

Program Assessment Plan  
 American University  
 Academic Program: CAS: Biology - BS

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Contact Person for Lynne Arneson

Assessment:

Unit's Primary Department: Biology

**Learning Outcome: Core Subjects**

Students will be able to apply information from core subjects in the biological sciences, including cell biology, genetics, and evolution.

Outcome Year: 2010-2011  
 2011-2012

Start Date: 11/01/2010

Outcome Status: Active Learning Outcome

| Assessment Plan   |   |   |        |
|---|---|---|--------|
| Assessment Measure  | Target  | Schedule/Cycle  | Active |
| <p>Series of questions, including fact-based synthesis and critical analysis questions, imbedded in final exams in courses that cover core subject areas, cell theory, evolution, and genetics. Core courses are covered in a variety of classes therefore specific classes utilized for this assessment will vary depending upon what is offered that year.</p> <p>Faculty teaching the course will comprise the assessment committee for this endeavor. They will report their findings of the departmental Assessment Director.</p> <p><b>Measure Type:</b><br/>Quiz/ Exam</p> | <p>80% of students in upper level courses will score good or excellent on questions.</p>  | <p>This outcome will be assessed on an ad hoc basis, at least once during the next six years.</p> | Yes    |
| <p>A student survey (attached) will be given to senior biology majors in their final Capstone course. The survey consists of a series of questions asking them to assess their level of learning in the core subjects, including cell biology, genetics, evolution, and ecology, as well as their level of scientific literacy and familiarity with various scientific equipment.</p> <p><b>Measure Type:</b><br/>Survey</p>  | <p>With 1 indicating poor learning and 5 indicating high learning, we expect the average score for responding students to be at least 4 out of 5.</p> | <p>The survey will be given every spring semester.</p>  | Yes    |

**Learning Outcome: Communication**

Students will be able to effectively communicate scientific ideas in both written and oral formats.

Outcome Year: 2007 and prior  
 2008-2009  
 2009-2010  
 2010-2011  
 2011-2012

Start Date: 11/01/2010

Outcome Status: Active Learning Outcome

| Assessment Plan   |  |   |        |
|---|--|---|--------|
| Assessment Measure  | Target   | Schedule/Cycle  | Active |
| <p>Effective Communication (written): Random selection of lab reports from introductory and upper level courses. Faculty teaching lab-based courses will comprise the assessment committee for this endeavor. They will report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Written Assignment</p> | <p>80% of students in upper level courses will score good or excellent in all aspects of rubric.</p> | <p>This assessment will occur once every six years; introductory reports assessed in 2009; upper reports next assessed in AY 2010/2011.</p> | Yes    |

| Assessment Plan   |   |   |        |
|---|---|---|--------|
| Assessment Measure  | Target  | Schedule/Cycle  | Active |
| <p>Effective communication (oral): Random selection of 10 end-of-term oral presentations (accounting for at least 15% of the students' final grade) from at least two upper level classes. Faculty teaching upper level courses will comprise the assessment committee for this endeavor. They will report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Presentation</p> | 80% of students in upper level courses will score good or excellent in all aspects of the rubric. | Given strong indicators of success for this skill during the 2004 assessment, this objective will be reassessed in 2012/2013. | Yes    |

### Learning Outcome: Scientific Method

Students will be able to demonstrate the scientific method through the use of hypothesis testing in the design and implementation of an experiment.

**Outcome Year:** 2009-2010  
2010-2011  
2011-2012

**Start Date:** 11/01/2010

**Outcome Status:** Active Learning Outcome

| Assessment Plan  |  |  |        |
|--|--|--|--------|
| Assessment Measure   | Target   | Schedule/Cycle   | Active |
| <p>Material produced by students in classes:</p> <ol style="list-style-type: none"> <li>1. Questions on end-of-term introductory course exam.</li> <li>2. Early lab reports.</li> <li>3. Assignment in upper level courses requiring students to formulate a hypothesis and design an experiment to test their hypothesis, including appropriate controls.</li> </ol> <p>Faculty who teach one of these courses in the year this objective is being assessed will comprise the assessment committee for this endeavor. They will collect and analyze their data and then report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Written Assignment</p> | 80% of students can successfully define and apply the scientific method. | This assessment will occur at least once ever six years, beginning in AY2009/2010. | Yes    |

### Learning Outcome: Informational Literacy

Students will demonstrate informational literacy by having the ability and skills to effectively and legitimately use various sources of information required for functioning in a global, information society.

