

CATALOG INFORMATION

Dept and Nbr: BIO 13

Title: HUMAN BIOLOGY

Full Title: Human Biology

Last Reviewed: 1/25/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**  
Primarily for students not majoring in biological sciences; presents topics from biology dealing specifically with humans. Topics include: cellular biology, genetics, anatomy and physiology, reproduction, evolution, and human impacts on the environment. Not an anatomy and physiology course.

**Prerequisites/Corequisites:**

**Recommended Preparation:**  
Eligibility for ENGL 100 or ESL 100.

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Course designed for students not majoring in biological sciences. Biological topics dealing specifically with humans. (Grade or P/NP)  
Prerequisites/Corequisites:  
Recommended: Eligibility for ENGL 100 or ESL 100.  
Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		Effective:	Inactive:
	C	Natural Sciences	Fall 1981	
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	B2	Life Science	Fall 1981	
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	5B	Biological Sciences	Fall 1981	
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:
<b>UC Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:

**CID:**

**Certificate/Major Applicable:**

Not Certificate/Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon successful completion of this course students will be able to:

1. Summarize the structure of atoms, molecules, biological polymers, and relate their significance to cell structure and function, anatomy, physiology, genetics and evolution.
2. Relate knowledge of enzyme reactions with cellular functions, metabolism, cell respiration and organ function.
3. Examine cell structures, ultra structures, membranes, and describe the functions of these structures in human cells.
4. Compare and contrast methods of cellular reproduction (mitosis, meiosis) and their significance.
5. Explain how DNA codes for proteins, how the code is translated by the cell, and the relationship of genes and alleles to specific traits and inheritance.
6. Compare and contrast the different inheritance patterns observed in human traits, and analyze these patterns using pedigree analysis.
7. Compare and contrast the structures and functions of human organ systems.
8. Summarize knowledge of the mechanisms of evolution, adaptation, and speciation.
9. Relate the principles of genetics to the processes of evolution.
10. Evaluate the impacts of human population growth and resource use, as a whole and by country, on the environment and the human species.
11. Describe current research on some aspect of human biology such as cancer research or the use of genetic technology.

**Topics and Scope:**

Topics will include but not be limited to:

## I. Cell Biology

### A. Cell chemistry

1. Atomic structure
2. Molecular bonding
3. Acids/bases/pH
4. Macromolecule structure and function
5. Enzymes: structure and function

### B. Cell structure and ultra structure

1. Eukaryotic cell organelles and their functions
2. Cell membrane structure and transport functions

### C. Cell Respiration

1. Glycolysis, Krebs's cycle, electron transport chain
2. Importance of ATP
3. Aerobic vs. anaerobic respiration

### D. Cellular Reproduction

1. Mitosis
2. Meiosis including sources of genetic variation

## II. Molecular Genetics

### A. DNA replication

### B. Protein synthesis, genetic code

### C. Mutations and mutagens

### D. Changes in chromosome number and chromosome structure

## III. Transmission Genetics

### A. Mendelian genetics:

1. monohybrid and dihybrid crosses
2. autosomal and sex-linked human genetic disorders

### B. Post Mendelian genetics

1. incomplete dominance and co-dominance
2. polygenic inheritance
3. autosomal and sex linkage

### C. Effects of environment on genetic expression

## IV. Human organ systems- overview of all systems will be covered, additional material on specific systems may be included at discretion of instructor.

### A. Digestive System

1. structure and function
2. diet and nutrition

### B. Respiratory System

1. structure and function
2. effects of smoking

### C. Circulatory System.

1. structure and function
2. heart and degenerative vascular diseases

### D. Immune System

1. infectious disease, including AIDS
2. immunization

### E. Musculo-skeletal system

1. muscle structure and function
2. bone growth and development
3. joint structure and function, arthritis

### F. Nervous system

- G. Excretory system
- H. Endocrine system
- I. Reproductive system
  - 1. structure and function
  - 2. sexually transmitted diseases
- V. Human Evolution
  - A. Mechanisms of evolution
    - 1. natural selection
    - 2. genetic drift and gene flow
    - 3. mutation
    - 4. non-random mating
  - B. Speciation
  - C. Evidence for evolution
    - 1. the fossil record
    - 2. comparative anatomy and physiology
    - 3. molecular and biochemical evidence
- VI. Human Population
  - A. Exponential growth
  - B. Carrying capacity and limiting factors
  - C. Resource use and ecological footprint
  - D. Environmental change and its affect on human well-being
- VII. Current research topics in human biology

### Assignment:

Assignments will include:

1. Reading scientific papers, handouts, and text assignments (10-50 pages per week).
2. Essays or written term paper (6-10 double-spaced pages).
3. Multiple choice and essay exams (2-4 midterm exams and 1 comprehensive final)
4. Quizzes.
5. Participation including attendance and/or participation in classroom discussions.

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

6-10 pg (double spaced) paper may be required

Writing  
10 - 20%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving  
0 - 0%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, Matching items, Completion

Exams  
75 - 90%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Participation

Other Category  
0 - 10%

**Representative Textbooks and Materials:**

HUMAN BIOLOGY by Starr,C. and McMillian,B. Brooks/Cole: 2002

HUMAN BIOLOGY: Health, Homeostatis, and the Environment. Chiras, D.

Jones and Bartlet: 2004