Lassen Community College Course Outline

BIOL 32 General Biology 3.0 Units

I. Catalog Description

A general survey of the living world with emphasis on the basic biological principles as illustrated in plant and animal groups. This course has been approved for online, hybrid and correspondence delivery.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to both UC/CSU
CSU GE Area: B2
IGETC GE Area: 5B
General Education Area: A 51 Hours Lecture, 102 Expected Outside Class Hours, 153 Total Student Learning Hours
Scheduled: Fall, Spring

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 040100

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Describe a biological process involved with living organism.
2. Describe the key characteristics of all life forms from the atom to the organism.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Describe the areas covered by: biology, zoology, botany, cytology, anatomy, physiology, microbiology, genetics, taxonomy and ecology.
2. Explain biological classification.
3. Apply the scientific method
4. Discuss the basic characteristics of life.
5. Explain the three tenets of cell theory
6. Describe atomic and molecular structure.
7. Describe the major kinds of biologically important compounds.
8. Define differences between prokaryotic and eukaryotic cells.
9. Define differences between respiration and photosynthesis.
10. Identify the parts of plant and animal cells and tell what their functions are.
11. Describe the cell cycle and mitosis and meiosis and its importance.
12. Understand DNA replication.
13. Describe protein synthesis
14. Explain the basic laws of heredity and distinguish between mono and dihybrid crosses.
15. Apply the idea of variation to populations of organisms and it to taxonomy.

16. Define evolution by natural selection as the key mechanism of evolution.
17. Define the biological species concept, the process of speciation, and the reproductive barriers that keep the species apart
18. Describe major hypotheses about life origins and macroevolution highlights of Pangea and plate tectonics.
19. Identify major characteristics of prokaryotes- Bacteria and Archaea
20. Define protists and identify their major characteristics.
21. Describe the relationship between viruses, bacteria, and fungi to the world around them.
22. Describe major groups of algae and explain their importance to the world
23. Describe fungi and lichens and their importance to the world.
24. Distinguish vascular plants on the basis of structure.
25. Describe some of the major groups of invertebrates and their importance to the biosphere.
26. Describe the five classes of vertebrates and relate them to the world around us.
27. Describe major events in primate evolution leading to humans.
28. Explain what ecology is and some of its more important implications to the world around us.

IV. Course Content

The following topics may be included; however, the order of presentation, relative emphasis and the depth of treatment will depend on the preferences of the instructor.

A. Introduction to Biology
1. Major Fields of Science
2. Science and Scientists
   a. The scientific method - hypothesis - theory
   b. Ancient science
3. Characteristics of life
4. Biogenesis vs Spontaneous generation

B. Basic Chemical Principles
1. Atomic structure
2. Isotopes
3. Molecular structure
4. Types of bonds
5. Organic and inorganic chemistry
6. Chemical structure of biological materials
7. Chemical transformation of biological materials
   a. Cellular respiration
   b. Photosynthesis

C. Cytology
1. Historical perspective
2. Cell structure and function
3. Cell cycle and cancer

D. Mitosis and Meiosis

E. Genetics and Heredity
1. Protein synthesis and phenotype vs genotype
2. Mendel's laws
3. Mono and dihybrid crosses
4. Sex-linked characteristics

F. Classification of Organisms

1. Modern system - Linnaeus
2. Variation and mutation
3. Classification problems – bacteria and protista

G. Viruses and Bacteria
1. Definition
2. Types and shapes
3. Relationships to man and the world

H. Fungi
1. Types
2. Importance biologically

I. Algae
1. Types
2. Importance biologically

J. Lichens
1. Symbiosis

K. Bryophytes
1. First group of true plants

L. Vascular Plants
1. Ferns
2. Gymnosperms
3. Angiosperms
   a. Structure of roots, stems, leaves, and flowers
   b. Importance

M. Invertebrates
1. Selected groups to illustrate diversity and importance (i.e. Arthropods - metamorphosis, Annelids - segmentation, Platyhelminthes - parasitism, Mollusks - food, Echinoderms - radial and bilateral symmetry)

N. Vertebrates
1. Mammal groups and characteristics
2. Birds - structure and importance
3. Reptiles - types and importance
4. Amphibians - types and importance
5. Fish - types and importance

O. Primate Evolution and Human characteristics
1. Where Humans came from and how they dispersed

P. Ecology
1. Energy pathways related to trophic pyramids
2. Biotic communities
3. Biodiversity
4. Human impacts on biodiversity

V. Assignments

A. Appropriate Readings

Standard college level texts will be the primary source of course readings.

B. Writing Assignments

In order to successfully complete this course, students must demonstrate understanding of course content on mixed-format (including essay) examinations.

C. Expected Outside Assignments

All text reading and note review is conducted outside of class. Students may elect to do a research paper which must conform to college level work.

D. Specific Assignments that Demonstrate Critical Thinking

The essay component of each unit exam is designed to challenge students to analyze and synthesize information presented in the text and during lecture.

VI. Methods of Evaluation

Traditional Classroom Instruction

The first day of class the instructor will provide each student with a written course syllabus indicating the evaluation procedures to be used. The formulation of a student grade will be based upon performance on mixed-format examinations.

Hybrid Evaluation:

All quizzes and exams will be administered during the in person class time. Students will be expected to complete on line assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous will be evaluated for participation and to maintain effective communication between instructor and students.

Online Delivery

Students will be evaluated using online methods. Online students will complete assignments as described in the course outline using a variety of online methods such as online submission of research papers, asynchronous and synchronous discussions (chat/forum), online quizzes and exams, postings to online website, and email communications in lieu of traditional classroom assignments and evaluation methods.

Correspondence Delivery Evaluation

Identical to face-to-face with the exception of the desired use of proctored exams and exclusion of participation in classroom activities. Students will be expected to complete assignments and activities equivalent to in-class assignments and activities. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☒ **Traditional Classroom Delivery** ☒ Correspondence Delivery

☒ Hybrid Delivery ☒ **Online Delivery**

Traditional Classroom Instruction

Lecture, discussion, audio-visual media and other appropriate methods to be determined by the instructor.

Hybrid Delivery:

A combination of traditional classroom and online instruction will be utilized. Each semester 34 lecture hours and 17 lecture hours will be instructed online through the technology platform adopted by the District. Traditional class instruction will consist of lectures, visual aids, and group presentations. Online delivery will consist of participation in forum-based discussions and posts, web links, email communications, lecture posts, and online lectures.

Online Delivery
Online written lectures and/or video lectures will be made available to students online. Students will be expected to participate in forum-based discussions and online exercises/assignments contained on website. Additionally, discussion papers, email communications, postings to forums, and web-links will comprise the method of instruction.

Correspondence Delivery
Assigned readings, instructor-generated typed handouts, typed lecture materials, exercises and assignments equal to face-to-face instructional delivery. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

VIII. Representative Texts and Supplies

Campbell, Neil, Eric Simon, Jean Dickey, Kelly Hogan and Jane Reece, *Campbell Essential Biology (w/MasteringBiology Access) Edition: 7th, 2019,* Pearson, ISBN: 9780134812946

IX. Discipline/s Assignment

Biological Sciences

X. Course Status

Current Status: Active
Original Approval Date: 1/16/1990
Revised By: Crystal Tobola
Curriculum/Academic Standards Committee Revision Date: 12/06/2022