GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: BIO 12 DIVISION: 10 ALSO LISTED AS:

TERM EFFECTIVE: Spring 2017 CURRICULUM APPROVAL DATE: 04/25/2016

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

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. This course satisfies the same general education life science requirements as Biology 10 and Ecology 1.

PREREQUISITES:

COREQUISITES:

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

STUDENT LEARNING OUTCOMES:

1. Demonstrate understanding of the organization and regulation of the body systems to keeping the internal environment constant (Homeostasis)

Measure: Quizzes, exams (lecture and lab)

PLO: 1,2

ILO: 2,1.3

GE-LO: B1, B2

Year assessed or anticipated year of assessment: Fall 2015

2. Demonstrate basic understanding of the anatomy and physiology of the human body at the cellular, tissue, organ and system level.

Measure: Quizzes, written exams (lecture and lab)

PLO: 2,3,6

ILO: 2,1

GE-LO: B1, B2

Year assessed or anticipated year of assessment: Fall 2015

3. Apply principles of the course to solve practical life- long problems in human biology.

Measure: Quizzes, written exams, class assignments, class discussion

PLO: 1,2,6

ILO: 2,1

GE-LO: B1, B2

Year assessed or anticipated year of assessment: Fall 2015

4. Develop a working vocabulary in the area of human biology.

Measure: Quizzes, written exams, class discussion, class assignments, lab reports, research paper

PLO: 3,6

ILO: 2,7,1

GE-LO: B2, B1, B5

A2, A5, A7

Year assessed or anticipated year of assessment: Fall 2015

5. Demonstrate an understanding and be able to identify of the major tissues, organs and organ systems found in the body.

Measure: Quizzes, written exams, class discussion

PLO: 2,3,6

ILO: 2, 1, 7, 3

GE-LO: B2, B1

Year assessed or anticipated year of assessment: Fall 2015

6. Develop a basic understanding of human diseases and the relationship between life forms and their environment and ecosystems.

Measure: Quizzes, written exams, class assignments, class discussion

PLO: 2,3,5,6

ILO: 2, 1, 3

GE-LO: B1, B2, B5, B6, B9

Year assessed or anticipated year of assessment: Fall 2015

7. Develop analytical skills required to differentiate between invalid and valid conclusions based on collected data using the Scientific Method

Measure: Quizzes, written exams, Lab reports

PLO: 1,2.3

ILO: 2, 1

GE-LO: B5

Year assessed or anticipated year of assessment: Fall 2015

8. Be able to work effectively in a lab setting. Be able to work with simple laboratory equipment and use time appropriately and use of proper lab etiquette such as proper documentation.

Measure: Lab reports, data collection, demonstration and overall performance

PLO: 3,7

ILO: 2, 1, 6

GE-LO: B4, B7, B8

A2, A5, A7

Year assessed or anticipated year of assessment: Fall 2015

PROGRAM LEARNING OUTCOMES:

1. Use raw experimental data to conduct statistical analysis, and present conclusions in a graphical and narrative form.

2. Find, select and evaluate various types of scientific information including primary research articles, mass media sources and world-wide web information.

3. Effectively communicate scientific concepts in both written and oral formats.

4. Identify the evolutionary processes that lead to adaptation and biological diversity.

5. Describe the relationship between life forms and their environment and ecosystems.

6. Explain the basic structures and fundamental processes of life at molecular, cellular and organismal levels.

7. Demonstrate the correct operating procedures in the use of common lab equipment such as compound micro-scopes, spectrophotometer,pH meter, electrophoresis gelapparatus, micropipetters, and centrifuges.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 04/25/2016

4 lec, 3 lab Hours Lec: Exploring Life and Science: Introduction to human biology Lab: Scientific inquiry SPO: Student will be able to list the characteristics of Life, define homeostasis and the role in everyday life. Describe the Hierarchy of organization and classification of organisms. Assignment: Discuss why a basic knowledge of science is essential to being a productive citizen.