**Outcome Year:** 2010-2011  
2011-2012

**Start Date:** 11/01/2010

**Outcome Status:** Active Learning Outcome

| Assessment Plan   |   |   |        |
|---|---|---|--------|
| Assessment Measure  | Target  | Schedule/Cycle  | Active |
| <p>Existing assignments in upper level courses that require a significant amount of primary research for their completion. Insert additional requirements on existing project rubrics.</p> <p>Faculty who teach one of these courses in the year this objective is being assessed will comprise the assessment committee for this endeavor. They will collect and analyze their data and then report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Written Assignment</p> | Students will be able to articulate how they would obtain copies of 90% of references outlined by the instructors in a timely manner. | This outcome will be assessed on an ad hoc basis, at least once during six years. | Yes    |

**Learning Outcome: Analysis**

Students will be able to critically analyze primary scientific literature.

**Outcome Year:** 2010-2011  
2011-2012

**Start Date:** 11/01/2010

**Outcome Status:** Active Learning Outcome

| Assessment Plan  |   |  |        |
|--|---|--|--------|
| Assessment Measure   | Target  | Schedule/Cycle   | Active |
| <p>Students will present a critical analysis of a primary scientific journal article of their own choosing in an upper level course. Rubric scores will determine how well this outcome is met. Three faculty teaching upper level courses will comprise the assessment committee for this endeavor. They will collect and analyze their data and then report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Written Assignment</p> | 80% of students will score good or excellent on the rubric. | This assessment will be completed once every six years, beginning in AY 2011/2012. | Yes    |

**Learning Outcome: Laboratory Skills**

Students will demonstrate that they can perform a set of basic laboratory skills.

**Outcome Year:** 2008-2009  
2009-2010  
2010-2011  
2011-2012

**Outcome Status:** Active Learning Outcome

| Assessment Plan  |  |  |        |
|--|--|--|--------|
| Assessment Measure   | Target   | Schedule/Cycle   | Active |
| <p>Performance on laboratory practical exams and quizzes. Knowledge of:</p> <ol style="list-style-type: none"> <li>1) Safety protocols and equipment.</li> <li>2) Effective use of a pipet and micropipetter; accurate pipetting.</li> <li>3) Ability to use a spectrophotometer.</li> <li>4) Exhibit successful sterile technique.</li> <li>5) Ability to use a key to identify organisms.</li> <li>6) Ability to interpret results represented in tables and graphs.</li> </ol> <p>Proficiency will be assessed during laboratory sessions. Faculty teaching these courses will comprise the assessment committee for this endeavor. They will collect and analyze their data and then report their findings to the departmental assessment director.</p> <p><b>Measure Type:</b><br/>Quiz/ Exam</p> | All students will show proficiency in all foundational laboratory skills.  | This assessment will be completed once every six years, next assessed in AY 2008/09. | Yes    |
| <p>A student survey (attached) will be given to senior biology majors in their final Capstone course. The survey consists of a series of questions asking them to assess their level of learning in the core subjects, including cell biology, genetics, evolution, and ecology, as well as their level of scientific literacy and familiarity with various scientific equipment.</p> <p><b>Measure Type:</b><br/>Survey</p> <p><b>Related Documents:</b><br/><a href="#">Student Survey</a></p>   | <p>With 1 indicating poor learning and 5 indicating high learning, we expect the average score for responding students on question 12 to be at least 4 out of 5.</p> | The survey will be given every spring semester.                                      | Yes    |

