

## ASSESSMENT PLAN: BS in Biological Sciences

Date Updated: 10/31/2019

### PROGRAM MISSION

[CSUEB Missions, Commitments, and ILOs, 2012](#)

#### **CSUEB Department of Biological Sciences Mission Statement**

The mission of the Department of Biological Sciences is to provide students with the most current biological information possible coupled with extensive laboratory and field experiences. An educated and trained biologist contributes to society and returns this knowledge to the community. A diversity of courses featuring laboratory and field work supports professional specialization in a broad spectrum of disciplines within the life sciences. The degree programs are designed for students with specific career objectives in laboratory, administrative, or field settings, and for students who may seek further graduate training or preparation for careers in health professions or teaching.

### PROGRAM LEARNING OUTCOMES (PLOs)

Students graduating with a BS in Biological Sciences will be able to:

PLO 1	Explain core biological concepts, including evolutionary processes, structure-function relationships across all levels of biological organization, homeostasis, information flow, matter and energy transformations, and the interactions and interconnectedness of living systems.
PLO 2	Apply quantitative reasoning to explain biological phenomena and to address biological problems.
PLO 3	Clearly communicate biological information in a variety of formats (written, oral, visual) using a style appropriate for the intended audience.
PLO 4	Apply methods of scientific inquiry by formulating testable hypotheses, collecting and analyzing data, and reporting conclusions.
PLO 5	Gather, interpret, and evaluate published scientific information.

### Year 1: 2018-2019

1. Which PLO(s) to assess	PLO3
2. Is it aligned to an ILO?	Yes
3. If yes, list ILO.	Written Communication
4. Course name and number	Biol 469 Conservation Biology
5. SLO from course	The course SLOs are only about content and so none match this PLO

	in particular.
6. <i>Assessment activity</i>	A written Assignment administered by the course instructor to "discuss the current issues of major environmental concern, the role of humans in their causes and consequences, and potential short and long term consequences of these phenomena."
7. <i>Assessment Instrument</i>	Written Communication CSUEB Rubric
8. <i>How data will be reported</i>	Quantitative
9. <i>Responsible person(s)</i>	Chris Kitting and the Biology Assessment Committee
10. <i>Time (which semester(s))</i>	Spring
11. <i>Ways of closing the loop</i>	Assessment will be used to determine if additional training in scientific writing is required before graduation

### Year 2: 2019-2020

1. <i>Which PLO(s) to assess</i>	PLO2
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	Quantitative Reasoning
4. <i>Course name and number</i>	BIOL 426 (Advanced Molecular and Cell Biology)
5. <i>SLO from course</i>	Analyze primary research papers and apply quantitative reasoning to explain results.
6. <i>Assessment activity</i>	Dissection and oral presentation of primary research papers.
7. <i>Assessment Instrument</i>	Quantitative Reasoning CSUEB Rubrics
8. <i>How data will be reported</i>	Quantitative
9. <i>Responsible person(s)</i>	Ana Almeida
10. <i>Time (which semester(s))</i>	Spring 2020
11. <i>Ways of closing the loop</i>	Assessment results will inform changes to curriculum in order to better support student learning

### Year 3: 2020-2021

1. <i>Which PLO(s) to assess</i>	PLO 1
2. <i>Is it aligned to an ILO?</i>	No
3. <i>If yes, list ILO.</i>	N/A
4. <i>Course name and number</i>	BIOL426 (Advanced Cell and Molecular Biology) BIOL 488 (Environmental Physiology)
5. <i>SLO from course</i>	Biol 426: Students will advance their understanding of cell and molecular processes as well as their implications to health and disease. Biol 488: Describe how abiotic variables influence biochemical processes and in turn how changes in biochemistry alters physiological function
6. <i>Assessment activity</i>	Biol 426: Close-question exam – Molecular Biology Capstone Assessment Biol 488: Exam on environmental physiology Capstone material
7. <i>Assessment Instrument</i>	Biol 426: Average Score Biol 488: Molecular Biology Capstone Assessment (Couch et al. 2015)
8. <i>How data will be reported</i>	Quantitative

	Quantitative
9. <i>Responsible person(s)</i>	BIOL 426 – Ana Almeida BIOL 488-Tyler Evans
10. <i>Time (which semester(s))</i>	BIOL426 – Spring 2021 BIOL 488-Fall 2020
11. <i>Ways of closing the loop</i>	Assessment results will inform changes to curriculum in order to better support student learning

### Year 4: 2021-2022

1. <i>Which PLO(s) to assess</i>	PLO 5
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	Information Literacy
4. <i>Course name and number</i>	BIOL 475 Global Change Biology
5. <i>SLO from course</i>	Extract information from global change biology research articles and summarize this information in an appropriate format
6. <i>Assessment activity</i>	Assess lab activities that require graphing and statistics
7. <i>Assessment Instrument</i>	CSUEB Information Literacy rubrics
8. <i>How data will be reported</i>	Quantitative
9. <i>Responsible person(s)</i>	Tyler Evans
10. <i>Time (which semester(s))</i>	Spring 2022
11. <i>Ways of closing the loop</i>	Assessment will be used to determine if additional training in scientific writing is required before graduation

### Year 5: 2022-2023

1. <i>Which PLO(s) to assess</i>	PLO 4
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	Critical Thinking
4. <i>Course name and number</i>	BIOL 428 (Genomics)
5. <i>SLO from course</i>	Apply principles of scientific inquiry to formulating testable hypotheses, collect and analyze data, and report findings.
6. <i>Assessment activity</i>	Research project
7. <i>Assessment Instrument</i>	University Critical Thinking Rubrics
8. <i>How data will be reported</i>	Quantitative
9. <i>Responsible person(s)</i>	Ana Almeida
10. <i>Time (which semester(s))</i>	Spring 2023
11. <i>Ways of closing the loop</i>	Assessment data will inform changes to the curriculum in order to better support student learning