Outcome Assessment Timeline

Academic Programs

# **Department of Biology**

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| **APR 4-Year Cycle** **SLO 3-Year Cycle** | **APR Cycle (2021 -2024)** |
| **Course ID** | **Course-Level Student Learning Outcome (CSLO)** | **Measure/Collect Data** | **Discuss & Plan** |
| BIOL 100 Principles of Biology | Upon completion of this course, the student will be able to describe and explain characteristics shared by all living organisms, and describe chemical, biological, ecological, and evolutionary processes that govern living organisms. | F21 | Sp22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to understand and evaluate issues relevant to biology. | F22 | Sp23 |
|  | Upon completing this course, the student will be able to approach and examine issues related to biology from an evidence-based perspective and communicate this information verbally, visually, and in writing. | F23 | Sp24 |
| BIOL 101 Principles of Biology Laboratory | Upon completing this course, the student will be able to recognize, identify, and use appropriate terminology and vocabulary to describe the characteristics, classification, and biology of major groups of organisms; and to describe and explain the evolution of populations and inter-relationships between organisms at the species, community and ecosystem level. | F21 | Sp22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to design experiments, to analyze data, and to present experimental results and conclusions visually, orally and in writing. | F22 | Sp23 |
| Upon completion of this course, the student will be able to apply laboratory methods and practices relevant to general biology in the areas of safety, measurement, microscopy, cell structure, basic chemistry, enzyme action, photosynthesis, respiration, genetics, and biotechnology. | F23 | Sp24 |
| BIOL 130 Animal Biology: A Behavior ApproachFall only | Upon completion of this course, the student will be able to apply critical thinking skills and the scientific thought process to analyze animal biology and animal behaviors. | F21 | Sp22 |
| Upon completion of this course, the student will be able to observe and record specific aspects of animal behavior and form hypotheses concerning the behavior’s evolution and ecological importance. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe, evaluate and discuss the survival strategies of different animal behaviors. | F21 | Sp22 |
| Upon completion of this course, the student will be able to research and analyze topics relevant to animal behavior and communicate this information verbally, visually and in writing. | F21 | Sp22 |
| BIOL 131 Animal Biology Laboratory Fall only | Upon completion of this course, the student will be able to describe, evaluate and discuss the survival strategies of different animal behaviors. | F21 | Sp22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific thought process to analyze animal behaviors in field, captive and laboratory settings. | F22 | Sp23 |
|  | Upon completion of this course, the student will be able to observe and record specific aspects of animal behavior in field, captive and laboratory settings and form and evaluate hypotheses concerning the behavior’s evolution and ecological importance. | F23 | Sp24 |
|  | Upon completion of this course, the student will be able to research and analyze topics relevant to animal behavior and communicate this information verbally, visually, and in writing. | F21 | Sp22 |
| BIOL 140 Environmental Biology | Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to understand and evaluate issues relevant to environmental biology. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe, evaluate and discuss the dynamic inter-relationships between physical Earth, biological diversity, ecosystems and evolution. | F22 | Sp23 |
| Upon completion of this course, the student will be able to research and analyze topics relevant to environmental biology and communicate this information verbally, visually, and in writing. | F23 | Sp24 |
| BIOL 143 Biology, Oceanography and Geoscience of Baja California Fall only | Upon completion of this course, the student will be able to apply critical thinking skills and the scientific thought process to understand and evaluate issues relevant to the biology, oceanography and geoscience of southern California and Baja California, Mexico. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe, evaluate and discuss the dynamic inter-relationships between physical and biological systems of the Pacific Ocean, Gulf of California, and the peninsula of Baja California. | F22 | Sp23 |
| Upon completion of this course, the student will be able to research, access and analyze topics relevant to the region’s biology, oceanography and geoscience and also describe, analyze and evaluate current issues including local and bi-national environmental crises as well as the management and exploitation of natural resources and subsequently communicate this information verbally, visually, and in writing. | F23 | Sp24 |
