

End of Year Assessment Report for Programs

Program: Environmental Biology

Semester/year: Spring 2019-2020

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Program Mission Statement

The Department of Biology is committed to excellence. Our mission is two-fold. First, preparing graduates in the biological sciences who demonstrate open-minded inquiry, integrity, service, and stewardship of God's creation. Second, helping students in the liberal arts better understand and appreciate their role in God's created order. We see this commitment as an affirmation of the mission of Greenville University.

Program Objectives

1. Think like an environmental biologist
 1. Demonstrate working knowledge of major areas in environmental biology (organismal biology, ecology, environmental science, and environmental policy).
 2. Describe ethical dimensions of environmental issues and articulate links between the study of environmental biology and a Christian worldview.
2. Work like an environmental biologist
 1. Design studies, collect and analyze data to answer biological questions
 2. Appropriately utilize scientific literature
 3. Demonstrate standard laboratory skills
3. Communicate like an environmental biologist
 1. Orally present scientific information effectively
 2. Communicate scientific information in written form effectively

Assessment Methods and Benchmarks – SPRING SEMESTER

For each program objective, choose one “best representative” assignment at the Introductory, Developmental, and Mastery levels. You will have a total of three assignments/measurements per program objective. Put this information in a chart. Refer back to your Program Learning Objective Alignment Chart to determine best representative assignments and benchmarks. In any given semester, you may not have assignments at all three levels for every program objective; simply report all that you can.

Program Objective	Introducing	Developing	Mastering
1.1. Think like an environmental biologist: Demonstrate working knowledge of major areas in environmental biology (organismal biology, ecology, environmental science, and environmental policy).	BIOL108; Exams, Labs Benchmark: >=70% Evidence: 100% completion *	BIOL215; Lab keying exam, collection Benchmark: >=70% Evidence: 100% completion	BIOL370; Exam 2, Final, Lab 8 Benchmark: >=70% Evidence: NA% completion No Env Bio majors were enrolled in BIOL370 this year
1.2. Think like an environmental biologist: Describe ethical dimensions of environmental issues and articulate links between the study of environmental biology and a Christian worldview.	THEO 110. See note below	UNIV301: Term paper or mid-term Benchmark: >= 70% Evidence: 100% (2/2)	BIOL410 CLO Faith/Ethics reflection paper Benchmark: >=70% Evidence: 67% completion (2/3; 1 did not complete assignment)

* Indicates completion rates calculated for Environmental Bio majors only, where the course is a General Education Science course.

PO 1.2 Not assessed at the “I” or “D” level in the biology curriculum. The General Education curriculum provides two important building blocks; THEO 110 (Introduction to Christian Thought and Life, “I” level) and UNIV 301 (Science and Christianity; “D” level).

Analysis of Assessment Findings – FULL YEAR

NOTE – the way our curriculum works it does not make sense to complete this analysis and reflection on a semester-by-semester basis.

Discuss the significance of the findings of the current semester in light of the desired results, findings from previous semesters/years, recent changes in the program or the assessment process, etc. What did you learn from the assessment? In particular:

(1) What strengths and weaknesses do the findings reveal about the program and/or the assessment process? --

(2) What impact have program changes in the last several years had on student learning (indicate those program changes that resulted from previous assessment findings)? --

(3) What impact have recent changes in the assessment process had on the quality and usefulness of the findings? Of particular importance to note are recent changes and improvements in the program that resulted from previous assessment efforts. --.

Honestly, we have not found this assessment process to be very helpful, due to a mismatch between the answers it seeks to give and the questions we are asking. The assessment framework as given seems focused on fine-scale tuning of delivery, while we have been asking bigger-picture questions about the curriculum. Furthermore, the number of students is not large enough in any one year to make the assessment findings anything more than anecdotal; the numbers are not nearly large enough for statistical confidence. One or two particularly strong or weak students in any given cohort can skew the numbers considerably.

