COURSE OUTLINE OF RECORD

Number: ANTH G185  TITLE: Physical Anthropology

ORIGINATOR: Leah Walden-Hurtgen  EFF TERM: Fall 2015
FORMERLY KNOWN AS: Formerly ANTH G120  DATE OF
Degree Audit  OUTLINE/REVIEW: 03-27-2015
CROSS LISTED COURSE:

SEMESTER UNITS: 3.0
HRS LEC: 54.0  HRS LAB: 0.0  HRS OTHER: 0.0
CONTACT HRS TOTAL: 54.0
STUDY NON-CONTACT HRS RECOMMENDED: 108.0

CATALOG DESCRIPTION:
This is an introductory course in the concepts, methods of inquiry and theory of biological evolution and their application to the human species. Specific focus is on molecular, Mendelian and population genetics, mechanisms of evolution of homo sapiens and non-human primates, paleoanthropology, biocultural adaptations, human variation, and current bioethical issues. The philosophy of science and the scientific method serve as foundations to the course.

JUSTIFICATION FOR COURSE:

PREREQUISITES:
COREQUISITES:
ADVISORIES:

ASSIGNED DISCIPLINES:
  Anthropology

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00
CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]
GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]
OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]
TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[X] Not Transferable[ ]
BASIC SKILLS STATUS: Yes [ ] No [X] LEVELS BELOW TRANSFER: Not Applicable
CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable
NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E
REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:
REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]

Anthropology

Anthropology(Associate in Arts for Transfer)
Associate in Arts: Liberal Arts: Emphasis in Social Sciences(Associate in Arts)
Liberal Arts: Emphasis in Science(Associate in Arts)
Psychology(Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:
IGETC Area 5: Physical and Biological Sciences
  5B: Biological Science  x
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
   B2 - Life Science
GWC AA - Area B Physical Universe and Its Life Forms
   Group 1 Physical Universe

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. Explain the process of biological evolution, including key concepts and biomolecular mechanisms, and describe how human evolution is uniquely affected by culture through the process of biocultural evolution.
2. Identify key behavioral aspects of non-human primates, and compare and contrast these to human biocultural evolutionary pathways and modern human behavior.
3. Describe the key primate and hominin fossil species, including pertinent behaviors and cultural/technological advances, and identify their defining morphological characteristics.
4. Compare and contrast historical and modern views of human variation, and provide contemporary examples of human adaptations.
5. Explain some of the key impacts that modern cultures and technologies are having on evolved human biology and other life-forms.

COURSE OBJECTIVES:

1. Describe the scientific method, and explain the philosophical constraints and practical applications of scientific processes to the field of physical anthropology.
2. Explain the fundamental processes of biological evolution, including the basic principles of Mendelian, molecular, and population genetics.
3. Compare and contrast non-human primate and human behaviors, and describe the related implications for hominin and human evolutionary pathways.
4. Compare and contrast key specimens and morphological features of non-human primates, hominins, and humans.
5. Explain the various methods for dating and identifying non-human primate, hominin, and human fossilized remains.
6. Explain biocultural evolution, and describe how modern human variation has been shaped by this process.
7. Discuss current bioethical issues, including human biological and behavioral interconnectedness with other life-forms.

COURSE CONTENT:

LECTURE CONTENT:

A. Introduction to Physical Anthropology
   1. Introduction
   2. The Human Connection
   3. Biocultural Evolution
   4. What is Anthropology?
      a. Cultural Anthropology
      b. Archaeology
      c. Linguistic Anthropology
      d. Physical Anthropology
         i. Applied Physical Anthropology
         ii. Physical Anthropology and the Scientific Method
ANTH G185-Physical Anthropology

e. Anthropological Perspective

B. The Development of Evolutionary Theory
  1. A Brief History of Evolutionary Thought
     a. The Scientific Revolution
     b. Precursors to the Theory of Evolution
     c. The Discovery of Natural Selection
     d. In Darwin's Shadow
  2. Natural Selection
     a. Natural Selection in Action
  3. Constraints of Nineteenth-Century Evolutionary Theory
  4. Opposition to Evolution Today
     a. A Brief History of Opposition to Evolution in the United States

C. The Biological Basis of Life
  1. Cells
  2. DNA Structure
     a. Coding and Noncoding DNA
  3. DNA Replication
  4. Protein Synthesis
  5. What is a Gene?
  6. Regulatory Genes
  7. Cell Division
     a. Chromosomes
     b. Mitosis
     c. Meiosis
  8. New Frontiers

