin_color_is_an_illusion#t-90191)
  - i. July 2011 TED talk by Svante Pääbo: [http://www.ted.com/talks/svante\\_paeaebo\\_dna\\_clues\\_to\\_our\\_inner\\_neanderthal.html](http://www.ted.com/talks/svante_paeaebo_dna_clues_to_our_inner_neanderthal.html)

### Instructional Services

#### OAN Number:

Ohio Transfer 36 TMNS and Transfer Assurance Guide OSS002

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