End of Year Assessment Report for Programs

Program: Environmental Biology	Semester/year: Spring 2018
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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 biological issues and articulate links between the study of biology and a Christian worldview.
2. Work like an environmental biologist
    1. Formulate testable hypotheses
    2. Collect, Analyze, and Interpret Data
    3. Appropriately utilize scientific literature
    4. Demonstrate development of relevant professional skills
3. Communicate like an environmental biologist
    1. Orally present scientific information effectively
    2. Communicate scientific information in written form effectively
    3. Use relevant scientific terminology

Assessment Methods and Benchmarks – SPRING SEMESTER

Program Objective	Introducing	Developing	Mastering
1.1 Working knowledge of major areas	*Not taught this semester*	BIOL215 CO 2; Lab keying, collection	*Not taught this semester*
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
1.2 Describe ethical dimensions	*Not currently assessed*	*Not currently assessed*	*Not currently assessed*
2.1 Formulate hypotheses	BIOL112 CO 6; Open inquiry experiment	*Not taught this semester*	BIOL410 Need to revise COs ; Paper & Presentation
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
2.2 Collect, analyze, interpret	*Not taught this semester*	BIOL309 CO 5; Practical exams	BIOL410 Need to revise COs ; Paper & Presentation
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
2.3 Utilize scientific literature	*Not taught this semester*	*Not taught this semester*	BIOL410 Need to revise COs ; Paper & Presentation
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
2.4 Integrate major with goals	*Not currently assessed*	*Not currently assessed*	*Not currently assessed*

3.1 Orally present	*Not currently assessed*	*Not taught this semester*	BIOL410 Research Presentation **
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
3.2 Written form	*Not taught this semester*	*Not taught this semester*	BIOL410 Research Paper **
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%
3.3 Use relevant terminology	BIOL112 CO 1; Exams, Homework	BIOL215 CO 1; Lab Quizzes	*Not taught this semester*
	Benchmark: >=70%	Benchmark: >=70%	Benchmark: >=70%

Assessment Findings – SPRING SEMESTER

PO1.1

D: BIOL215, CO2. *Use technical botanical keys to identify unknown plants.* Assessed based on plant collections. This addresses PO 1.1 – demonstrate knowledge of major areas of environmental biology. 75% (6/8) students met this objective at a 70% threshold.

PO1.2

Not currently assessed

PO 2.1

I: BIOL112, CO 6. *Design and conduct experiments, and interpret the results*. Assessed based on an open-inquiry experiment[1]. Hypothesis formulation is part of experimental design. 97% (38/39) students met this objective at a 70% threshold.

M*:* BIOL 410, Paper and Presentation. Hypothesis formulation is part of completion of this paper[1]. 92% (12/13) students met this objective at a 70% threshold.

PO 2.2

D. BIOL309, CO 5. *Identify and analyze the unifying features of chordates using actual biological specimens*. Assessed based on practical exams. 85% (6/7) students met this objective at a 70% threshold.

M*:* BIOL410, Paper and Presentation. Hypothesis formulation is part of completion of this paper[1]. 92% (12/13) students met this objective at a 70% threshold.

PO 2.3

M*:* BIOL410, Paper and Presentation. Hypothesis formulation is part of completion of this paper[1]. 92% (12/13) students met this objective at a 70% threshold.

PO 2.4

Not currently assessed

PO 3.1

M. BIOL410 CO 2: *Communicate their own results in writing and speaking using appropriate scientific formats and language*. Assessed on grades for an 8 minute and a 16 minute oral presentation of the students research results. 100% (13/13) students met this objective at a 70% threshold.

PO 3.2

M. BIOL410 CO 2: *Communicate their own results in writing and speaking using appropriate scientific formats and language*. Assessed on Paper grades. 77% (10/13) of students met this objective at a 70% threshold.

PO 3.3

I. BIOL112 CO 3: *Describe the life histories and importance of viruses, bacteria, protists, fungi, and invertebrates*. This objective was assessed on this course objective because it involves a large amount of terminology[2]. 92% (36/39) students met this objective at a 70% threshold.

D. BIOL215 CO 1: *Understand botanical terminology and nomenclature*. This course objective directly aligns with the program objective. 87.5% (7/8) students met this objective at a 70% threshold

[1] These assessments based on global assignment scores, not on scores specific to hypothesis formulation, data use and management, or literature use.

[2] It should be assessed on terminology based exam items

Analysis of Assessment Findings – SPRING SEMESTER

The current results suggest that we are achieving our objectives. However, there are substantial problems (detailed in the footnotes above) in how the objectives are assessed, and it is entirely possible that these numbers will drop off when we have more specific assessments in place. These problems have not substantially changed since last semester. Given the recent adoption of new student learning outcomes at the institutional level, the entire curriculum map should be revised. This should include new mapping of assignments to the program objectives.

Sharing and Discussion of Assessment Findings – SPRING SEMESTER

In the past, program assessment has been more organic and less formal. For example, we had a discussion several years ago about the range of specific laboratory skills that a biologist would be expected to have, and began a process of identifying where in our curriculum those would be introduced. This arose organically from a faculty discussion in which lack of critical skills was noted. This is typical of our process.

With the introduction of a more structured assessment process, three actions seem to be important:

1) Faculty should review and comment on this report each semester
2) Additional "subjective" assessments that come up as part of normal departmental discussions should be noted and added to future reports
3) Needed revision of POs, COs, and grade items should be determined and carried out (specified below, in part).

Use of Assessment Findings for Program Improvement (Action Plan) – SPRING SEMSTER

As noted above, this process has highlighted the need to:

1) Better define some of the program objectives (specifically 1.1). *This should be completed in Fall 2018.*
2) Map assignments to PO 1.2. This may only have assessment at the D level. *This should be completed in Fall 2018*.
3) Consider revising PO 2 to include reference to specific laboratory skills, as this process was begun several years ago. *This is a longer-term goal, and should be addressed in the 2018-2019 academic year.*
4) Revise some assignments to make the assessment of program objectives more specific (PO 2.1, 2.2, 2.3, and 3.3). *Needed changes should be identified in Fall 2018.*
5) Extend our assessment efforts to include advising (PO 2.4). This makes sense from the perspective that advising is an important activity that the faculty department carry out, and it is heavily based on our curriculum (but also includes Gen Ed requirements). It is a challenge however because it does not produce "assessable artifacts" at present, and the advising workload is heavy enough that we need to think carefully about how we gather assessment data without unduly burdening faculty. This is a more major project, and we probably don't want to rush this. We should develop a plan to address this issue by the end of the year (Fall 2018).

Full Year Reflection – FALL/INTERTERM/SPRING TERMS

The major findings of the fall and spring are nearly identical – our assessment methods are insufficiently specific. Revision of the curriculum map to incorporate the new SLOs (which is needed in any case) should include an update of the curriculum map. This major is ripe for a major revision, and we need to dedicate some time to that during the fall semester.

Supporting Documents

[you may insert documents below or upload them separately]