

Annual Key Assessment Findings and Curricular Improvements
Chemistry Department/A&S
Undergraduate BA/BS Program in Chemistry/Biochemistry/Environmental Chemistry
AY 2010-11

I. Key Assessment Findings

Senior Assessment

Five candidates for May 2011 graduation and one candidate for January 2011 graduation completed a written research paper and gave an oral presentation of the topic, which fulfilled the senior assessment requirement for these students. The group included candidates for the BS in Chemistry, BS in Biochemistry, and BA in Biochemistry. All students passed the senior assessment (see table 1).

Table 1 Undergraduate Comprehensive Exam Results

	Fail		Pass		High Pass		Pass w/Honors		TOTAL
	#	%	#	%	#	%	#	%	
BS Chemistry	1	0.00%	1	100.00%	0	0.00%	0	0.00%	1
BS Biochemistry	4	0.00%	4	100.00%	0	0.00%	0	0.00%	4
BA Biochemistry	1	0.00%	1	100.00%	0	0.00%	0	0.00%	1

As indicated in the table of results for the senior assessment rubric that follows, each candidate met or exceeded expectations in all categories.

Table of Results
Student Learning Assessment Rubric
Department of Chemistry
Chemistry BS, Biochemistry BA/BS, Environmental Chemistry
Senior Assessment

Trait	Level						Mean	SD	Total N
	Exceeding Expectations (3pts)		Meeting Expectations (2pts)		Below Expectations (1pt)				
	N	%	N	%	N	%			
1) Proficiency in curricular content and chemical concepts in the comprehensive paper	1	17%	5	83%	0	0%	2.17	0.41	6

2) Written presentation of scientific topics	2	33%	4	67%	0	0%	2.33	0.52	6
3) Effective use of peer-reviewed scientific literature	0	0%	6	100%	0	0%	2.00	0.00	6
4) Oral communication and presentation of scientific topics	1	17%	4	67%	1	17%	2.00	0.63	6

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.

Graduate Placement

Of the six graduates in chemistry or biochemistry in 2011, one is enrolled in medical school for Fall 2011. One has a NIH Intramural Research Training Award (IRTA) for AY 2011-2012 and has been accepted to medical school for Fall 2012. Another is working as a NIH Post Bac Student Trainee (NBCI) for AY 2011-2012 and is applying to medical school for admission in Fall 2012. A fourth graduate is a Clinical Chemistry Technician at INOVA hospital for AY 2011-2012 and is also applying to medical school for admission in Fall 2012.

The remaining two will be attending graduate programs in Fall 2011 – one is enrolled in the MSEV program (Environmental Engineering) at Bucknell University and the other will be starting in Fall 2011 at University of Maryland Baltimore County as a PhD student in neuroscience.

II. Performance in key courses

“Capstone” course: Seniors in the ChemBS/Env.ChemBS programs and in the Biochem BA/BS programs do not take a single course that could be considered a “capstone” course for the programs. However, all Chem BS and Env.Chem BS majors take Chem 352 and Chem 501. All Biochem BA/BS majors take Chem 572. Enrollment, grade, and course evaluation data are provided for these senior courses.

Physical Chemistry II – Chem 352 (Spring ‘10):

The Department of Chemistry analyzed course grade, evaluation, and enrollment data in Chem 352 for the last offering of the course (Spring 2010).

For the last offering of this course (Spring 2010), enrollment was 4 students. (Only the chemistry BS majors are required to take this course, not biochemistry BS or BA majors.) The grades of students in this class spanned C to B with an average grade in this course of 2.75 (B-). Course evaluations are not available for this period because the enrollment dropped below the minimum required for generation of course evaluation forms.

Advanced Inorganic Chemistry – Chem 501(Fall 2010):

The Department of Chemistry analyzed course grade, evaluation, and enrollment data in Chem 501 for the last offering of the course (2010).

For the last offering of this course (Fall 2010), enrollment was 5 students. The grades of students in this class ranged from A to F with an average grade in this course of 2.74 (B-). Course evaluations are not available for this period.

Biochemistry II – Chem 572 (Spring 2011):

The Department of Chemistry analyzed course grade, evaluation, and enrollment data in Chem 572 for the last offering of the course (2011).

For the last offering of this course (Spring 2011), enrollment was 9 students. The grades of students in this course ranged from D to A. The average grade in this course is 2.66 (B-). Course evaluations are not available for this period

III. Curricular Improvements

Introduction of Chem 505 into the core requirements for majors

For Fall 2010 a new 3 credit course Chem 505 was introduced that is required of all chemistry, biochemistry, and environmental chemistry seniors. This course is designed to train the students in the use of the chemical literature, the preparation of a research report and the preparation and presentation of a seminar. In addition, it served as a vehicle for monitoring the preparation of their senior assessment papers.

Curricular improvements to Chem 203/213 – Chem 204/213

For Fall 2010, Spartan Student, a software based molecular modeling and structural computations component was introduced into the sophomore level organic chemistry lecture and laboratory courses. The software supports topics already covered in organic chemistry texts by providing a more visual exploration (in lieu of plastic models) of conformational analysis and stereochemistry topics. A more in-depth study of reaction mechanisms is also possible with the Spartan program. Reception by students has been positive.

Curricular improvements to Chem 311 and Chem 114

New electrochemistry equipment has been integrated into the analytical chemistry (Chem 311) and General Chemistry lab (Chem 114) for chemistry majors.

Development of Chem 308

At the request of the Engineering school, a new course (Chem 308) about batteries, fuel cells and energy storage was developed and offered during the Spring 2011 semester. It will next be offered in the Spring 2012 semester.

Restructuring of Chem 107 – General Chemistry for Engineers

In communication with the Engineering school to meet their accreditation requirements, the general chemistry class for engineering students is being restructured as a one semester course, surveying topics from the general chemistry curriculum of greatest relevance to the engineering curriculum.