| BIOL 145 Ecomundo: Ecology and Environmental Science Spring only | Upon completion of this course, the student will be able to describe, evaluate and discuss the dynamic inter-relationships between physical Earth, biological diversity, ecosystems and evolution. | Sp22 | F22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to understand and evaluate issues relevant to environmental biology. | Sp22 | F22 |
| Upon completion of this course, the student will be able to research and analyze topics relevant to environmental biology and communicate this information verbally, visually, and in writing. | Sp22 | F22 |
| BIOL 150 Natural History Spring only [Offered for first time in spring 2023.] | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information related to plant and animal anatomy, morphology and taxonomic classification. | Sp 23 | F23 |
| Upon completing this course, the student will be able to describe and explain basic principles of ecology at the population, community and ecosystem levels; and will be able to evaluate and analyze data specific to local ecosystems. | Sp 23 | F23 |
| Upon completing this course, the student will be able to locate, access, evaluate and analyze information about local ecosystems (ecology, population structure and evolution, demography, biogeography, and the natural history of various local, native species). | Sp23 | F23 |
| BIOL 151 Introduction to Fermentation Science | Upon completion of this course, the student will be able to research a topic and clearly communicate it to others. | F21 | Sp22 |
| Upon completion of this course, the student will be able to integrate information from various sources to generate a cohesive thesis. | F22 | Sp23 |
| BIOL 160 Marine Biology Spring only | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information related to marine biology; and demonstrate information literacy skills to access, evaluate, and use resources to stay current in this field. | Sp22 | F22 |
| Upon completion of this course, the study will be able to describe and explain the inter-relationships between physical, biological and ecological processes at work in Earth's oceans and their importance on a global scale. | Sp22 | F22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific thought process to describe, explain and evaluate issues relevant to marine biology. | Sp22 | F22 |
| Upon completion of this course, the student will be able to research and analyze topics relevant to marine biology and communicate this information verbally, visually, and in writing. | Sp22 | F22 |
| BIOL 161 Marine Biology Laboratory Spring only | Upon completing this course, the student will be able to recognize, identify, and using appropriate terminology and vocabulary describe characteristics and biology of major groups of marine organisms. | Sp22 | F22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific thought process to design experiments, to analyze data, and to present experimental results and conclusions visually, orally and in writing. | Sp22 | F22 |
| Upon completion of this course, the student will be able to research and analyze topics relevant to marine biology and marine ecosystems, and communicate this information verbally, visually, and in writing. | Sp22 | F22 |
| BIOL 180 Human Heredity, Evolution, and Society | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information about human genetics. | F21 | Sp22 |
| Upon completing this course, the student will be able to describe and analyze examples of genetic mutations and chromosomal aberrations seen in various human syndromes and describe basic tests and tools used to study genetics at the molecular level. | F22 | Sp23 |
| Upon completion of this course, the student will be able to solve genetic problems as well as analyze and interpret patterns of inheritance of traits. | F23 | Sp24 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to describe, discuss and evaluate issues relevant to human genetics, population dynamics and the evolution of species, and to genetic engineering. | F23 | Sp24 |
| BIOL 185 Biology of Alcohol and Other Drugs | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information about the physiological effects of drugs on the human body. | F21 | Sp22 |
| Upon completing this course, the student will be able to describe the chemical processes and biological mechanisms involved at cellular, organ and organ system levels when the human body is exposed to drugs; and describe how these drugs alter the body's homeostasis; and describe how these drugs effect human behavior. | F22 | Sp23 |
| Upon completion of this course, the student will be able to describe, evaluate and discuss the physiological effects of various drugs on the human body. | F23 | Sp24 |
| Upon completion of this course, the student will be able to research and analyze information regarding the physiological effects of drugs on the human body and communicate this information verbally, visually, and in writing. | F23 | Sp24 |
| BIOL 190 Human Anatomy and Physiology | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information about anatomy and physiology. | F21 | Sp22 |
| Upon completing this course, the student will be able to recognize structures and describe functional relationships of all of the human body’s organ systems and explain how the structural anatomy of an organ dictates its physiological functions. | F22 | Sp23 |
