

# ANTH 0001 - BIOLOGICAL ANTHROPOLOGY

## Catalog Description

Hours: 54 lecture

Description: Broad introduction to the science of biological anthropology. Topics include: the field of anthropology, the scientific method, evolutionary theory, genetics and inheritance, human variation, biology and behavior of living primates, and the fossil evidence of human evolution. (C-ID ANTH 110) (CSU, UC)

## Course Student Learning Outcomes

- CSLO #1: Compare and contrast cultural, archaeology, linguistic and biological anthropology.
- CSLO #2: Explain and discuss the scientific process and scientific theory of evolution.
- CSLO #3: Assess the role of DNA in living things, apply methods to analyze the patterns of inheritance, and discuss genetic variation.
- CSLO #4: Apply evolutionary principles and the biocultural synthesis to explain global human variation.
- CSLO #5: Determine the evolutionary, anatomical and behavioral aspects that define the order primates and taxonomically categorize them.
- CSLO #6: Evaluate the emergence of hominins and developments in biology, brain size, cultural adaptations, and migrations in the early, middle, and late hominin species.

## Effective Term

Fall 2020

## Course Type

Credit - Degree-applicable

## Contact Hours

54

## Outside of Class Hours

108

## Total Student Learning Hours

162

## Course Objectives

1. Compare and contrast cultural, archaeology, linguistic and physical anthropology.
2. Describe the scientific process as a methodology for understanding the natural world.
3. Explain and discuss the scientific theory of evolution and identify the main contributors to the development of the theory.
4. Using the fundamental characteristics of DNA, evaluate the process of protein synthesis and the production of genetic variability.
5. Compare and contrast monogenic/Mendelian modes of inheritance with polygenic modes.

6. Document the genetic, hormonal, environmental and cultural influences on human growth and development through time and space; apply the biocultural synthesis to interpret and explain human growth and development.
7. Explain and differentiate the anthropological concepts of race, ancestry and clinal distribution and apply to current scientific evidence.
8. Determine the evolutionary and anatomical trends that define the order primates and taxonomically categorize them.
9. Investigate social behaviors in primates and explain the role they serve in specific primate groups.
10. Apply discussions of generalized, specialized, derived and ancestral traits to cladistics and evolutionary systematics.
11. Evaluate the emergence of early hominids and integrate concepts of biocultural and mosaic evolution to distinguish change through time and, explain methods used to establish dates and evaluate the fossil record.
12. Compare and contrast the biological and behavioral components of hominids existing from greater than 5mya to early Homo, (comprising mostly the Australopithecines but including Sahelanthropus, Orrorin and Ardipithecus) including geography, population movements and the possible criteria allowing for the emergence of bipedalism.
13. Evaluate developments in biology, brain size, cultural adaptations, and migrations from Homo habilis to Homo sapiens sapiens inferring probable relationships and interactions that may have occurred within and between species.
14. Use genetic and archaeological evidence to investigate Modern Human migrations within the Old World, dispersal into the New World, and interactions with archaic hominid groups.

## General Education Information

- Approved College Associate Degree GE Applicability
  - AA/AS - Life Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
  - CSUGE - B2 Life Science
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)
  - IGETC - 5B Biological Science

## Articulation Information

- CSU Transferable
- UC Transferable

## Methods of Evaluation

- Classroom Discussions
  - Example: The students will each choose one of the organisms from the list generated in groups by a discussion on natural selection. Take home essay questions will be assigned. For example: Given the definition of the process of natural selection, in a brief paper, evaluate how one (or more) specific features of the organism you have chosen demonstrates the results of natural selection and propose how those traits have become the norm for that organism over time. Essay will be graded based upon a rubric developed by the instructor and shared with the class. Rubric Grading.
- Essay Examinations
  - Example: We have discussed the importance of culture and its influence on biology (the biocultural synthesis). (A) Please explain how your culture (negatively or positively) influence biology—be specific about the behavior or practice or value and how biology

is impacted. (B) Does this practice have any effect on future generations? (if yes, why? If no, why not?)

