

SLO Presentation

BIOL

Date: 09/11/2019

SCIENCE, ENGINEERING & MATH
BIOL
Biology--AA <ul style="list-style-type: none">• Students apply scientific methodology and reasoning through experimentation, proper lab technique, observation, and review of scientific literature.• Students describe the characteristics of major taxa, and compare and contrast their anatomical, physiological, and life-history characteristics.• Students describe the mechanisms of evolution, evolution's relationship to the diversity of life and organization of taxa.• Students evaluate ecological relationships at the population, community, and ecosystem level.• Students identify and describe cell structures and processes including the flow of genetic information, genetic expression, and both classical and molecular genetics and inheritance.
Botany--AA <ul style="list-style-type: none">• Students describe the mechanisms of evolution, evolution's relationship to the diversity of life and organization of taxa.• Students apply scientific methodology and reasoning through development of hypotheses, testing of those hypotheses through experimentation, and analysis of data in the format of a scientific paper and poster presentation.• Students identify and describe cell structures and the flow of genetic information and expression, and inheritance.• Students describe the characteristics of major plant taxa and compare and contrast the anatomical and physiological features of the major taxa.• Students describe and evaluate ecological relationships at the population, community, and ecosystem level.• Students describe common adaptations plants have evolved to survive in the desert and chaparral plant communities, based on observations on field trips,• Students describe nutrient processing and energy flow in plants at the cellular, individual, and ecosystem level through the processes of photosynthesis and cellular respiration.
Microbiology--AA <ul style="list-style-type: none">• Students explain the mechanisms of evolution, evolution's relationship to the diversity of life and organization of taxa.• Students utilize the scientific methodology and reasoning through development of hypotheses, testing of those hypotheses through experimentation, and analysis of data in the format of a scientific paper and poster presentation.• Students describe cell structures and the flow of genetic information and expression, and inheritance.• Students describe the characteristics of major taxa and compare and contrast the anatomical and physiological features of the major taxa.• Students evaluate ecological relationships at the population, community, and ecosystem level.• Students apply laboratory skills and techniques related to the isolation, staining, identification, and control of microorganisms.• Students explain the relationship between the molecular mechanisms of microbial pathogenesis and the immune system.
Zoology--AA <ul style="list-style-type: none">• Students discuss the evidence of evolution and its mechanisms and how this explains the unity and the diversity of organisms on this planet.• Students interpret a phylogenetic tree with regards to evolutionary relationships within the animal kingdom and be able compare and contrast the characteristics of major taxa.• Students explain how animals function, from gene to organ-systems, and provide examples from major taxa.• Students discuss the major skeletal and physiological adaptations for the transition to land.• Students identify and explain the function of major structures in a given dissected organism.
CSLO BIOL100 - Natural History of Southern California <ul style="list-style-type: none">• Identify major biomes and communities observed in course through photographs, written description, or field observation.• Describe the major physical factors of biomes and communities and the relationships between the biological and physical factors observed in course through photographs, written description, or field observation.

- Identify dominant organisms and other organisms observed in course through photographs, written description, or field observation.
- Identify and describe examples of symbiosis observed in course through photographs, written description, or field observation.
- Identify and describe adaptive characteristics of organisms observed in course through photographs, written description, or field observation.

BIOL105 - Humans and the Environment

- Students classify various organisms according to their niche and then insert these organisms correctly into a food chain, food pyramid, and food web, indicating the flow of energy.
- Students recognize the difference between logistic and exponential growth curves and be able to indicate the presence of a carrying capacity and correctly identify possible limiting growth factors which will impact population growth.
- Students know alternatives to current popular farming techniques (such as crop rotation, agroforestry, contour farming strip cropping, alternative to pesticides, organic farming, etc..)and be able to explain whether these alternative techniques reduce soil erosion or help to maintain soil fertility.
- Students know the 3 types of fossil fuels, where they originate from, how they are each used by humans, and potential pros and cons of each.
- Students identify energy alternatives to fossil fuels and how these alternatives can be harvested (such as nuclear energy, wind, solar, geothermal, etc...) as well as any pros or cons of each.

BIOL110 - California Animals and Plants

- A. Students identify the major taxa of living things through pictures, written description or observation in the field
- B. Students describe the principal ecological relationships between organisms.
- C. Students identify common plants and animals of different Southern California communities from pictures, written description or observation in the field.
- D. Students recognize the major biological communities in Southern California from pictures, written description and field observation.
- E. Students describe the major abiotic factors (e.g., tolerance limits) that affect biological communities, and their distribution.
- F. Students describe the life history of the major groups of plants and animals and several common species based on class description or field observation.
- G. Students identify and describe human impacts on nature in Southern California and be able to cite or identify examples seen in the field.
- H. Students responsibly, safely, and legally collect plants and invertebrates for collection and preservation.
- I. Students use a dichotomous key to identify organism to genus and species.