| Upon completing this course, the student will be able to describe and explain how each organ system inter-functions and contributes to homeostasis of the body. | F23 | Sp24 |
| BIOL 210 General Zoology | Upon completing this course, the student will be able to describe and explain taxonomic characteristics, evolutionary relationships, and adaptations of major groups of consumers within kingdoms protista and animally; and describe and explain how evolution of structures determines their function. | F21 | Sp22 |
| Upon completing this course, the student will be able to recognize and identify various anatomical structures at the cellular, tissue, organ and organ system levels; and subsequently describe and discuss evolutionary change within anatomical systems in major groups of animals. | F21 | Sp22 |
| Upon completion of this course, the student will be able to use the scientific method to design experiments and ways to test hypotheses and predictions, and to collect, analyze and interpret data. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe and explain characteristics shared by all living organisms and describe chemical, biological, ecological and evolutionary processes that govern living organisms, specifically heterotrophic protistans and animals. | F21 | Sp22 |
| Upon completing this course, the student will be able to approach and examine issues related to zoology, such as evolution, ecology and behavior, from an evidence-based perspective and communicate this information verbally, visually, and in writing. | F21 | Sp22 |
| BIOL 211 Introduction to Cell and Molecular Biology | Upon completion of this course, the student will be able to access and evaluate information regarding the evolution of organelles and cells; and will be able to describe and discuss genetic inheritance and genetic engineering. | F21 | Sp22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to describe, analyze and evaluate issues relevant to molecular and cellular biology; and will be able to communicate this information visually, verbally and in writing. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe and explain chemical and biological processes that govern the structure and function of cells. | F21 | Sp22 |
| Upon completion of this course, the student will be able to locate, access and evaluate information related to cellular and molecular biology from an evidence-based perspective and present this information verbally, visually, and in writing. | F21 | Sp22 |
| BIOL 212 Biology of Plants | Upon completing this course, the student will be able to describe the anatomy, morphology, genome organization and physiology of plants; explain taxonomic characteristics, evolutionary relationships, and adaptations of major plant families. | F21 | Sp22 |
| Upon completion of this course, the student will be able to describe and explain chemical and biological processes that govern the physiology of plants on the cellular, tissue, and organ system levels; and describe and explain how the evolution of structures governs function. | F21 | Sp22 |
| Upon completing this course, the student will be able to develop hypotheses about the evolutionary history of plants. | F21 | Sp22 |
| Upon completion of this course, the student will be able to locate, access and evaluate information related to plant science from an evidence-based perspective and present this information verbally, visually, and in writing. | F21 | Sp22 |
| BIOL 215 Biostatistics [Offered for first time in fall 2022.] | Upon completing this course, the student will be able to differentiate between dependent and independent variables; present data in appropriate format(s); and describe and measure population and sample parameters and statistics. | F22 | Sp23 |
| Upon completion of this course, the student will be able to define, describe, compare and contrast sampling methods and probability distributions (e.g. normal, Poisson); define, describe, compare and contrast, calculate, explain the use of, and interpret numerical measures of central tendency (e.g. mean, mode, median), and measures of variability (e.g. variance, standard deviation, standard error of the mean, confidence interval); and will be able to differentiate types of statistical errors and identify methods to limit or eliminate them. | F22 | Sp23 |
| Upon completion of this course, the student will be able to differentiate between accuracy and precision of measurements, and will be able to report measurements to the proper significant figures. | F22 | Sp23 |
| Upon completion of this course, the student will be able to construct hypotheses, design experiments, collect data, and use appropriate statistical methods to evaluate hypotheses. | F22 | Sp23 |
| Upon completion of the course, the student will be able to calculate, interpret the results, and identify the assumptions of student t test, correlation, regression and analysis of variance as well as non-parametric statistics and analysis of frequencies. | F22 | Sp23 |
| BIOL 260 Human Anatomy | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information related to anatomy, and demonstrate information literacy skills to access, evaluate, and use resources to stay current in the field of anatomy. | F21 | Sp22 |
