

Biology Program Assessment Plan, College of Science and Mathematics
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November 2018

The **mission of the Biology Department** at Colorado State University – Pueblo is to provide quality undergraduate and graduate education for a diverse student population through a comprehensive curriculum that emphasizes experiential learning opportunities, course-embedded laboratories, field experience, internships, and scientific research opportunities. The Biology Department provides the biological component of the liberal arts education for the University. We promote student understanding of biological concepts relevant to the individual and society, and foster an appreciation and understanding of scientific inquiry. Our students obtain a broad education, covering a wide variety of biological disciplines. We are committed to providing access for our students to a modern, rigorous academic curriculum and equipping our graduates to succeed and make important contributions to the workforce and nation. The Faculty is committed to producing scholarly works and research with undergraduate and graduate students, and contributing our expertise to local business, industry, government, and our campus community.

Biology Program Goals: these include giving our students a solid grounding in the biological sciences and critical thinking skills. We aim to 1) prepare our students to become productive, accountable and responsible employees upon entering the work force; 2) prepare students to enter and succeed in graduate or professional schools; 3) develop in students a broad-based theoretical foundation supplemented by laboratory and field experiences that allow individual observations, interpretations and applications; and 4) allow those students seeking a minor in biology to supplement and strengthen the major field of study.

Student Learning Outcomes

1. Students will develop a broad-based knowledge and application of concepts, techniques and terminology in molecular, cellular, organismal, evolutionary and ecological biology.
2. Students will develop applied scientific skills through field and laboratory experience and data analysis.
3. Students will develop skills in reading and interpreting the scientific literature and in presenting a synthesis of it accurately in oral and written form.
4. Students will demonstrate critical thinking and problem solving skills using experimental design and the scientific method.

Curriculum

The biology curriculum has a set of core courses, support courses (mathematics, physics, and chemistry), plus a selection of elective courses that meet the learning outcomes above. The structure of these courses requires the students to learn content knowledge, interpret and report on literature and data they have collected, as well as to evaluate scientific ideas. Various course assignments are used to allow students to demonstrate achievement of these skills.

Biology core courses are to include the following (AY 2010-11): Course prefix	Course title	Credit hours
BIOL 171	First Year Seminar	1
BIOL 181/L	College Biology I/ Organismal Diversity	4
BIOL 182/L	College Biology II/ Cellular Biology	4
BIOL 201/L or BIOL 202/L	Botany or Zoology	4
BIOL 301/L	General Microbiology	5
BIOL 350	Mendelian and Population Genetics	2
BIOL 351	Molecular Biology and Genetics	2
BIOL 352	Evolutionary Biology and Ecology	3
BIOL 412/L or BIOL413/L or BIOL414/L	Cellular Biology or Plant Physiology or Vertebrate Physiology	4
BIOL 493	Senior Seminar	1

Assessment Methods and Results

SLO 1. Administer the GRE to each class of First Year Seminar (BIOL 171) for baseline assessment. Administer the GRE and MFAT exam to each class of Senior Seminar (BIOL 493). Our goal is to have 75% of our senior students score at 70% or higher on the GRE in the BIOL 493 class, and to have 75% of our senior students score at or above 50% of National percentile on the MFAT exam.

SLO 2. Assess the applied scientific skills of our students during their first year (College Biology I BIOL 181 Lab and College Biology II 182 Lab) and second year (Botany BIOL 201 Lab or Zoology BIOL 202 Lab) and compare the applied scientific skills of the same students during their junior or senior year in Microbiology (BIOL 301 Lab). Our goal is to have 80% of our junior or senior students show increased proficiency.

SLO 3. Assess the reading, writing and presentation skills of our students during their second year in Botany (BIOL 201) or Zoology (BIOL 202) and compare to the same skills during their junior or senior year in Evolutionary Biology and Ecology (BIOL 352). Our goal is to have 75% of our junior or senior students show increased proficiency in BIOL 352. In addition, faculty will complete a rubric for each student in Senior Seminar (BIOL 493) that will assess their literature interpretation based on their Senior Capstone Oral Presentation. Our goal is to have at least 80% of our senior students be at Proficient level.

SLO 4. Assess the critical thinking and problem skills of each class of College Biology I (BIOL 181 Lab) and compare to the same skills during their junior or senior year in Microbiology (BIOL 301 Lab), Cell Biology (BIOL 412/Lab), Plant Physiology (413 Lab), and/or Vertebrate Physiology (BIOL 414

Lab). Our goal is to have our students show increased proficiency during all these evaluations. In addition, faculty will complete a rubric for each student in Senior Seminar (BIOL 493) that will assess their critical thinking based on their operation of the scientific method within their Senior Capstone Oral Presentation and their written Senior Capstone Research Proposal. Our goal is to have at least 80% of our senior students be at Proficient level.

PROPOSED Timeline

	Assessment Frequency	Evidence Gathered
SLO 1	Every semester	MFT Exam
SLO 2	Every 3rd year, starting 2018-2019	Rubric results
SLO 3	Every 3rd year, starting 2019-2020	Rubric results
SLO 4	Every other year, starting 2020-2021	Rubric results

BIOLOGY STUDENT LEARNING OUTCOMES CURRICULUM MATRIX									
	351	352	412	412L	413	413L	414	414L	493
1. Students will develop a broad-based knowledge and application of concepts, techniques and terminology in molecular, cellular, organismal, evolutionary and ecological biology.	Mastery	Develop	Mastery	Mastery	Mastery	Mastery	Mastery	Mastery	<i>Assess by GRE / MFAT</i> Mastery
2. Students will develop applied scientific skills through field and laboratory experience and data analysis.	Develop	Develop	Mastery	Mastery	Mastery	Mastery	Mastery	Mastery	Mastery
3. Students will develop skills in reading and interpreting the scientific literature and in presenting a synthesis of it accurately in oral and written form.		<i>Assess / Develop/</i> Mastery	Mastery	Mastery	Mastery	Mastery	Mastery	Mastery	<i>Assess by Paper & Presentation</i> Mastery
4. Students will demonstrate critical thinking and problem solving skills using experimental design and the scientific method.	Develop	Develop	Mastery	<i>Assess</i> Mastery	Mastery	<i>Assess</i> Mastery	Mastery	<i>Assess</i> Mastery	<i>Assess by Paper & Presentation</i> Mastery