BIOL G100: INTRODUCTION TO BIOLOGY

Item	Value
Curriculum Committee Approval Date	02/18/2020
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	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)
Local General Education (GE)	• GWC Physical Universe*** (GB1)
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

This course emphasizes basic concepts of biology for non-science majors. Unifying concepts to be covered include: cell biology, animal and plant physiology, genetics, evolution, and ecology. Transfer Credit: CSU; UC: Credit Limitations: No credit for BIOL G100 if taken after BIOL G180.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Explain the core concepts of biology.
3. Connect theoretical concepts in biology with everyday applications and situations.
4. Analyze data in a laboratory setting.
5. Interpret newsworthy biological reports using evidence-based reasoning.

Course Objectives

- 1. Describe the levels of organization within living things from the composition of atoms, molecules, cells, organ systems, and organisms to the organization and relationships of an ecosystem.
- 2. Organize and describe the objectives of the key metabolic processes of photosynthesis and cellular respiration.
- 3. Solve genetics problems determining probabilities of inheritance.
- 4. Describe the core concepts of evolution including the mechanisms of microevolution and macroevolution.
- 5. Evaluate ones lifestyle in light of biological principles using evidence-based reasoning.
- 6. Report orally and in writing, on the results of laboratory experiments.

Lecture Content

Introduction Scientific methodology Science versus pseudoscience Methods of communicating science Properties of life Chemistry Atomic structure Chemical bonds Properties of water pH and buffers Macromolecules: Lipids, carbohydrates, proteins, and nucleic acids Cell biology Prokaryotic versus eukaryotic cells Cell structure and function Cell membrane structure and function Structure and function of internal cellular components Cellular transport Energy metabolism Photosynthesis Cellular respiration The cell cycle Mitosis Cancer Meiosis Genetics Patterns of inheritance Predicting outcomes of genetic crosses using Punnett squares Molecular genetics DNA replication Transcription Translation Gene regulation Biotechnology Molecular techniques as appropriate Genetically modified organisms Stem cells Other modern pertinent biotechnology Physiology Animal physiology Plant physiology Evolution Charles Darwins Theory of Evolution Mechanisms of microevolution Mechanisms of macroevolution The Earths geologic timeline Understanding evolutionary trees Biological diversity Taxonomy and the evolution of biodiversity Viruses Prokaryotes Eukaryotes Ecology Populations, communities, and ecosystems Trophic levels and energy transfer Biogeochemical cycles Benefits o f species diversity Human impacts on the environment

Lab Content

Scientific methodology Lab safety Lab measuring devices and units of measure Using the Scientific Method to test hypotheses Cell biology Macromolecules, water, pH, and buffers Molecular movement Enzyme function Microscopy Care and use of microscopes Plant and animal cell structure Photosynthesis and cellular respiration Cell growth and genetics Mitosis and meiosis Inheritance Evolution Diveristy of life Survey of microorganisms (bacteria, protists, fungi) Survey of Kingdom Plantae Survey of Kingdom Animalia Human physiology 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

Instructors will present material via lecture, active learning activities, animations/videos, class presentations, readings, and other methods where appropriate.

Reading Assignments

1. A current text in general biology for non-science majors2. Laboratory manual in general biology

Writing Assignments

A. Pre-lab summaries highlighting core concepts and important safety
B. Laboratory reports detailing results and conclusions of lab activities
C. Essays, through homework and examination, that demonstrate

proficiency in course objectives D. Analyses of current news related to core biological topics

Out-of-class Assignments

A. Individual or group presentations on biological topics B. Online pre- or post-lecture assessments or quizzes C. Preparation of written/oral summaries of reading assignments D. Preparation of the results of self-assessment study skill assignments E. Completion of worksheets, study guides, or other study materials

Demonstration of Critical Thinking

Students are required to analyze laboratory data. They may also solve problem sets. Scientific methodology, including detailed observation skills, formulation of general conceptual questions, proposal of hypotheses, data collection and interpretation, and criteria for accepting conclusions and answers are practiced in each laboratory unit.

Required Writing, Problem Solving, Skills Demonstration

Students use laboratory skills to present hypotheses, solve problems, gather data, analyze data, and present conclusions and inferences based upon those data. Students may write laboratory reports and summarize field observations as well as present data to other students. Students will write essays, through homework and examination, that demonstrate proficiency in course objectives.

Eligible Disciplines

Biological sciences: Masters degree in any biological science OR bachelors degree in any biological science AND masters degree in biochemistry, biophysics, or marine science OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Simon, E.. Biology: The Core, 3rd ed. Pearson, 2019 2. Required Faculty and staff of Golden West College. BioExplorations, Spring 2020 ed. Golden West College, 2020