D. Heredity and Evolution
  1. The Genetic Principles Discovered by Mendel
     a. Segregation
     b. Dominance and Recessiveness
     c. Independent Assortment
  2. Mendelian Inheritance in Humans
     a. Misconceptions about Dominance and Recessiveness
  3. Polygenic Inheritance
  4. Genetic and Environmental Factors
  5. Mitochondrial Inheritance
  6. Modern Evolutionary Theory
     a. The Modern Synthesis
     b. A Current Definition of Evolution
  7. Factors that Produce and Redistribute Variation
     a. Mutation
     b. Gene Flow
     c. Genetic Drift and Founder Effect
     d. Recombination
  8. Natural Selection Is Directional and Acts on Variation
  9. Review of Genetics and Evolutionary Factors

E. Processes of Macroevolution
  1. How We Connect: Discovering the Human Place in the Organic World
  2. Principles of Classification
  3. Constructing Classifications and Interpreting Evolutionary Relationships
     a. Comparing Evolutionary Systematics with Cladistics
     b. An Example of Cladistic Analysis: The Evolutionary History of Cars and Trucks
     c. Using Cladistics to Interpret Real Organisms
  4. Definition of Species
  5. Interpreting Species and Other Groups in the Fossil Record
     a. Recognition of Fossil Species
b. Recognition of Fossil Genera
6. What Are Fossils and How Do They Form?
7. Vertebrate Evolutionary History: A Brief Summary
8. Mammalian Evolution
9. The Emergence of Major Mammalian Groups
10. Processes of Macroevolution
   a. Adaptive Radiation
   b. Generalized and Specialized Characteristics
11. Working Together: Microevolution and Macroevolution

F. An Overview of Primates
1. Introduction
2. Primate Characteristics
3. Primate Adaptations
   a. Evolutionary Factors
   b. Geographical Distribution and Habitats
   c. Diet and Teeth
   d. Locomotion
4. Primate Classification
5. A Survey of the Living Primates
   a. Lemurs and Lorises
   b. Tarsiers
   c. Anthropoids: Monkeys, Apes, and Humans
   d. Hominoids: Apes and Humans
6. Endangered Primates

G. Primate Behavior
1. Introduction
2. The Evolution of Behavior
   a. Some Factors That Influence Social Structure
3. Why Be Social?
   a. Primate Social Strategies
4. Primate Social Behavior
   a. Dominance
   b. Communication
   c. Aggressive Interactions
   d. Affiliation and Altruism
5. Reproduction and Reproductive Behaviors
   a. Female and Male Reproductive Strategies
   b. Sexual Selection
   c. Infanticide as a Reproductive Strategy?
6. Mothers, Fathers, and Infants
7. Primate Cultural Behavior
8. Language
   a. The Evolution of Language
9. The Primate Continuum

H. Primate and Hominin Origins
1. Early Primate Evolution
   a. Eocene Primates: Closer Connections to Living Primates
   b. Oligocene Primates: Anthropoid Connections
2. Miocene Fossil Hominoids: Closer Connections to Apes and Humans
3. Understanding the Human Connection to Other Primates and Ways We Differ: Biocultural Evolution
4. Discovering Human Evolution: The Science of Paleoanthropology
5. Early Hominin Tools
6. Connecting the Dots Through Time: Paleoanthropological Dating Methods
7. Understanding our Evolutionary Connections: What's a Hominin?
What's in a Name?

8. Walking the Walk: The Bipedal Adaptation
   a. The Mechanisms of Walking on Two Legs
9. Digging For Connections: Early Hominins from Africa
10. Pre-Australopiths (6.0-4.4 mya)
11. Australopiths (4.2-1.2 mya)
   a. *Australopithecus afarensis*
   b. Later More Derived Australopiths (3.0-1.2 mya)
   c. New Connections: A Transitional Australopith?
12. Closer Connections: Early *Homo* (2.0-1.4 mya)
13. Interpretations: What Does It All Mean?
14. Seeing the Big Picture: Adaptive Patterns of Early African Hominins