| Upon completing this course, the student will be able to communicate clearly and in a way that reflects knowledge and understanding of the human body and demonstrates the ability to adapt information to different audiences and applications. | F22 | Sp23 |
| Upon completion of this course, the student will be able to approach and examine issues related to anatomy from an evidence-based perspective. | F23 | Sp24 |
| BIOL 261 Principles of Human Physiology | Upon completing this course, the student will be able to use appropriate vocabulary and terminology to effectively communicate information related to human anatomy and physiology; and demonstrate information literacy skills to access, evaluate, and use resources to stay current in the field of human anatomy and physiology. | F21 | Sp22 |
| Upon completing this course, the student will be able to describe and discuss how each organ functions at the molecular and cellular levels and how various organ systems inter-function and contribute to the homeostasis of the body. | F22 | Sp23 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to describe, explain and evaluate issues relevant to human anatomy and physiology. | F23 | Sp24 |
| BIOL 265 General Microbiology | Upon completion of this course, the student will be able to use vocabulary and terminology relevant to microbiology to communicate in a clear concise manner both orally and in writing. | F21 | Sp22 |
| Upon completion of this course, the student will be able to apply critical thinking skills and the scientific method to understand and evaluate concepts relevant to microbiology. | F21 | Sp22 |
| Upon completion of this course, the students will be able to successfully perform basic tests and techniques used in a microbiology laboratory | F21 | Sp22 |
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| **Program** | **Program-Level Student Learning Outcome (PSLO)** | **Measure/Collect Data** | **Discuss & Plan** |
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| Baja California Studies Certificate of Proficiency (02891) | Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to use critical thinking skills and logical reasoning to analyze ideas and themes in literature from Baja California and Mexican-American border regions. | 2018-2021 | Spring 2022 |
| Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to apply critical thinking skills and the scientific method to assess and evaluate issues relevant to the biology, oceanography and geoscience of southern California and Baja California, Mexico. | 2018-2021 | Spring 2022 |
| Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to communicate ideas in ways that are considered clear and appropriate by people of that culture. | 2018-2021 | Fall 2022 |
| Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to apply literary theory and critical thinking skills to examine various historical, aesthetic, and social political contexts present in literature of the Mexican-American border region and Baja California. | 2018-2021 | Fall 2022 |
| Biology Associate in Science (01510) | Upon successful completion of the Biology Program, students will be able to communicate clearly in a way that reflects knowledge and understanding of biological processes and structures. | 2018-2021 | Spring 2022 |
|  | Upon successful completion of the Biology Program, students will be able to approach and examine issues related to the biological sciences from an evidence-based perspective and communicate this information in a clear manner. | 2018-2021 | Fall 2022 |
|  | Upon successful completion of the Biology Program, students will be able to demonstrate information literacy skills to access, evaluate, and use resources. | 2018-2021 | Spring 2022 |
|  | Upon successful completion of the Biology Program, students will be able to use and apply the scientific method to critically evaluate hypotheses. | 2018-2021 | Fall 2022 |

**Directions & Helpful Hints**

In the spaces provided on the timeline, please list course-level and program-level student learning outcomes and when each will be assessed.

 **APR/SLO 3-Year Cycle**: The APR/SLO cycle begins with a compressive program review and ends just before the next comprehensive is due.

 **Course ID:** Insert course designator (e.g., ENGL 114, MATH 60, COMM 103)

 **Course-Level Student Learning Outcome (CSLO):** Write in each CSLO listed on the course outline of record. This can be accessed in CurricUNET.

 **Measure:** Insert the semester(s) each CSLO will be measured, and entered into eLumen.

 **Discuss & Plan:** State the semester the faculty will meet to discuss assessment results and create action plans as needed.

 **Program:** State the program being assessed.

 **Program-Level Student Learning Outcome (PSLO):** State the PSLO(s) for each program listed.

Considerations for Completing the SLO Assessment Timeline:

As per the SCEA contract, “The timeline shall ensure that all SLOs in all sections for each course are to be assessed at least once during the 3-year cycle, with a maximum number of course SLOs per section collected by a Unit member at any one time being three (3)”.

According to the ACCJC Standard II.A.3, “The institution identifies and regularly assesses learning outcomes for courses, programs, certificates. And degrees using established institutional procedures.”