4 lec, 3 lab Hours Lec: The origins of modern humans and our environment Lab: Human evolution and heritage SPO: Students will be able to describe the origins of modern humans and the characteristics of primates. Students will be able to discuss the way energy flows through the human body and how chemicals cycle through our body and through the ecosystem. Assignment: Define habitat, niche, and the outcome of niche competition

4 lec, 3 lab Hours Lec: Cell chemistry and the molecules of life: Lab: Biochemistry of the cell (computer lab) SPO: Students will be able to identify the four most common chemicals in living organisms, the relationship between valence electrons and atomic reactivity, the types of chemical bonds, water and its properties that are critical to life, and be able to read and apply the pH scale and explain the bicarbonate ion formation and why buffers are important in the body. Students will also be able to describe the basic elements of life (DNA, Proteins, Lipids and Carbohydrates) and the cells metabolic processes. Assignment: Complete text assignments that reviews atomic structure and chemical bond formation. Also complete Protein synthesis handout that covers transcription and translation phases.

4 lec, 3 lab Hours Lec: DNA, Genes, Biotechnology, Disease, Cancer Lab: Chromosomes and Human Genetics, Patterns in Inherited Traits SPO: Students will be able to distinguish between DNA, genes, and chromosomes and describe the difference between mitosis and meiosis. Students will also be able to explain Gregor Mendel's two laws of inheritance and the interaction of alleles under complete dominance, incomplete dominance and co dominance. Students will be able to draw and interpret a pedigree chart using

sex linked traits, and/or autosomal linked traits. Students will be able to list four biotechnologies used in modern research, and describe how DNA is used in the courtroom. Assignment: Students will define transgenic organisms and describe how the Human Genome Project has aided human kind.

4 lec, 3 lab Hours Lec: Microscopy and cell anatomy Lab: Identify examples of each major types. SPO: Students will be able to identify and describe the major types of cells found in the body and correlate cell structure with cell function. Students will also be able to define the cell theory and describe the difference between plant and animal cells. Assignment: Use the text to: Label the animal cell compartments and describe their function, define osmosis and relate it to the actions of hypotonic, and hypertonic solutions and describe the major steps in cell respiration.

4 lec, 3 lab Hours Lec: Histology- tissues, organs and systems Lab: Define and identify cavities, planes and terminology. Identify four basic tissue types. SPO: Students will be able to describe and identify the four basic tissue types and discuss their functions. Students will be able to describe the body cavities and list their contents. Students will be able to list the organ systems and the organs of each system. Assignment: Read text and use to identify tissues, relate tissues to organs and organ systems.

3 lec, 3 lab Hours Lec: Skeletomuscular, Lab: osteology and myology SPO: Students will be able to describe and identify osseous tissue, and the three types of muscle tissue. Students will be able to identify selected bones and muscles. Students will be able to discuss how muscles create movement. Assignment: Use text to identify listed tissues and structures, and to describe movement and muscle contraction.

3 lec, 3 lab Hours Lec: Nervous System, CNS/PNS and Senses Lab: Nervous system and Senses SPO: Students will be able to describe and list the major structures of the central and peripheral nervous systems and their functions. Students will be able to describe nerve conduction and transmition. Students will be able to relate neurotransmitters to the action of certain medications. Students will be able to describe the basis for classification of senses. Students will be able to discuss the basic mechanisms of cutaneous and proprioceptive sensations, smell, taste, hearing, equilibrium and vision. Assignment: Read text and relate the nervous system to human ability to react to the environment. Use text to recognize selected structures in lab.

3 lec, 3 lab Hours Lec: Blood and Circulation Lab: cardiovascular system and blood SPO: Students will be able to identify major structures of the heart and describe their function. Students will be able to describe components of blood, and major types of blood vessels. Students will be able to define hypertension, HDL's and LDL's and their relationship to cardiovascular disease. Students will be able to define the terms myocardial infarction (heart attack) and cerebrovascular accident (stroke), and discuss their possible causes. Assignment: Read text and develop a list of structures and definitions that describe the cardiovascular system and common disorders of the cardiovascular system. Use text to develop a plan to maintain cadiovascular health.

3 lec, 3 lab Hours Lec: Gas exchange Lab: Homeostatis Respiration SPO: Students will be able to identify major structures and describe their function. Students will be able to describe the mechanism of breathing and how gas exchange in the body occurs. Students will be able to describe the common respiratory disease and disorders found in the upper and lower respiratory tract. Assignment: Read text and use text to be able to describe respiratory disorders commonly associated with smoking tobacco.

3 lec, 3 lab Hours Lec: Immunology Lab: Infectious Disease and Epidemiology SPO: Students will be able to identify the major structures and describe their function. Students will also be able to describe the various pathogens and the body's innate defenses. Assignment: Read text and use text to be able to describe hypersensitivity reactions such as allergies, organ rejection, and Autoimmune disease.