BIOL115 - Marine Biology

- Students discuss how physical characteristics of the ocean affect the distribution of flora and fauna in the more common marine realms.
- Students identify and distinguish between the major characteristics of 9 major animal phyla, and select subphyla and classes.
- Student will be able to identify and discuss major ecological and biological interactions between organisms in the marine realms.
- Students use and explain how dichotomous keys are used to identify unknown marine flora and fauna.
- Students explain how oceanographic equipment is used to understand the different aspects of the ocean.
- Students discuss how humans' have impacted the ocean's properties and inhabitants and identify some ways in which humans can participate in its conservation.

BIOL120 - Introduction to Biological Science

- Students will demonstrate knowledge of DNA replication, RNA transcription and translation of a protein segment, as well as the effect of mutations and DNA fingerprinting
- Students use microscope to locate and identify plant, animal, and bacterial cells as well as structures, which may be visible in these cells such as the nucleus, cell membrane, chloroplasts, and cell wall.
- Students compare and contrast algae, mosses, ferns, Gymnosperms and Aniosperms and describe the similarities and differences between each group.
- Students use the scientific method to develop hypothesis to predict outcomes of experiments and record experimental data to use to refute or support thier hypothesis.
- Students compare and contrast members of a variety of animal Phyla and describe unique characteristics of each Phyla.
- Students state the names and functions of five different organelles in the cell.
- Students identify evidence to support the theory of evolution, and two mechanisms that cause evolution to happen.
- Students identify the reactants and products of photosynthesis and cell respiration and describe the role of both plants and animals in the carbon cycle.

BIOL180L - Life Science Preparations

- Operate and care for laboratory equipment
- Use specimens of plants and animals in tutoring students in laboratory sections.
- Identify specimens of plants and animals and place them into appropriate taxonomic groups.
- Collect specimens of local plant life for use in laboratory sections.
- Properly Prepare displays used in laboratory instruction, prepare media, cultures, and solutions

BIOL200 - Principles of Biology

- Explain adaptations of early plants to terrestrial environments
- Explain the mechanisms of evolution and speciation
- Compare and contrast how a variety of invertebrate and vertebrate animals obtain nutrition, eliminate waste, transport nutrients, and exchange gases
- Compare and contrast reproduction and morphology, and water and nutrient acquisition in vascular plants
- Compare and contrast members of select invertebrate and vertebrate taxa by describing the characteristics that group them in their taxa
- Compare and contrast members of select plant and fungi (i.e., non-animal) taxa by describing the characteristics that group them in their taxa
- Describe ecological concepts that provide structure and function to ecosystems
- Describe ecological principles and how they inform conservation and biodiversity
- In lab, calculate the frequencies of alleles and genotypes of populations undergoing natural selection using the Hardy-Weinberg equation
- In lab, identify the anatomy of a variety of invertebrate animals as well as the frog and fetal pig
- In lab, identify the anatomy of a variety of plant taxa
- In lab, identify selected taxa of living organisms and their key characteristics
- In lab, use the scientific method to develop hypotheses to predict outcomes of experiments; record experimental data to use to refute or support these hypotheses

BIOL201 - Principles of Biology

- Describe the events, control, and roles of molecules in cellular processes, including DNA replication, transcription, and translation and cell signaling
- Describe the structure and functions of nucleic acids, proteins, lipids, and carbohydrates in the cell
- Compare cellular respiration and photosynthesis in terms of purpose, location, cell type, input, and output
- Demonstrate an understanding of the differences between mitosis and meiosis in terms of purpose, divisions, DNA content, and key phase events
- Describe the mechanisms and rules of inheritance and apply them using pedigrees and Punnett square analysis to make predictions regarding the genotypes and phenotypes of future generations
- In lab, demonstrate an understanding of the practical benefits from basic biotechnology techniques like PCR and gel electrophoresis and interpret results from these techniques
- In lab, clearly communicate hypotheses and experimental results in written lab reports
- In lab, demonstrate an understanding of and critically evaluate scientific data generated in the laboratory or gathered from primary literature

BIOL202 - Molecular Biology/Genetics

- When given a particular question or hypothesis, design a simple experiment using techniques discussed in class to address the question or hypothesis
- Describe DNA structure and explain how it relates to protein function
- When given data from crosses with two mutants, determine if two genes are involved and if so, characterize their genetic interactions
- Use online databases to Obtain the amino-acid sequence for the polypeptide encoded by a DNA sequence
- Use online databases to analyze an amino-acid sequence and research homologies with other polypeptides
- Use results from a scientific experiment to interpret the data and provide conclusions on the meaning of the results

BIOL250L - Special Topics in Biology

- Conduct appropriate analysis of experimental data , and interpret experimental results
- Student will utilize online data bases such as Science Direct to access articles on his or her chosen topic from current peer reviewed

sources.

- Student will develop a valid experimental procedure to test his or her hypothesis
- Student will write a scientific paper to present his or her results.