- Objective Examinations
  - Example: Students will be assessed using short answer questions for summative evaluation. For example: Based on morphological, genetic and cultural evidence, postulate the most likely behavioral scenarios when Neanderthals and Modern Humans came into contact. Please use specific examples from the reading and classroom discussion to support your ideas (at least four examples).
- Reports
  - Example: The students will each choose one of the organisms from the list generated in groups by a discussion on natural selection. Take home essay questions will be assigned. For example: Given the definition of the process of natural selection, in a brief paper, evaluate how one (or more) specific features of the organism you have chosen demonstrates the results of natural selection and propose how those traits have become the norm for that organism over time. Essay will be graded based upon a rubric developed by the instructor and shared with the class. Rubric Grading.

## Repeatable

No

## Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. During a class session focusing on hominin remains, the instructor will use images and lecture to provide morphological, genetic and cultural features of two hominin species such as *Homo sapiens sapiens* and *Homo sapiens neanderthalensis*. The instructor will then divide students into small collaborative groups during which they will evaluate the characteristics of each hominin group. Groups will propose the most likely scenario for the relationships and interactions between the two hominin groups and the instructor will bring groups back together to compare and contrast the conclusions established by each group.
2. The instructor will guide a lecture/discussion based on assigned reading of the influence of natural selection upon evolution. Together with the instructor, students will formulate a list of living organisms and their respective environments such as howler monkeys in canopies of the rainforest or polar bears in the arctic. The instructor will ask students to work in pairs to deduce the biological traits that would be most beneficial for survival and collectively surmise the evolutionary conditions under which such traits arose. The instructor will ask students to share their examples with the class, recording the information on the board as each pair presents.

Distance Learning

1. During a week when an introduction to the theory of evolution is the focus, several learning avenues are provided. (1) Textbook pages and two contemporary articles will be assigned to read (2a) A written lecture provided and/or (2b) A full video lecture with the instructor presenting the material (3) A voicethread where students have the ability to respond to images and to one another's comments (4) a set of focused, but exciting discussion topics. After reading and

choosing their mode of instruction, the students will engage in the conversation aspect with fellow students and the instructor. For example, a discussion topic asking them to draw on information from both the article and their own experiences/knowledge base makes the topic more relevant: "This article (Evolution in Action from Annual Edition) is important for humans of ALL ages to read. It asks us to THINK about the world around us and our place in it... we have mastered it so totally that we are often totally removed from it. (a) What are some of the most striking examples of EVOLUTION in action (occurring right now) you read in the article? (b) What are some other REAL (not just things you have heard or urban legends--or vague references to global warming...) ways that humans affect how the earth's creatures CHANGE around us (intentionally or unintentionally)?"

2. During a class session focusing on natural selection, the students will complete a hands-on activity in which they must use the tools given to them to collect resources (chopsticks, spoons, knives, forks). Students will learn to develop multiple techniques and strategies for harvesting the resources through several generations. Students will then discuss the activity in terms of natural selection and evolution.

## Typical Out of Class Assignments Reading Assignments

1. Students will read the assigned pages from the textbook on evolutionary theory and be prepared to discuss the topics during class meetings.
2. Students will read assigned articles from the reader or other designated source on human variation and adaptation and answer relevant questions using the information prior to class meetings.

## Writing, Problem Solving or Performance

1. Students will compare and contrast the biology and behavior of living primates.
2. Short written assignments evaluating humans in an adaptive context (i.e., skin pigmentation, height, stature).

## Other (Term projects, research papers, portfolios, etc.)

Possible topics for research essays include: Investigate the evidence for neanderthal and modern human interbreeding. Explore the evidence for cannibalism among archaic groups. Detail the evidence for modern human origins.

## Required Materials

- Introduction to Physical Anthropology
  - Author: Jurmain, Kilgore, Trevathan and Ciochon
  - Publisher: Wadsworth, Cengage Learning
  - Publication Date: 2017
  - Text Edition: 15th
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Our Origins: Discovering Physical Anthropology
  - Author: Clark Spencer Larsen
  - Publisher: W.W. Norton Publishing
  - Publication Date: 2017
  - Text Edition: 4th
  - Classic Textbook?: No

- OER Link:
- OER:
- Essentials of Physical Anthropology: Discovering Our Origins
  - Author: Clark Spencer Larsen
  - Publisher: W.W. Norton Publishing
  - Publication Date: 2016
  - Text Edition: 3rd
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Biological Anthropology
  - Author: Stanford, Allen, and Anton
  - Publisher: Pearson Higher Education
  - Publication Date: 2016
  - Text Edition: 4th
  - Classic Textbook?: No
  - OER Link:
  - OER:

**Other materials and-or supplies required of students that contribute to the cost of the course.**