GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: BIO 12 DIVISION: 10 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2021 CURRICULUM APPROVAL DATE: 12/14/2021

SHORT TITLE: HUMAN BIOLOGY

LONG TITLE: Introduction to Human Biology

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
4	18	Lecture:	3	54
		Lab:	3	54
		Other:	0	0
		Total:	6	108

Out of Class Hrs:	108.00
Total Learning Hrs:	216.00

COURSE DESCRIPTION:

This course will provide an introduction to human biology for non-science majors to meet general education laboratory science requirements. It will cover the biologic principles of basic body structure and function including all systems of the body, genetic diseases, and current biotechnological advances as well as encompass the relationship between humans and their environment and ecosystems.

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion
03 - Lecture/Laboratory
04 - Laboratory/Studio/Activity
04B - Laboratory - LEH 0.75
05 - Hybrid
71 - Dist. Ed Internet Simultaneous
72 - Dist. Ed Internet Delayed
73 - Dist. Ed Internet Delayed LAB
73B - Dist. Ed Internet LAB-LEH 0.75

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Describe the anatomy and physiology of the human body at the cellular, tissue, organ and system level, and explain how they maintain dynamic constancy of the internal environment (i.e. homeostasis).
2. Apply principles of the course to solve practical life-long problems in human biology.
3. Explain the relationship between life forms and their environment and ecosystems.
4. Apply analytical skills to differentiate between invalid and valid conclusions based on collected data using the scientific method.
5. Work effectively and productively in a simple laboratory setting.

COURSE OBJECTIVES:

By the end of this course, a student should:

1. Explain why basic knowledge of science is essential to being a productive citizen.
2. Define homeostasis and explain why it is essential for life.
3. Describe the origins of modern humans.
4. Identify the four molecules of life and describe their functions.
5. Distinguish between DNA, genes, and chromosomes.
6. Summarize the process of inheritance.
7. Identify the four primary tissue types and describe their functions.
8. Identify the major structures and functions of the skeletomuscular system.
9. Identify the major structures and functions of the nervous system.
10. Identify the major structures and functions of the cardiovascular system.
11. Identify the major structures and functions of the respiratory system.
12. Identify the major structures and functions of the immune system.
13. Identify the major structures and functions of the digestive system.
14. Describe the major events of the cell life cycle, including mitosis and meiosis.
15. Identify the major structures and functions of the reproductive systems.
16. Identify the major structures and functions of the urinary system.
17. Describe the interactions of living things with their environment and how humans influence this interaction.
18. Work effectively with simple laboratory equipment.
19. Use proper lab etiquette, including adherence to lab safety protocols, appropriate lab documentation, and budgeting of lab time.

COURSE CONTENT:

Curriculum Approval Date: 12/14/2021

LECTURE CONTENT:

3 Hours

Exploring Life and Science, Introduction to human biology

Content: Characteristics of life, homeostasis, hierarchy of organization and classification of organisms

3 Hours

The origins of modern humans and our environment

Content: Characteristics of primates, energy flow and chemical cycling through the human body and through the ecosystem

4 Hours

Cell chemistry and the molecules of life

Content: Atoms, valence electrons, chemical bonds, water and its properties that are critical to life, pH scale pH buffers, molecules of life (DNA, proteins, lipids and carbohydrates), metabolic processes

3 Hours

DNA, Genes, Biotechnology, Disease, Cancer

Content: DNA, genes, and chromosomes, mitosis and meiosis, Gregor Mendel's two laws of inheritance, complete dominance, incomplete dominance, and codominance, pedigrees, biotechnology in modern research, DNA evidence in the courtroom

3 Hours

Microscopy and cell anatomy

Content: Major types of cells found in the body, cell structure with cell function, the cell theory, plant and animal cells

3 Hours

Histology - tissues, organs, and systems

Content: Four primary tissues, body cavities, organ systems

3 Hours

Skeletomuscular System

Content: Osseous tissue, three types of muscle tissue, selected bones and muscles, how muscles create movement

3 Hours

Nervous System, CNS/PNS, and Senses

Content: Central and peripheral nervous systems, nerve conduction and transmission, neurotransmitters and the action of certain medications, classification of senses, cutaneous and proprioceptive sensations, smell, taste, hearing, equilibrium and vision

3 Hours

Blood and Circulation

Content: Major structures and functions of the heart, components of blood, blood vessels, hypertension, HDL and LDL and their relationship to cardiovascular disease, myocardial infarction (heart attack), and cerebrovascular accident (stroke)

