

BIOL C100C: INTRODUCTION TO BIOLOGY LECTURE/LAB

Item	Value
Curriculum Committee Approval Date	09/12/2014
Top Code	040100 - Biology, General
Units	4 Total Units
Hours	108 Total Hours (Lecture Hours 54; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• Area 5B Life Sciences (CB2)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5B Biological Sciences (5B) • Cal-GETC 5C Laboratory Activity (5C)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5B Biological Sciences (5B) • IGETC 5C Laboratory Activity (5C)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B2 Life Science (B2) • CSU B3 Laboratory Activity (B3)

Course Description

A general study of the basic concepts of biology including the human body and the environment. Emphasis on the characteristics of plant and animal life, human body systems, health, genetics, and the interaction of organisms in their environment. This lecture and lab course is suitable as a general education elective for non-science majors. Course combines content from BIOL C100 and BIOL C100L. Transfer Credit: CSU; UC: Credit Limitation: No credit for BIOL C100C if taken after BIOL C100 & BIOL C100L or BIOL C180.

Course Level Student Learning Outcome(s)

1. Compare and contrast the cell structures and functions observed in the domains of life.
2. Compare and contrast anatomical, physiological, and ecological characteristics of the major taxonomic groups.
3. Describe how natural selection and mutation drive evolution.
4. (Lab) Apply the scientific method as a problem-solving tool.
5. (Lab) Identify organisms in the major biological kingdoms.
6. (Lab) Explain mechanisms of evolution.

Course Objectives

- I Lecture
 - I. 1. Describe the chemical basis of life.
 - I. 2. Describe basic cell structure, function, and mechanisms of reproduction.
 - I. 3. Describe basic characteristics of prokaryotes and viruses.
 - I. 4. Describe basic plant characteristics.
 - I. 5. Describe major concepts of human anatomy and physiology.
 - I. 6. Develop a rudimentary understanding of genetics, ecology, and evolution.
- II Lab
 - II. 1. Explain the scientific method and how it is used in everyday science.
 - II. 2. Describe the basics of cellular functions.
 - II. 3. Identify characteristics of Kingdom Plantae.
 - II. 4. Identify characteristics of the Kingdom Animalia.
 - II. 5. Identify characteristics of the Kingdom Fungi.
 - II. 6. Identify characteristics of Domain Archaea.
 - II. 7. Identify characteristics of protists.
 - II. 8. Identify characteristics of Domain Bacteria.
 - II. 9. Describe basic laboratory models in evolutionary and environmental biological science.
 - II. 10. Perform monohybrid and dihybrid crosses.

Lecture Content

OUR PLACE IN THE UNIVERSE Earth and its unique place Special conditions for life How life came about Diversity of life Levels of biological organization and taxonomy CHEMICAL BASIS OF LIFE Atoms and molecules as the basis of life Structure of the atom Biological molecules Metabolism (Photosynthesis and Respiration) CELL BIOLOGY The Cell Theory Cellular structure and function Cell physiology Cell reproduction (Mitosis and Meiosis) MICROBES Characteristics of Viruses Characteristics of Bacteria and Archaea Characteristics of Protists PLANTS Characteristics of plants Plant nutrition Plant physiology Plant reproduction ANATOMY AND PHYSIOLOGY OF THE HUMAN BODY Nutritional requirements of animals Human Body Systems Digestive Respiratory Circulatory Support and movement Integumentary Nervous Excretory Endocrine Reproductive GENETICS Basic genetics with applications to humans Role of DNA, genes, chromosomes in human genetics DNA replication, transcription, and translation Biotechnology ECOLOGY Basic ecology Human ecology Importance of environmental maintenance and conservation EVOLUTION Theory of evolution Evidence supporting theory of evolution Natural selection and speciation

Lab Content

INTRODUCTION The scientific method Experimental design Scientific measurements and recording data Tools used in the laboratory THE CELL- A BASIC STRUCTURAL UNIT Molecules of life Cell types Cell components Metabolism Mitosis and Meiosis Microbes Sample preparation for Microscopy Microscopy HUMAN ANATOMY AND PHYSIOLOGY Tissue types Organs Body systems Dissection PLANT BIOLOGY Tissues Osmosis Capillary action Photosynthesis GENETICS Monohybrid and dihybrid crosses Dominant and Recessive traits Transmission of genetic information Biotechnology EVOLUTION AND

SYSTEMATIC BIOLOGY Natural Selection Speciation Identification vs. Classification Dichotomous Keys ENZYMES DIVERSITY AND ECOLOGY

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

Discussions, PowerPoint, lecture, audio-video presentations, demonstrations. Laboratory experiments.

Reading Assignments

Textbooks, open resources, news articles

Writing Assignments

Essays

Out-of-class Assignments

Essays, library assignments, news articles

Demonstration of Critical Thinking

Essays, analysis of current events, problem-solving evaluations in genetics and evolution. Experiments and examinations covering the use of the scientific method in analysis of data.

Required Writing, Problem Solving, Skills Demonstration

Essays, problem-solving in genetics; laboratory experiments, identification and classification of organisms, genetic monohybrid and dihybrid crosses, evolutionary mathematical modeling.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Clark, M.A., Douglas, M., Choi, J. Biology 2e, ed. OpenSTAX (<https://openstax.org/details/books/biology-2e>), 2018

Manuals Resources

1. Gunnstream, S. E. BIOL C100L Introduction to Biology Lab Manual (custom), Pearson Custom Library (Legacy Text) , 08-01-2014

Other Resources

1. Coastline Library