

Annual Key Assessment Findings and Curricular Improvements
Department of Biology
Undergraduate B.A./B.S. Program in Biology
AY 2011-12

Key Assessment Findings

There were 8 students who took the undergraduate comprehensive examination in 2011-12 (Table 1). All eight of those students passed this key assessment milestone for their B.S. or B.A. degree in Biology.

Table 1. Undergraduate Comprehensive Examination Data from AY2011-12

	Fail		Pass		High Pass		TOTAL
	#	%	#	%	#	%	
Biology Major	0	0.00%	5	62.5%	3	37.5%	8

Table 2. Student Learning Assessment Rubric of Senior Comprehensive Exams from AY2011-12

Trait	Level						Mean	SD	Total N
	Exceeding Expectations (3pts)		Meeting Expectations (2pts)		Below Expectations (1pt)				
	N	%	N	%	N	%			
1) Proficiency in curricular content and biological concepts	5	62.5%	3	37.5%	0	0%	2.63	0.52	8
2) Written presentation of scientific topics	3	37.5%	4	50%	1	12.5%	2.25	0.71	8
3) Effective use of peer-reviewed scientific literature	3	37.5%	5	62.5%	0	0%	2.38	0.52	8

Note: 1) The "N" represents the number of students at each level of performance for each trait.

2) The "%" represents the percentage of the number of students falling at the level performance for each trait against the total number of students.

3) The mean is the average of all scores across the levels within the trait.

4) The standard deviation (SD) is the measure of the variability of the data set, indicating how "spread out" these data are from the mean value.

This was the third year the Biology Department used our established assessment rubric for senior comprehensive examinations. Nearly all of the students met or exceeded expectations in all

categories of the examination. One student fell below expectations for written presentation of topics. Overall, all the categorical means increased from the previous academic year, which is predominantly due to three students whose performance was in the “high pass” category and who exceeded expectations for all three traits.

Curricular Improvements

The most significant and exciting change in our undergraduate curriculum in AY 2011-12 was the introduction of our new sophomore labs: Biol 217--Molecular Genetics and Protein Engineering (3 credits) and Biol 317--Investigations in Molecular Cell Biology (4 credits). This course sequence builds upon the basic skills that our majors are learning in our freshman laboratories. These laboratory courses progressively teach students to become independent researchers with the capacity to engage in their own projects by proposing specific experiments, defending their ideas, performing modern molecular experiments, and communicating their results. The innovation with these courses is multi-fold. The content emphasizes quantitative aspects of biology. The experiments are progressively more sophisticated across the academic year and include cutting-edge biology where the students have some freedom to decide what to investigate and how to design the experiments. We place significant emphasis on developing problem-solving, writing, and oral presentation skills, and we teach the students how to critically interpret the primary scientific literature. All of these skills are assessed in our Biology senior comprehensive examinations.

In continuing to develop the curriculum for our Master's in Biotechnology program, there were 3 new upper-level elective offerings introduced into the undergraduate curriculum during this academic year. These courses can be used to fulfill requirements for our undergraduate degrees, as well as count towards a Master's degree if the students apply to have the courses considered in both programs their senior year. The new courses are Biol 581 Essentials of Biotechnology Project Management, Biol 593 Rational Drug Design, and Biol 596 Computational Genomics. These courses provide more options for our students to explore advanced biology in depth as they meet their biology electives requirement for their degree.