

## Capstone II AY17 Program Review: Capstone Rubric & 2017 Aggregate Scores

### CHEMISTRY/BIOCHEMISTRY

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**Assessment Type:** Academic Program

**Year/Term:** 2016-2017

**Level:** Chemistry/Biochemistry Capstone

**Learning Outcome:** Program Outcomes Program Learning Outcomes (PLOs)

**Assessment Method/Tool:** Program Learning Outcomes Capstone Rubric

**Measurement Scale:** 3-1

**Sample Size:** 5

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	Proficient (# of students)		Competent (# of students)		Adequate (# of students)	
Content Knowledge	4	80%	1	20%	0	0%
Applied Learning Skills	0	N/A	0	N/A	0	N/A
Inquiry and Integrated Learning	4	80%	1	20%	0	0%
Communication and Critical Thinking	4	80%	1	20%	0	0%
		80%		20%		0%

**Benchmark:** **100%** Institutional benchmark goal for percent of students to meet "Proficient" or "Adequate" levels

**Number Achieving Benchmark:** 5 of how many participants? **5**

**Percent Achieving Benchmark:** Actual percentage of students meeting "Adequate" or "Proficient" levels: **Mean: 100%**  
**Median: 100%**

## Closing the Loop Statement

Although the student population assessed in 2017 was small, all students met the program outcomes (80% at a “proficient” level and 20% at “adequate” level). We believe this is the result of careful scaffolding and alignment of course structure and co-curricular activities with program outcomes. Students in the Chemistry-Biochemistry degree are required since their freshman year to write lab reports in the style of technical papers. In upper division level lab courses, they are often required to research the literature and integrate previous knowledge in the implementation of experiments. Thus, throughout the curriculum, they have the opportunity to develop literature searching skills, interpret technical papers and integrate that knowledge in their own writing. In addition, most majors are also members of the Eastern Oregon University Student Chapter of the American Chemical Society (Chemistry Club) which provides opportunities for informal communication of chemistry concepts through outreach activities in the community and formal communication of scientific research through presentations at regional and national meetings. At least 80% of all majors have experienced presenting their research in a professional setting prior to their capstone presentation in their senior year.

As for improving performance, most concerns were addressed in 2015. Prior to that time, concerns were raised by faculty that students were not meeting program outcomes, particularly in the “content knowledge” category. This was attributed to the fact that the assignment only provided a general umbrella topic for the seminar that was leading to not so technical seminar papers and presentations. This issue was resolved by enforcing that the seminar topic be chosen based on a current peer reviewed article from The Journal of the American Chemical Society. Following this change, a large improvement on the chemistry content of the seminar was observed.

## Program Learning Outcomes

Chemistry-biochemistry graduates will be able to apply pertinent chemical knowledge to the solution of diverse scientific, environmental, and social problems in the following learning outcomes:

- **Content Knowledge:** Students will understand the basic chemical/biochemical principles and content in the major specialty areas, which include inorganic, organic, physical, analytical, and biochemistry.
- **Applied Learning Skills:** Students will acquire safe chemical/biochemical laboratory practices and techniques including the use of instrumentation and computers.
- **Inquiry and Integrated Learning:** Students will be able to design and conduct chemical/biochemical research with appropriate documentation including literature searches.
- **Communication and Critical Thinking:** Students will understand the importance of the discipline to modern society and be able to communicate chemical/biochemical information both orally and in writing to their peers and the public.