College of Science (CSCI)
North Science 135
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2015-2016 CSCI EETF Assessment Year End Report, June, 2016

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[NOTE: Items A, B, C, and D are identical to your Page 2 on your Annual Report for CAPR. Please simply cut and paste from there. Item E is unique to the CSCI EETF.]

A. Program Student Learning Outcomes

Students graduating with a Chemistry M.S. from Cal State East Bay will :

1. demonstrate specialized knowledge in the chemical sciences beyond the undergraduate level.!
2. work effectively and safely in a laboratory environment using modern chemical/biochemical instrumentation and methods to test hypotheses or design solutions to problems.!
3. understand, organize, and critically assess information from the chemical literature.!
4. present complex chemical information via oral and written reports.
5.

the ability to answer questions about the topic using a common rubric. Assessment was measured by the number of students presenting a seminar that met or exceeded the expectations by their third seminar presentation.

Selected Specific Learning Goals:

Students who successfully complete this course three times should be able to:
1) understand information from the chemical literature.
2) organize and critically assess information from the chemical literature.
3) present complex chemical information via an oral seminar.

Assessment Data:

During the 2015-2016 academic year, 7 students gave their first seminar. The average score for these students was 13.1/16 or 82%. The average score for the 11 students giving their second seminar was 14.5/16 or 90%. The average score for the 12 students giving their third seminar was 14.8/16 or 92%.

Academic Year	**1st Seminar**		**2nd Seminar**		**3rd Seminar**	
	# of students	average score	# of students	average score	# of students	average score
2015-2016	7	82%	11	90%	12	92%

A score of 12/16 was defined as meeting expectations and a score of 14/16 was defined as exceeding expectations.

First Seminar

Academic Year	**# of Students**	**Met Expectations**	**Exceeded Expectations**

		#	%	#	%
2015-2016	12	12	100	9	75

Analysis: This assessment data demonstrates that, on average, students improved from their first seminar to their last seminar in their ability to understand, organize and present a journal article. By their third seminar, more than 75% of the graduate students enrolled in the seminar class gave a seminar that exceeded expectations.

Ex I, Question 11	HPLC (SLO #3)	3	100
Ex II, Question 6	HPLC (SLO #3)	3	100
Ex II, Question 7	PAGE (SLO #4)	3	100
Ex II, Question 11	Isoelectric Focusing (SLO #5)	3	100
Ex II, Question 12	MS Proteomics (SLO #6)	2	67

*Partial credit was given for embedded exam questions. If 75% of the possible points were earned the answer was counted as correct.

Analysis: The student sample was unusually small this year, with only three M.S. Chemistry majors taking this class. For that reason it is difficult to draw far reaching conclusions. The performance of these three students was excellent or generally good for all of the learning goals except number two. Whereas some other students in the class (M.S. Biological Sciences majors) were able to master this outcome, the three chemistry students did not master it. Of eleven students who took the class, only 45% mastered the specific activity outcome.

Plans: The assessment results definitely draw attention to Learning Outcome 2. Because an examination of the class as a whole shows that only about 45% mastered this outcome, it is obvious that this topic needs more emphasis. A special exercise on analysis of protein purification data that includes calculation of specific activity will be assigned next year as a group activity with a subsequent discussion of the class results planned.

Selected Specific Laboratory Learning Goals:

1) Purify a hybrid protein using affinity chromatography (effective use of a biochemical method to solve an experimental problem)
2) Identify and quantify biomolecules from a mixture by high performance liquid chromatography
(effective use of instrumentation to solve an experimental problem)
3) Demonstrate induction of specific protein synthesis from an expression vector with SDS-polyacrylamide gel electrophoresis and immunoblot detection (effective use of a biochemical

documentation and analysis of methods for solving experimental problems and testing hypotheses, this year's M.S. Chemistry students generally met expectations. While there were

Final Q4	4	2	2	100
Final Q1	5	2	2	100
Final Q2	5	2	0	0
Final Q12	5	2	0	0
Final Q7	6	2	2	100
Final Q10	6	2	2	100
HPLC-lab question	6	2	2	100
Lab #7(building your own Spectrometer) question	7	2	2	100
Final Q3	7	2	1	50

*Where partial credit was given, the answer was counted as correct if at least 75% of the total possible points were awarded.
* Only two master's degree students took this course in 2016 winter quarter. More data points were needed for more meaningful assessment.

Summary

Student Learning Outcome	Average Percentage of Students Able to Answer the Questions
1	75 %
2	75 %
3	75 %
4	75 %
5	33 %
6	100 %
7	75 %

Conclusion: In this quarter, none of our master's degree students reached their learning outcome #5, which suggests their lacking in understanding the basic working principle behind NMR spectroscopy. However, due to lack of enough data points (only two masters' degree students took Chem4240 for this year, it was difficult to draw meaningful assessment. Both of the master' degree students passed this course with good grades (A and A-).

E. Suggestions and Recommendations for the CSCI EETF in the Future

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