3 Hours

Gas exchange

Content: Major structures and functions of the lungs, mechanism of breathing, gas exchange in the body, common respiratory diseases and disorders

3 Hours

Immunology

Content: Major structures and functions of the immune system, pathogens, the body's innate defenses

COURSE CONTENT(CONTINUED):

LECTURE CONTENT(CONTINUED):

3 Hours

Digestion

Content: Major structures and functions of the digestive system, accessory organs, major disorders of the digestive system (e.g. lactose intolerance, liver disorder, gallstones, diarrhea, constipation, IBS, colitis)

3 Hours

Reproduction

Content: Phases of the cell cycle, mitosis, and meiosis, human reproduction, birth control, labor, delivery, and lactation, cancer and its connection with mitosis

3 Hours

Development

Content: Early stages of human embryology, exposure to certain chemicals such as alcohol and their effect on embryological development, early stage of embryos in other species of animals

3 Hours

Urinary system

Content: Major structures of the urinary system, urine formation, how the kidneys control the volume and composition of blood

3 Hours

Humans in the Larger World

Content: The biosphere, the interaction of living and physical environment and how humans influence this interaction, energy and chemical flow from one population of the food web to the next

3 Hours

Population, resources, and pollution

Content: Growth of the human population in developed and undeveloped countries, global impacts of human use of resources and pollution, advantages of biodiversity and reasons for loss of biodiversity

2 Hours

Final Exam

COURSE CONTENT(CONTINUED):

LAB CONTENT:

4 Hours
Scientific inquiry
3 Hours
Human evolution and heritage
3 Hours
Biochemistry of the cell (simulation)
3 Hours
Chromosomes and Human Genetics, Patterns in Inherited Traits
3 Hours
Microscopy and cell anatomy
3 Hours
Body cavities, planes, terminology, Primary tissues
3 Hours
Skeletomuscular System: osteology and myology
3 Hours
Nervous System and Senses
3 Hours
Cardiovascular system and Blood
3 Hours
Homeostasis respiration
3 Hours
Infectious Disease and Epidemiology
3 Hours
Nutrition
3 Hours
Cell life cycle: interphase and cell division (mitosis and meiosis)
3 Hours
Reproduction and developmental stages
3 Hours
Renal anatomy
3 Hours
Ecosystems
3 Hours
Ecology, environment, and us
2 Hours
Lab Exam

METHODS OF INSTRUCTION:
Lecture, Laboratory, Demonstration, Projects, Field Trips, and Guest speakers.

OUT OF CLASS ASSIGNMENTS:
Required Outside Hours 78
Assignment Description
Assigned reading, homework

Required Outside Hours 30
Assignment Description
Projects, papers

METHODS OF EVALUATION:
Writing assignments
Evaluation Percent 25
Evaluation Description
Percent range of total grade: 15-30%
Written responses are part of these assessments:
Written Homework
Lab Reports
Term or Other Papers
Other: Quizzes

Problem-solving assignments
Evaluation Percent 30
Evaluation Description
Percent range of total grade: 25-35%
Homework Problems
Lab Reports
Quizzes
Other: writing assignment

Skill demonstrations
Evaluation Percent 5
Evaluation Description
Percent range of total grade: 1-5%
Class Performance/s, particular in lab
Field Work

Objective examinations
Evaluation Percent 40
Evaluation Description
Percent range of total grade: 35-45%
Multiple Choice
True/False
Matching Items
Other: Short answer

REPRESENTATIVE TEXTBOOKS:

Human Biology, Concepts and Current Issues, 9e., Michael D. Johnson, Pearson, 2022.

ISBN: 9780134834085

Johnson. Laboratory Manual for Human Biology, Concepts and Current Issues, 8e. 2017. Pearson. ISBN 9780134283814

RECOMMENDED MATERIALS:

Biology of Humans: Concepts, Applications, and Issues, 6e., Judith Goodenough, Betty A. McGuire, Pearson, 2017.

ISBN: 0134056671

13 Grade Verified by: MS Word

Biological Exploration: A Human Approach Custom Edition Lab Manual, Boston, Pearson Publishing 2013 ISBN: 978125660005-3

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

- GAV B2
- GAV B3
- GAV Area 4

CSU GE:

- CSU B2
- CSU B3

IGETC:

- IGETC 5B
- IGETC 5C

CSU TRANSFER:

- Transferable CSU

UC TRANSFER:

- Transferable UC

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Program Status: 1 Program Applicable

Special Class Status: N

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: E

Course Control Number: CCC000521550

Sports/Physical Education Course: N

Taxonomy of Program: 040100