

SLO Presentation

BIOL

Date: 09-15-2022

ISLO

Civic Engagement

- Students will develop values and beliefs in their role as a member of local, national and global societies to promote truth, fairness and goodwill to others. They will use the democratic process to further their values and beliefs and recognize and accept differing perspectives based on cultural diversity. They will engage in actions which provide service to others and have a positive impact on their local community.

Communication and Expression

- Students will demonstrate the ability to effectively and appropriately communicate their thoughts and ideas both in written and oral forms. They will develop verbal and non-verbal delivery skills, in an appropriate manner, to communicate their ideas as well as evaluate the ideas of others in a wide variety of contexts.

Critical Thinking and Quantitative Reasoning

- Students will demonstrate the ability to recognize assumptions within an argument and actively and skillfully analyze underlying reasoning to develop a conclusion. They will apply qualitative and/or quantitative analysis to solve problems, predict outcomes, test hypotheses, and explore alternatives in an ethical manner.

Information Literacy

- Students will demonstrate the ability to determine when gathering additional information is necessary. They will use appropriate resources and technologies to locate, evaluate and incorporate the information when developing supporting arguments and drawing conclusions. Students will also develop the ability to understand any legal, ethical or social issues regarding the use of information.

Personal Knowledge and Responsibility

- Students will develop the necessary skills to define, maintain and complete their personal educational goals. They will learn to work independently to accomplish personal goals toward realizing their full potential academically, physically and emotionally whether for personal enrichment, further education or career advancement.

Science, Engineering, and 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

- 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

- 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.

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

- State the names and functions of five different organelles in the cell.
- Identify evidence to support the theory of evolution, and two mechanisms that cause evolution to happen.
- Identify the reactants and products of photosynthesis and cell respiration and describe the role of both plants and animals in the carbon cycle.
- Identify the steps of DNA replication, RNA transcription and translation of a protein segment; identify a mutation in a DNA sequence and explain how diseases caused by mutations can be passed onto offspring; analyze a DNA fingerprint and determine which individual left behind DNA at a simulated crime scene

- In lab, use a 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.
- In lab, compare and contrast algae, mosses, ferns, gymnosperms and angiosperms.
- In lab, use the scientific method to develop hypotheses to predict outcomes of experiments and record experimental data to use to refute or support hypotheses.
- In lab, compare and contrast members of a variety of animal phyla and describe unique characteristics of each phylum.

BIOL180L - Life Science Preparations

- 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.

BIOL200 - Principles of Biology

- Explain adaptations of early plants to terrestrial environments
- Explain the mechanisms of evolution and speciation
- 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

- A. Describe the structure and functions of nucleic acids, proteins, lipids, and carbohydrates in the cell
- B. Describe the events, control, and roles of molecules in cellular processes, including DNA replication, transcription, and translation and cell signaling
- C. Compare cellular respiration and photosynthesis in terms of purpose, location, cell type, input, and output
- D. Demonstrate an understanding of the differences between mitosis and meiosis in terms of purpose, divisions, DNA content, and key phase events
- E. 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
- F. In lab, demonstrate an understanding of the practical benefits from basic biotechnology techniques like PCR and gel electrophoresis and interpret results from these techniques
- G. In lab, clearly communicate hypotheses and experimental results in written lab reports
- H. 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

- 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.