I. GENERAL COURSE INFORMATION

Subject and Number: Anthropology 5
Descriptive Title: Biological Anthropology Laboratory
Course Disciplines: Anthropology
Division: Behavioral and Social Sciences

Catalog Description:
This course uses laboratory exercises and hands-on activities to explore the primary topics of biological ~~a~~nthropology. Topics will include principles of evolution, genetics, forensic anthropology, behavior and anatomy of nonhuman primates, human variation and fossil evidence for human evolution.

Conditions of Enrollment:
Prerequisite: Anthropology 1 with a minimum grade of C or Concurrent Enrollment

Course Length:	**X Full Term**	**Other (Specify number of weeks):**
Hours Lecture:	**0 hours per week**	**TBA**
Hours Laboratory:	**3.00 hours per week**	**TBA**
Course Units:	**1.00**	

Grading Method: Letter
Credit Status: Associate Degree Credit

Transfer CSU: X Effective Date: 2/19/2008
Transfer UC: X Effective Date: Fall 2008

General Education:

El Camino College:
1 – Natural Sciences
Term: Fall 2008 Other:

CSU GE:
B3 - Laboratory Sciences
Term: Fall 2008 Other:

IGETC:
5C - Science Laboratory
Term: Fall 2008 Other:

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. In an in-class lab activity, students will determine the sex of human skeletal remains by visually observing various pelvic and cranial features and applying the techniques used by forensic anthropologists to measure various post-cranial bones.
2. In an in-class lab activity, students will compare and contrast human karyotypes to identify potential abnormalities and chromosomal mutations.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at http://www.elcamino.edu/academics/slo/.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Demonstrate a basic understanding of the scientific method by testing a simple hypothesis.
   - Homework Problems
2. Examine and identify and the basic components of cell biology including the structure of cells, cell division, DNA structure and replication, and protein synthesis.
   - Other (specify)
   - Lab activity
3. Compare and contrast human karyotypes (chromosome spreads) to identify potential abnormalities and chromosomal mutations.
   - Other (specify)
   - Lab activity
4. Employ principles of Mendelian genetics to determine offspring genotype and phenotype probabilities.
   - Other (specify)
   - Lab activity
5. Analyze human pedigrees to discover the mode of inheritance of given traits, disorders and diseases.
   - Other (specify)
   - Lab activity
6. Compare and contrast processes of microevolution and macroevolution.
   - Other (specify)
   - Lab activity
7. Identify the basic principles of Darwinian Theory and give an example of natural selection in action.
   - Other (specify)
   - Lab activity
8. Differentiate between the forces of microevolution and recognize their effects on allele and genotype frequencies in populations.
   - Other (specify)
   - Lab activity
9. Distinguish between ancestral and derived characteristics in a given animal lineage using cladistic analysis.
   - Other (specify)
   - Lab activity
10. Compare and contrast skeletal and anatomical features of representatives of the vertebrate classes.
    - Other (specify)
    - Lab activity

11. Identify the distinguishing adaptations of the four types of nonhuman primates.
    - Other (specify)
    - Lab activity
12. Locate and describe the major bones of the human skeleton.
    - Other (specify)
    - Exam-lab practicum
13. Analyze, assemble and measure human skeletal material to objectively determine the age and sex of remains, assess ancestry and identify pathologies.
    - Other (specify)
    - Lab activity
14. Utilize anthropometric techniques to measure human body form and describe human biological variation.
    - Other (specify)
    - Lab activity
15. Distinguish between the early hominid genera and explain their evolutionary significance.
    - Other (specify)
    - Exam-lab practicum
16. Compare and contrast various extinct species of the Genus Homo with modern Homo sapiens and describe their relative positions on the human family tree.
    - Other (specify)
    - Exam-lab practicum

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lab	3	I	Biological Anthropology and the Scientific Method A. Hypothesis, Theory and Fact B. Hypothesis Formation, Data Gathering and Testing
Lab	6	II	Cell Biology and DNA A. Cell Structure and Division Modes B. DNA Structure and Replication C. Protein Synthesis D. Chromosomes and Karyotyping
Lab	6	III	Mendelian Genetics A. Monogenic and Polygenic Traits B. Autosomal and Sex-Linked Inheritance C. Punnett Squares 1. Monohybrid Crosses 2. Dihybrid Crosses D. Pedigree Analysis
Lab	6	IV	Principles of Evolution A. Microevolution 1. Mutation 2. Natural Selection a) The Basic Principles of Darwinian Theory b) Examples of Natural Selection in Action 3. Gene Flow 4. Genetic Drift and Founder Effect

