

2019-20 Student Learning Assessment Report, Academic

Program: Biology (BA/BS)	Degree: Major	Department Head: Christopher Harbison	Submitted By: Tom Giarla	Date Submitted: 10/15/2020
<p>Mission:</p> <p>The Biology Department seeks to develop in each student an appreciation of the science of biology at all levels of study (molecular, cell, whole organism, and populations), which is understood and integrated in terms of Darwinian evolution. This is accomplished through a rigorous, broadly based, laboratory-intensive curriculum taught by faculty who are dedicated, first and foremost, to enriching the learning experience of their students. In addition to a biology core curriculum, all students take additional courses in the areas of cell/molecular biology, physiology, morphology, and organismic/population biology. A major emphasis of our program is to encourage critical thinking and an active engagement in the biological sciences. We do this by keeping class sizes small and including a laboratory experience as an integral component of most courses. Many laboratories incorporate independent research projects where students creatively build on fundamental concepts and techniques to address interesting biological questions. The program further encourages and reinforces independent research skills by offering credit for on-campus Independent Research courses mentored by departmental faculty or off-campus Science internships in Biology. In order to accomplish these pedagogical goals, the department hires only broadly-trained faculty who also possess expertise in a particular biological discipline. Faculty members are encouraged to establish and maintain active research programs in order to remain current in their disciplines, enthusiastic about their courses, and to provide independent study opportunities for students.</p>				
1. Major/Program Student Learning Outcomes Students will be able to...		2. Phase		
1. Explain key biology concepts within an evolutionary framework and across different levels of biological organization, from molecules to ecosystems.		Planning Planning2+		
<p>3. Assessment Procedures (Planning/ determining)</p> <p>Method: (ex. tests, presentations, research paper)</p> <p>This outcome will be assessed in multiple upper-division biology courses (BIOL225 and above) that emphasize learning facts and theories. Student learning will be assessed through exams and/or quizzes. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Faculty teaching those courses will select an exam or quiz and report the grades for that assignment for each major in the course.</p>				
<p>Using a Sample of Students?</p> <p>Yes</p>				
<p>If yes, describe your sample.</p> <p>All majors enrolled in one of the classes selected by the assessment coordinator.</p>				
<p>When does assessment occur?</p> <p>Once per course selected by the assessment coordinator.</p>				
<p>How often does assessment occur?</p> <p>Every other year</p>				
<p>Criteria (How do you know students are achieving learning outcome?)</p> <p>At least 80% of students earning a C- or better on the quiz or exam.</p>				

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
2. Evaluate scientific literature to engage in scientific discussion, debate competing ideas, and formulate arguments.	Planning Planning2+
<p>3. Assessment Procedures (Planning/ determining) Method: (ex. tests, presentations, research paper)</p> <p>This outcome will be assessed in courses where students are required to read and synthesize multiple primary literature articles. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Faculty members will teaching those courses will provide a rubric and report to the assessment coordinator explaining their assessment procedure and results. Student learning will be assessed via in-class debates, literature reviews, annotated bibliographies, and/or oral presentations.</p>	
<p>Using a Sample of Students?</p> <p>Yes</p>	
<p>If yes, describe your sample.</p> <p>All majors enrolled in one of the classes selected by the assessment coordinator.</p>	
<p>When does assessment occur?</p> <p>Once per course selected by the assessment coordinator.</p>	
<p>How often does assessment occur?</p> <p>Every other year.</p>	
<p>Criteria (How do you know students are achieving learning outcome?)</p> <p>At least 80% of students earning a C- or better on the assignment.</p>	
1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
3. Apply scientific inquiry to address biological questions, including hypothesis formulation and experimental design.	Planning Planning2+
<p>3. Assessment Procedures (Planning/ determining) Method: (ex. tests, presentations, research paper)</p> <p>This outcome will be assessed in courses with independent projects where students design experiments with appropriate strategies, controls, and alternative approaches. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Student learning will be assessed via experimental planning worksheets, written proposals, lab journals, and portions of formal lab reports or posters.</p>	
<p>Using a Sample of Students?</p> <p>Yes</p>	
<p>If yes, describe your sample.</p> <p>All majors enrolled in one of the classes selected by the assessment coordinator.</p>	

When does assessment occur?

Once per course selected by the assessment coordinator.

How often does assessment occur?

Every other year.

Criteria (How do you know students are achieving learning outcome?)

At least 80% of students earning a C- or better on the assignment.

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
4. Operate equipment and use experimental techniques competently in lab and field settings.	Planning Planning2+

3. Assessment Procedures (Planning/ determining)**Method: (ex. tests, presentations, research paper)**

This outcome will be assessed in courses with lab or field components that demand safe handling of scientific equipment and chemicals to make observations and generate data of sufficient quality as to be useful for addressing biological questions. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Student learning will be assessed via lab practicals and portions of formal lab reports.

Using a Sample of Students?

Yes

If yes, describe your sample.

All majors enrolled in one of the classes selected by the assessment coordinator.

When does assessment occur?

Once per course selected by the assessment coordinator.

How often does assessment occur?

Every other year.

Criteria (How do you know students are achieving learning outcome?)

At least 80% of students earning a C- or better on the assignment.

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
5. Apply quantitative reasoning to problems in biology, including analyzing data and modeling biological phenomena.	Planning Planning2+

3. Assessment Procedures (Planning/ determining)**Method: (ex. tests, presentations, research paper)**

This outcome will be assessed in courses that include data collection and/or analysis and in courses where mathematical modeling is applied to biological

phenomena. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Student learning will be assessed via data analysis exercises in the lab, relevant exam/assignment questions, and data analysis portions of formal lab reports.

Using a Sample of Students?

Yes

If yes, describe your sample.

All majors enrolled in one of the classes selected by the assessment coordinator.

When does assessment occur?

Once per course selected by the assessment coordinator.

How often does assessment occur?

Every other year.

Criteria (How do you know students are achieving learning outcome?)

At least 80% of students earning a C- or better on the assignment.

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
6. Effectively communicate current knowledge of biology orally and in writing to varied audiences, including faculty, peers, community members, and/or other professionals.	Planning Planning2+

3. Assessment Procedures (Planning/ determining)

Method: (ex. tests, presentations, research paper)

This outcome will be assessed in courses that include a major writing assignment or presentation. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Student learning will be assessed via formal scientific reports, poster presentations, and oral presentations.

Using a Sample of Students?

Yes

If yes, describe your sample.

All majors enrolled in one of the classes selected by the assessment coordinator.

When does assessment occur?

Once per course selected by the assessment coordinator.

How often does assessment occur?

Every other year.

Criteria (How do you know students are achieving learning outcome?)

At least 80% of students earning a C- or better on the assignment.

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase
7. Evaluate information related to global challenges in biology and society, including climate change, habitat destruction, biodiversity loss, sustainable resource use, and disease outbreaks.	Planning Planning2+
<p>3. Assessment Procedures (Planning/ determining) Method: (ex. tests, presentations, research paper)</p> <p>This outcome will be assessed in courses that address one or more of these issues. The assessment coordinator will identify at least two courses from which to gather data for a given cycle. Student learning will be assessed via reflection papers (where students examine their own thinking about a global challenge and potential solutions) and via literature reviews (where students synthesize information from multiple sources to provide a holistic overview of a challenge).</p>	
<p>Using a Sample of Students?</p> <p>Yes</p>	
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