

**Annual Key Assessment Findings and Curricular Improvements**  
**Chemistry Department/A&S**  
**Undergraduate BA/BS Program in Chemistry/Biochemistry/Environmental Chemistry**  
**AY 2009-10**

**I. Key Assessment Findings**

*Senior Assessment*

Five candidates for 2010 graduation completed a written research paper and gave an oral presentation of the topic during the Spring '10 semester, 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	0	0.00%	2	100.00%	0	0.00%	0	0.00%	2
BS Biochemistry	0	0.00%	2	100.00%	0	0.00%	0	0.00%	2
BA Biochemistry	0	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	%			
<b>1) Proficiency in curricular content and chemical concepts in the comprehensive paper</b>	0	0%	5	100%	0	0%	2.00	0.00	5

<b>2) Written presentation of scientific topics</b>	0	0%	5	100%	0	0%	2.00	0.00	5
<b>3) Effective use of peer-reviewed scientific literature</b>	0	0%	5	100%	0	0%	2.00	0.00	5
<b>4) Oral communication and presentation of scientific topics</b>	2	40%	3	60%	0	0%	2.40	0.55	5

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 five graduates in chemistry or biochemistry in May 2010, two have gone on to graduate schools. A third is working in a research lab at the NIH. Another of the graduates is teaching in Phoenix, AZ for the "Teach-for-America" program for 2010-2011. He is undecided in terms of future plans. For one of the graduates, a post-graduation placement is not known.

## **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 2008):

The Department of Chemistry analyzed course grade, evaluation, and enrollment data in Chem 501 for the last offerings of the course (2008).

For the last offering of this course (Fall 2008), enrollment was 8 students. The grades of students in this class ranged from C to A- with an average grade in this course of 2.71 (B-). Course evaluations are not available for this period.

**Biochemistry II – Chem 572** (Spring 2009):

The Department of Chemistry analyzed course grade, evaluation, and enrollment data in Chem 572 for the last offering of the course (2009).

For the last offering of this course (Spring 2009), enrollment was 8 students. The grades of students in this course ranged from C- to A with one withdrawal out of 24 students. The average grade in this course is 2.93 (B-). Course evaluations are available for this period. Favorable course evaluations 9.20 average course rating and 8.80 average instructor rating) were obtained.

### **III. Curricular Improvements**

Restructuring chemical literature and information retrieval course, formerly Chem 500.

Starting in Fall 2010, a new 3 credit course Chem 505 is being introduced that will be required of all chemistry, biochemistry, and environmental chemistry seniors. This course will train the students in the use of the chemical literature, the preparation of a research report and the preparation and presentation of a seminar. This should impact the quality of their senior assessment papers and presentation.

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

Starting in Fall 2010, a software based molecular modeling and structure computations component is being introduced into the sophomore level organic chemistry lecture and laboratory courses. This is expected to have benefits for the student in terms of familiarity with the use of computers in chemistry as well as a better understanding of structure and energy considerations in molecules, fundamental to their performance in more advanced chemistry courses, as well as organic chemistry.