4 lec, 3 lab Hours Lec: Digestion Lab: Nutrition SPO: Students will be able to identify all the major structures and describe their function. Students will also be able to describe the accessory organs and their function. Students will be able to describe major disorders of the Digestive system (lactose intolerance, liver

disorder, gallstones, diarrhea, constipation, IBS, colitis etc.) . Assignment: Read text and use text to be able to recognize to describe nutrition and weight control to help make informed food choices.

3 lec, 3 lab Hours Lec: Reproduction Lab: Cell life cycle- Interphase and cell division (Mitosis and Meiosis) SPO: Students will be able to describe the phases of the cell cycle, mitosis and meiosis. Students will be able to differentiate between mitosis and meiosis. Students will be able to the processes of human reproduction, and mechanisms of different methods of birth control. Students will be able to describe the processes of labor, delivery and lactation. Students will be able to define and discuss cancer and to relate mitosis to cancer. Assignment: Read text and use text to be able to recognize the stages of mitosis and meiosis.

3 lec, 3 lab Hours Lec: Development Lab: Reproduction and developmental stages SPO: Students will be able to list and describe the early stages of human embryology. Students will be able to discuss how exposure to certain chemicals such as alcohol may affect embryological development. Students will be able to recognize early stage of embryos in other species of animals. Assignment: Use text to identify early embryonic stages and to discuss factors that affect embryonic development.

3 lec, 3 lab Hours Lec: The Urinary system Lab: Renal anatomy SPO: Students will be able to describe the basic process of urine formation and how the kidneys control the volume and composition of blood. Students will be able to identify the major structures of the urinary system. Assignment: Use text to write a description of urine formation, structures of the urinary system.

4 lec, 3 lab Hours Lec: Humans in the Larger World- Lab: Ecosystems SPO: Students will be able to describe the biosphere, the interaction of living and physical environment and how humans influence this interaction. Students will be able to describe the Energy and Chemical flow from one population of the food chain to the next. Assignment: Read text and use text to be able to describe the various interactions of biotic and abiotic factors.

4 lec, 3 lab Hours Lec: Population, resources and pollution. Lab: Ecology, environment and us. SPO: Students will be able to describe and compare the growth of the human population in developed and undeveloped countries. Students will be able to describe the global impacts of human use of resources and pollution. Students will be able to describe the advantages of biodiversity and reasons for loss of biodiversity. Assignment: Read text and use text to be able to have a clear understanding and vision of a sustainable society.

METHODS OF INSTRUCTION:

Lecture, Laboratory, Demonstration, Projects, Field Trips, and Guest speakers.

METHODS OF EVALUATION:

Category 1

Percent range of total grade: 5 % to 20 %

Section 1 – Substantial writing assignments including:

Written Homework

Lab Reports

Term or Other Papers

Other: Quizzes

Category 2 – Computational or non-computational problem solving demonstrations including:

Percent range of total grade: 30 % to 35 %

Homework Problems

Lab Reports

Quizzes
Other: writing assignment

Category 3 – Skill Demonstrations, including:
Percent range of total grade: 1 % to 5 %

Class Performance/s

Field Work
Category 4 – Objective Exams, including:
Percent range of total grade: 35 % to 40 %

Multiple Choice

True/False

Matching Items
Other: Short answer

REPRESENTATIVE TEXTBOOKS:

Required:

Judith Goodenough, Betty A. McGuire. Biology of Humans: Concepts, Applications, and Issues 5th ed. IL: Pearson, 2014. Or other appropriate college level text.

ISBN: 9780321820600

Reading level of text, Grade: 13Verified by: Microsoft

Other textbooks or materials to be purchased by the student: Biological Exploration: A Human Approach Custom Edition Lab Manual, Boston, Pearson Publishing 2013 ISBN: 978125660005-3

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
- GAV B2, effective 201070
- GAV B3, effective 201070

CSU GE:
- CSU B2, effective 201070
- CSU B3, effective 201070

IGETC:
- IGETC 5B, effective 201070
- IGETC 5C, effective 201070

CSU TRANSFER:
- Transferable CSU, effective 201070

UC TRANSFER:
- Transferable UC, effective 201070

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department: BIO
CSU Crosswalk Course Number: 12
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: E
Maximum Hours:
Minimum Hours:
Course Control Number: CCC000521550
Sports/Physical Education Course: N
Taxonomy of Program: 040100