



## Biology (M.A.) and (M.S.)

Department Website: <http://www.american.edu/cas/biology/>

### 1. Learning Outcomes

1. Students will possess a working knowledge of facts and concepts in a specific area of biology.
2. Students will demonstrate an in-depth understanding of and the ability to apply information from a broad range of fundamental biological concepts and subjects, including cell biology, molecular genetics, evolution and ecology.
3. Students will be able to critically analyze primary literature articles.
4. Students will be able to effectively communicate scientific ideas in both written and oral formats.
5. Students will be able to effectively use statistical and analytical methods.

## 2. Assessment Plan

Measures	Target	Learning Outcome	Cycle and Reviewers
1.1 Thesis proposal on specific area of student's research will be assessed by faculty members knowledgeable in the field.	100% of students will satisfactorily complete and defend their research proposal.	1	This assessment will determine the student's level of understanding of their chosen research field. Faculty who participate in the students' research committees will participate in the assessment. They will report their findings to the department's chair of graduate studies and assessment director. This assessment has occurred informally, since AY 2008-09. Formal assessment has occurred since AY 2009-10.
1.2 Completion of thesis on student's chosen research area.	100% of students will be able to satisfactorily complete and defend their research thesis.	1	This assessment will determine the student's level of understanding of their chosen research field. Faculty who participate in the students' research committees will participate in the assessment. They will report their findings to the department's chair of graduate studies and assessment director. This assessment has occurred informally, since AY 2007-08. Formal assessment has occurred since AY 2009-10.
2.1 Students will take written comprehensive exams with questions focusing on the four fundamental areas of biology: cell biology, molecular genetics, evolution, and ecology.	100% of students will satisfactorily complete 3 out of the 4 sections of the written comprehensive exam.	2	This assessment tests students' mastery of core biological concepts. Each set of questions will be assessed by 2-3 faculty members. The departmental Graduate Studies Committee will collect and analyze the data and then report their findings to the departmental Assessment Director. This assessment has occurred yearly, beginning AY 2006-07.
3.1 Students will write comprehensive literature reviews of their chosen research	100% of students will score good or excellent on all areas of the rubric.	3	This assessment will be conducted by faculty participating in student thesis committees. Each review will be assessed by three faculty members, who will

area.			collect and analyze the data and then report their findings to the departmental Assessment Director. This assessment will be conducted every three years, next in AY 2012-13.
3.2 Students will present a critical analysis of one or more primary scientific journal articles of their own choosing in BIO697 Research Methodology, assessed using a rubric.	80% of students will score good or excellent on the rubric.	<b>3</b>	Three faculty teaching graduate level courses will comprise the assessment committee for this endeavor. They will report their findings to the department's chair of graduate studies and assessment director. This assessment will occur every 3 years, beginning in AY 2011-12
4.1 Students will write a research thesis (or paper if MA)	100% of students will score satisfactory (3) to exemplary (5) on all areas of the rubric.	<b>4</b>	Faculty participating on student thesis committees will comprise the assessment committee for this endeavor, with at least 3 faculty assessing each document. They will report their findings to the department's chair of graduate studies and assessment director. This assessment will be conducted every three years, beginning AY 2010-11.
4.2 Students will orally present their research thesis (or paper if MA)	100% of students will score good or excellent on all areas of the rubric.	<b>4</b>	Faculty participating on student thesis committees will comprise the assessment committee for this endeavor, with at least 3 faculty assessing each document. They will report their findings to the departmental Assessment Director. This assessment will be conducted every three years, beginning AY 2011-12.
5.1 Students will conduct analysis and/or employ statistical methods to the data obtained during thesis research.	80% of students will score good or excellent on the rubric.	<b>5</b>	Faculty participating on student thesis committees will comprise the assessment committee for this endeavor, with at least 3 faculty assessing each document. They will report their findings to the departmental Assessment Director. This assessment will be conducted every three years, beginning AY 2011-12.

