

# Collaborative Program Assessment Using an Undergraduate Capstone Course

Department of Biology  
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## B.S. Marine Biology Facts

20 Department of Biology faculty  
240 B.S. Marine Biology students  
25-35 graduates per year  
Is a new program

## Introduction

The Department of Biology began collaborative program assessment in the fall of 2012.

Previously the Department of Biology had student learning outcomes, but they were not defined and implemented by the entire faculty.

Following the generation of collaborative student learning outcomes for the undergraduate BS in Marine Biology, the faculty created a curriculum map and began program level assessment in spring 2014.

## B.S. Marine Biology Learning Outcomes

1. Student will be able to demonstrate scientific literacy by making informed, evidence-based decisions on science-related issues.

### Biological Knowledge: Synthesis and Application

Student will be able to:

2. Explain biological processes from molecules to eco-systems in an evolutionary context, including being able to use examples from Hawai'i.
3. Propose potential solutions to real-world problems by applying biological knowledge.

### Critical Thinking and Reasoning Skills

Student will be able to:

4. Identify gaps in knowledge and apply the scientific method to generate and test new hypotheses to fill those gaps.
5. Form strong biological arguments by critically evaluating scientific evidence and arguments, and applying logic and quantitative methods.

### Values

Student will:

6. Demonstrate inquisitiveness regarding, and respect for, the biological world.
7. Strive for excellence, work ethically individually and in teams and demonstrate respect for diversity of opinions.

### Communication skills

8. Student will in oral and written forms, be able to communicate clearly and professionally.

## Curriculum Map

Course Number and Title	1	2	3	4	5	6	7	8 (OC)	8 (W)
BIOL 171 Introduction to Biology I	I	I				I	I		
BIOL 171L Introduction to Biology I Lab	I			I	I	I	I		I
BIOL 172 Introduction to Biology II	I	I				I	I		
BIOL 172L Introduction to Biology II Lab	I	I			I		I	I	I
BIOL 265 Ecology and Evolutionary Biology		R	I	R	R				
BIOL 265L Ecology and Evolutionary Biology Lab	R	R			R	R	R	R	R
BIOL 275 Cell and Molecular Biology		R	R		R				
BIOL 275L Cell and Molecular Biology Lab	R			R		R	R		R
BIOL 301 Marine Ecology and Evolution	R	R	R	R	R				
BIOL 301L Marine Ecology and Evolution Lab	R	R		R	R		R		R
BIOL 375 Concepts of Genetics	R	R		R	R				
BIOL 375L Concepts of Genetics Lab	R		R			R	R	R	R
MICR 401 Marine Microbiology	M	M	M		M			M	
MICR 401L Marine Microbiology Lab			M		M		M		
BOT 480 Algal Diversity and Evolution	M	M,A	M		M	M	M	M	M
ZOOL 475 Biology of the Invertebrates		M,A					M		
ZOOL 475L Biology of the Invertebrates Lab	M					M	M		
BIOL 404 Advanced Topics in Marine Biology	M,A		M,A	M,A	M,A	M,A	M,A	M,A	M,A

## Successful Strategies

Initially identified holes in curriculum map. Brought faculty together from core courses to identify potential course modifications to fill holes.

Collected evidence from BIOL 404 (Advanced Topics in Marine Biology) capstone course.

Collaborative approach encourages faculty support and participation.

Curriculum committee performed assessment using AAC&U Values Rubric.

Results required a reevaluation of writing experiences within the curriculum due to lower than expected scores.

Great value in having a diverse committee of faculty to participate in assessment planning and execution.

Collaborative approach to all steps is essential!

Utilize the Mānoa Assessment Office to facilitate workshops and training with faculty.

## Next Steps

Create a comprehensive assessment plan.

Continue to assess a minimum of one SLO each year.

Simplify SLOs to remove redundancy.