			B. Population Genetics and the Hardy-Weinberg Formula C. Macroevolution
Lab	9	V	Biological Classification and a Brief Evolutionary History of the Vertebrates A. Traditional Classification Versus Cladistics 1. Cladogram Analysis 2. Homologous Traits a) Ancestral Traits b) Derived Traits B. Comparative Vertebrate Anatomy
Lab	6	VI	The Order of Primates A. Distinguishing Adaptations of the Nonhuman Primates 1. Prosimians 2. New World Monkeys 3. Old World Monkeys 4. Apes B. Behavior of Nonhuman Primates
Lab	9	VII	Human Variation A. Human Osteology B. Applications of Forensic Anthropology 1. Sex Determination 2. Age Determination 3. Assessment of Ancestry 4. Identification of Pathologies D. The Anthropological Concept of Race
Lab	9	VIII	Human Evolution A. Origins and Morphology of Early Hominins 1. Pre-Australopithecus 2. Australopithecus 3. Paranthropus B. Origins, Morphology and Culture of the Genus Homo 1. Habilis/Rudolfensis 2. Ergaster/Erectus 3. Neanderthals 4. Archaic Homo Sapiens
Total Lecture Hours		0	
Total Laboratory Hours		54	
Total Hours		54	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. **PRIMARY METHOD OF EVALUATION:**
Substantial writing assignments

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:
To learn about the principles of Mendelian genetics, choose members of one family as your study subjects. Interview and observe the parents and children to identify whether each possesses dominant or recessive phenotypes for the following monogenic traits: earlobe attachment, tongue rolling ability and hitchhiker's thumb (the parents and children must be biologically related to each other). Using Punnett Squares, attempt to determine each person's genotype for each of the three traits. Present your findings in a typed, two-page report.

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

1. Your group will be given a set of skeletal remains that belong to one person. Using the techniques and tools of forensic anthropology, determine the following about this individual: approximate age at death, sex, ancestry/race, stature, and any visible pathologies or trauma. In a typed, three- to four-page report discuss your findings by providing a description of the individual, along with an explanation of the methods employed by your group, and the cranial and skeletal features you analyzed. If applicable, provide an assessment of the cause and manner of death.
2. With your lab partners select a nonhuman primate species for behavioral observations at a local zoo. Based on reconnaissance observations, your group must design an ethogram that includes at least ten behaviors and construct a simple hypothesis. Each member of your group must use the focal animal sampling method to collect at least ten hours of behavioral data and test the hypothesis. Present your findings in a typed, three- to four-page report. Include your hypothesis, discussion of behavior frequencies and an explanation of whether the data you collected supported the hypothesis.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:
Laboratory reports
Homework Problems
Multiple Choice
Other (specify):
Lab activity, exam-lab practicum

V. INSTRUCTIONAL METHODS
Demonstration
Laboratory
Lecture
Multimedia presentations

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS
Study
Required reading
Written work
Observation of or participation in an activity related to course content

Estimated Independent Study Hours per Week: 1

VII. TEXTS AND MATERIALS

A. **UP-TO-DATE REPRESENTATIVE TEXTBOOKS**
Suzanne E. Walker-Pacheco. Exploring Physical Anthropology: A Lab Manual and Workbook. 3rd ed. Morton Publishing Company, 2017.

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
Course Prerequisite Anthropology-1	Sequential

B. Requisite Skills

Requisite Skills
Students need to understand the basic premise of biological anthropology as well as the terminology used. ANTH 1 - Demonstrate an understanding of the concept of the scientific method and its significance to science. ANTH 1 - Identify and describe the processes by which genetic information is transmitted from one generation to the next. ANTH 1 - Identify and discuss the various components of the DNA molecule and the process of protein synthesis. ANTH 1 - Contrast point and chromosomal mutations and discuss the significance of point mutations to evolution. ANTH 1 - Compare and contrast the skull characteristics of Australopithecus africanus, Australopithecus (or Paranthropus) boisei, and Homo habilis in relation to the particular diet of each. ANTH 1 - Contrast the anatomical characteristics of Homo habilis and Homo erectus, and analyze those contrasts in reference to their respective environments and subsistence strategies. ANTH 1 - Outline the cultural stages in the evolution of the genus Homo, making reference to the particular Homo species, tool industry, and environmental context associated with each stage.

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification

D. Recommended Skills

Recommended Skills

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact

Course created by Marianne Waters on 11/01/2007.

BOARD APPROVAL DATE: 02/19/2008

LAST BOARD APPROVAL DATE: 11/18/2019

Last Reviewed and/or Revised by: Marianne Waters **Date:** September 26, 2019
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