This year has been even worse for assessment, as one of the key assessment pieces in the table above was affected by the pandemic. BIOL215 was supposed to be a field-based class, teaching plant ID skills, and the instructor was unable to come up with satisfactory activities and assessments comparable to the planned ones, due to students being in many geographical areas with varying access to natural areas to find plants. The keying assessment was not administered this year due to the impossibility of having all the students working with the same kinds of fresh plant specimens, with appropriate technical botanical keys. Furthermore, due to the flexibility of course sequence in the major, it just so happened that no env bio majors were enrolled in BIOL 370 this year, which is where the M level of PO 1.1 is assessed.

Sharing and Discussion of Assessment Findings – FULL YEAR

We have regular department meetings as well as informal hallway discussions. At this point, our program discussions are driven by our own anecdotal observations, and not by the limited scope of what this assessment data can tell us. Sometimes the discussions at the level of the Math & Science Division touch on topics with relevance to the program, e.g. summer research.

Use of Assessment Findings for Program Improvement (Action Plan) – FULL YEAR

(A) Describe any changes in (1) the program and/or (2) the assessment process that are planned in response to these assessment findings.

(A.1)

(B) Briefly summarize the status of the previous years' or semester's action plans. Are they complete, still being implemented, on hold, or some other status?

(C) For each intended improvement or change in the program stemming from this semester's data, provide a detailed timeline for follow-up data collection, data analysis, and data review.

We are well aware that this is a weak major. Much of it is pieced together from gen-ed requirements, and past students have commented that there aren't many course options. We simply do not have the resources to make many substantial improvements to the program. We would love to be able to offer a GIS course, since many entry-level jobs in the field list that as a desirable skill, but we simply do not have the capacity.

Gregg Marcello developed a Mammalogy and Conservation Biology courses for May term, which were a good way to increase our relevant course offerings in a setting very amenable to field learning, and he offered them at both gen-ed and majors levels concurrently to ensure enough enrollment. However, now that May term has been discontinued, the future of these courses is not clear. This year, the pandemic made the point moot.

One thing we consistently hear from students is that PHYS102, currently a requirement, is not valuable to them at all. It seems to be more aimed at education majors, they say the labs are "a joke" after the rigor of some of their CHEM and BIOL classes, and it doesn't introduce much they don't get in BIOL 108. However, we have not yet removed that course from the curriculum because it's not clear what we would replace it with.

We have still been unable to identify an adjunct to teach BIOL 365, Environmental Law and Policy, since our last one quit a couple of years ago. However, we decided to not remove it from the curriculum because we believe it is very important for prospective environmental biologists to understand the regulatory framework which has such a powerful influence on so many jobs in the field.

The best thing we could do to strengthen the major given the institutional resources we have, would be to have our students take more courses at the Au Sable Institute. However, most of our students do not seem to have the financial resources that would allow them to do this.

One change we made a couple years ago that seems to be working well is to separate BIOL 309 and BIOL 215 into different semesters. Both of these courses require large amounts of memorization and are two of the more challenging courses in the major, and both are offered only every other year. However, both used to be offered in the same semester. We rearranged the schedule to not offer them together, and think this makes less of a "feast or famine" course scheduling situation for the students.

We had started discussing whether statistics should be a prerequisite for BIOL 370. This is not something that shows up in the assessment tables, but it shows up in the extra hours spent trying to help students understand the data-intensive labs. However, this discussion has been tabled for now because our attention has turned to several other things: chiefly the whole pandemic thing, UNIV101, and personnel transitions and searches in the department.

Having UNIV101 taught by biology faculty, while it's not without significant costs and drawbacks, does present some opportunities. These are still fairly undefined but hopefully over the summer we can better define these and build the syllabus accordingly.

Full Year Reflection - FALL/INTERTERM/SPRING TERMS

See above

Supporting Documents

[If you attach any supporting documents, please list them here. You may submit these supporting documents into the D2L dropbox.]