I. The First Dispersal of the Genus *Homo: Homo erectus* and Contemporaries
   1. A New Kind of Hominin
   2. The Morphology of *Homo erectus*
      a. Body Size
      b. Brain Size
      c. Cranial Shape
   3. The First *Homo erectus: Homo erectus* from Africa
   4. Who Were the Earliest African Emigrants?
   5. *Homo erectus* from Indonesia
   6. *Homo erectus* from China
      a. Zhoukoudian *Homo erectus*
      b. Cultural Remains from Zhoukoudian
      c. Other Chinese Sites
   8. Later *Homo erectus* from Europe
   9. Technological Trends During *Homo erectus* Times
10. Seeing the Connections: Interpretations of *Homo erectus*

J. Premodern Humans
   1. When, Where, and What
      a. The Pleistocene
      b. Dispersal of Middle Pleistocene Hominins
      c. Middle Pleistocene Hominins: Terminology
   2. Premodern Humans and *Homo heidelbergensis* Fossils of the Middle Pleistocene
      a. Africa
      b. Europe
      c. Asia
   3. A Review of Middle Pleistocene Evolution
   4. Middle Pleistocene Culture
   5. Neanderthals: Premodern Humans of the Late Pleistocene
      a. Western Europe
      b. Central Europe
      c. Western Asia
      d. Central Asia
   6. Culture of Neanderthals
      a. Technology
      b. Subsistence
      c. Speech and Symbolic Behavior
      d. Burials
   7. Molecular Connections: The Genetic Evidence
   8. Seeing Close Human Connections: Understanding Premodern Humans

K. The Origin and Dispersal of Modern Humans
   1. Approaches to Understanding Modern Human Origins
      a. The Regional Continuity Model: Multiregional Evolution
b. Replacement Models

2. The Earliest Discoveries of Modern Humans
   a. Africa
   b. The Near East
   c. Asia
   d. Australia
   e. Central Europe
   f. Western Europe

3. Something New and Different: The "Little People"

4. Technology and Art in the Upper Paleolithic
   a. Europe
   b. Africa

5. Summary of Upper Paleolithic Culture

L. Human Variation and Adaptation
   1. Historical Views of Human Variation
   2. The Concept of Race
   3. Contemporary Interpretations of Human Variation
      a. Human Polymorphisms
      b. Polymorphisms at the DNA Level
   4. Human Biocultural Evolution
   5. Population Genetics
   6. The Adaptive Significance of Human Variation
      a. Solar Radiation and Skin Color
      b. The Thermal Environment
      c. High Altitude
      d. Infectious Disease
         i. Paleopathology: What Bones Can Tell Us About Ancient Diseases and Injury
   7. The Continuing Impact of Infectious Disease

M. Legacies of Human Evolutionary History: Effects on the Individual
   1. Introduction
   2. Evolved Biology and Contemporary Lifestyles: Is There a Mismatch?
   3. Biocultural Evolution and the Life Course
   4. Human Growth and Development Today and in the Past
      a. Nutritional Requirements for Growth
      b. Other Factors Influencing Growth and Development: Genes and Environment
         i. Epigenetics
      c. Hormones
   5. The Human Life Cycle
      a. Pregnancy, Birth, and Infancy
      b. Childhood
      c. Adolescence
      d. Adulthood
   6. Aging and Longevity
      a. Effects of Technology on the Brain
   7. Are We Still Evolving?

N. The Human Disconnection
   1. Human Impact on the Planet and Other Life-Forms
      a. Humans and the Impact of Culture
      b. Global Climate Change
      c. Impact on Biodiversity
      d. Acceleration of Evolutionary Processes
   2. Looking for Solutions
   3. Is There Any Good News?
METHODS OF INSTRUCTION:

A. Lecture:
B. Online:
C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

Objective and subjective tests, critical thinking writing assignments, classroom activities, and/or group projects/presentations.

COURSE ASSIGNMENTS:
  Reading Assignments
  Course textbook, assigned articles, relevant websites
  Out-of-class Assignments
  Assigned reading, critical thinking written assignments, and/or group projects.
  Writing Assignments
  Critical thinking written assignments and/or short answer essay questions.

METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations

  Demonstration of Critical Thinking:
  Analysis of biological mechanisms which lead to changes in gene frequencies (evolution) through time.
  Synthesis of genetic, ethological and archaeological data. Differentiation of primate development utilizing models of human evolution.

  Required Writing, Problem Solving, Skills Demonstration:
  Essay examinations are designed to test student recognition of terms and their application of terms and their application and synthesis in the explanation of physical anthropological phenomena.

TEXTS, READINGS, AND RESOURCES:
TextBooks:

LIBRARY:
  Adequate library resources include: Non-Print Materials
  Comments:

Attachments:
  Attached Files