

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

Assessment Type: Academic Program

Year/Term: 2016-2017

Level: BIOL Capstone

Learning Outcome: Program Learning Outcomes (PLOs)

Assessment Method/Tool: ETS Major Field Test

Measurement Scale: 3-1 (Scores were reported as Totals)

Sample Size: 12

	Proficient	Adequate	Developing
Content Knowledge			
Integrative Learning/Critical thinking			
Community/Civic Engagement	N/A		
Totals	7 58%	1 8%	4 33%

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

Number Achieving Benchmark: 8 of how many participants? **12**

Percent Achieving Benchmark: 66% Actual percentage of students meeting “Adequate” or “Proficient” levels

Closing the Loop

The Biology Program at EOU assesses student mastery in its program learning outcomes via the use of the Major Field Test, administered by ETS. The test is taken by thousands of Biology majors at hundreds of institutions nationwide and assesses core areas in Molecular Biology/Genetics, Population Biology/Ecology/Evolution, Organismal Biology, and Cell Biology. The test is further divided into subcategories such as Plant Physiology, Taxonomy, Animal Physiology, and so forth. Because our students matriculate in two very different degree tracks, we split those students out into those two categories when we perform our assessment.

Overall, our students meet or exceed expectations in all 4 subcategories, as reported in our assessment data presented elsewhere. As expected, students in our Ecological track perform better in the organismal biology and population biology/ecology subcategories, while students in our Molecular Biology track perform better in the Cell Biology and Molecular/Genetics subcategories. Based on these data, we believe the program is serving students well.

However, there are caveats to be addressed. A few students this year performed particularly poorly overall, even in categories that they should have performed better in, based on their chosen degree track. Some of these students were transfers who had received part of their degree schooling elsewhere; in one case, the student studied abroad and did not receive the same mix of classes that our students would be exposed to in a typical four-year curriculum at EOU. Nevertheless, these students, with 2 exceptions, performed well enough in categories directly related to their degree track to at least meet expectations, while not exceeding them.

One program learning outcome that we put in place several years ago bears further attention, based on our curriculum and these data. In BIOL 213, one of the outcomes is engagement with community; while students do perform tasks geared toward community engagement, this is the only course in which they do so, and no other courses in the curriculum carry this outcome as a designated course outcome. Therefore, the students have no way of developing this skill as they move through their coursework, and without a chance to continue their development, there is really no way for students lacking the skill at the outset to master the skill by the time they are done. It is likely, therefore, that we will remove civic engagement as a program learning outcome.

These data also reveal some troubling aspects of our curriculum that need to be taken into account, especially for our students in the Ecological track. In the past few years, due to budget cuts, we have been forced to remove many of our courses that focus on specific organismal groups; as a result, we have a single organismal course, Ornithology, which is great for someone wanting to be a bird biologist but not as useful for others. To have a strong Ecological/Organismal program, we need additional organismal courses, such as a rotating Mammalogy/Ornithology/Herpetology course and an Entomology course that introduces additional aspects of invertebrate zoology. Moreover, our students are poorly prepared for Plant Physiology, and so we need to find a way to engage more students from both tracks in that course.

Program Learning Outcomes

- Breadth of **Content Knowledge** in Biology: Students will master the basic foundational content in the field of biology and apply it to critical analysis and creative application of that content.
- **Creative Inquiry**: Students will demonstrate the ability to design (create) and conduct experiments to answer biological questions. This process is based upon the tenets of the scientific method.
- **Integrated Learning through Critical Thinking**: Students will integrate their knowledge (content) of

biology, chemistry, physics, and social systems through critical analysis of ecosystems, biological evolution, and the biotechnological revolution.

- **Community/Civic Engagement:** Students will learn to engage in and apply scientific inquiry to conservation activities that involve the wider regional community.