

Program: ___ Chemistry, B.S. _____

Date: ___ May 6, 2014 _____

Completed by: ___ David Lehmpuhl _____

Assessment contributors (other faculty involved in this program's assessment): ___ All chemistry faculty supplied the data from the appropriate ACS exams and seminar evaluations. ___ Compilation and the report was completed by Dr. Lehmpuhl _____

Please complete this form for each undergraduate, minor, certificate, and graduate program (e.g., B.A., B.S., M.S.) in your department. Please copy any addenda (e.g., rubrics) and paste them in this document, and submit it to the dean of your college/school as per the deadline established. The dean will forward it to me as an email attachment before June 2, 2014. You'll also find the form at the assessment website at <http://www.colostate-pueblo.edu/Assessment/ResultsAndReports/Pages/default.aspx>.

Please describe the 2013-2014 assessment activities for the program in Part I. Use Column H to describe improvements planned for 2014-2015 based on the assessment process. In Part II, please describe activities engaged in during 2013-2014 designed to close-the-loop (improve the program) based on assessment activities and the information gathered in 2012-2013. Thank you.

I. Program student learning outcomes (SLOs) assessed in this cycle, processes, results, and recommendations.

A. Which of the program SLOs were assessed during this cycle? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the semester and year.	C. What method was used for assessing the SLO? Please include a copy of any rubrics used in the assessment process.	D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved.	E. What is the expected achievement level and how many or what proportion of students should be at it?	F. What were the results of the assessment?	G. What were the department's conclusions about student performance?	H. What changes/improvements to the <u>program</u> are planned based on this assessment?
1: Demonstrate knowledge of chemical	Data are collected at the end	Evaluation of the results of the American	All students taking core chemistry	The average student should be at	For all classes except Chem	The organic chem class that performed poorly	It is quite difficult to get quality VAPs at the salary level we pay. Until we

concepts and theories.	of every semester. SLO was assessed in June 2013.	Chemical Society Nationally normed final exams in each core course. When norms are not available, previous versions' norms were substituted.	courses (388 students, not necessarily all unique since students may take more than one core course in a particular year)	or above the 50 th percentile.	301, Organic Chem I, students were reasonably close to the 50 th percentile. They were significantly lower (21 st percentile) in Chem 301. Data are appended.	was taught by a visiting assistant professor. This is not ideal for student learning.	become more competitive and are able to search early, student learning is likely to be highly variable. No changes are planned at this time other than the VAP was one of the positions cut at the university so he will not be returning next year.
2: Demonstrate Problem Solving Skills	SLO was assessed in June 2013	The Major Field Achievement Test (MFAT) and ACS exams.	Senior chemistry majors taking the Chem 493 Seminar class (4 students). Unfortunately, the MFAT was not given to the Fall 2013 seminar students due to a miscommunication with a new seminar instructor.	The average student should be at or above the 50 th percentile.	The MFAT results were exceptional due to a unique graduating class. Average was in the 96 th percentile. Data are appended.	The department concluded that we will likely never see another cohort of students of this high a caliber in the graduating seniors.	Changes in the monitoring and collection of the data are needed, especially when switching instructors. The chair will make a more concerted effort to communicate the assessment requirements for the seminar course to all instructors through the use of a common syllabus template.

3: Evaluate, write and present chemical topics from the literature.	SLO was assessed in June 2013.	All attending faculty evaluate the senior seminar using a common rubric.	Senior chemistry majors	All students should be at or above 70% on the scoring rubric.	All students exceeded the expected achievement level.	As mentioned in the previous SLO, this particular graduating class is strong and did an exceptional job with their senior seminars.	The rubric was altered to alleviate confusion based on the comments from the assessment review last year, however, no further substantive changes are deemed necessary.
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Comments: With respect to the ACS data: The ACS scores for the inorganic exam that is listed first is also low, however that course is the lower level 2-cr hr course. The course has been changed to a 3-cr hr course which should help. The second exam listed is for the advanced inorganic course and is more geared toward what the ACS exam covers. The first list organic exam is the course/area of concern.

II. Follow-up (closing the loop) on results and activities from previous assessment cycles. In this section, please describe actions taken during this cycle that were based on, or implemented to address, the results of assessment from previous cycles.

A. What SLO(s) did you address? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment?	D. Were the recommendations for change acted upon? If not, why?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?
1: Demonstrate knowledge of chemical concepts and theories.	Data are collected at the end of every semester. SLO was assessed in June 2013.	A suggestion was made to more closely look at course prerequisites and preparedness.	Significant policy changes have resulted with respect to the lower level chemistry courses. Previous policy stated that course prerequisites were in place, but no level of performance was	Since it takes a full year to implement any curriculum changes at the university, we will hopefully be able to determine initial results of the change with the 2015 assessment review. It is unclear if previous changes in requiring College Algebra as a prerequisite rather than a co-requisite are having a

			expected. The department has now instituted and passed through CAPB a policy that prerequisite courses must be completed at a level of C or better. And prerequisites will be manually enforced for the first time in the fall 2014.	significant effect.
1: Demonstrate knowledge of chemical concepts and theories.	Data are collected at the end of every semester. SLO was assessed in June 2013.	A recommendation was made to upgrade the ACS exams to more current versions for the core chemistry courses.	As budget has allowed, all exams for the core chemistry courses are being updated.	The changes have impacted the analysis of data this assessment cycle since the new exams in biochemistry and inorganic chemistry do not have the national statistics available yet. Previous years' exam norms were used but these may be misleading, depending on the statistics of the current exam.

Comments:

American Chemical Society Standardized Final Examination Data Academic Year 2013-14

ACS Final (Exam name & year and instructor initials)	Semester	Raw Score Average						Percentile Average		Percentile	Difference
	Given	U.S.	Std. Dev.	N =	CSU- P	Std. Dev.	N =	U.S.	CSU-P	Raw	Weighted
General Chemistry Exams											
Gen. Chem. First Term 2009	Fall 2013	37.13	11.39	3827	34.7	9.7	81	51	43.4	-7.6	-615.6
1st term (2009) CC	Sp 14	37.13	11.39	3827	34.3	9.4	73	51	43.2	-7.8	-569.4
Gen. Chem. 2005	F2013	34.45	11.51		31	8.66	39	54	40	-14	-546
Gen. Chem. Conceptual 2001	Sp2014	31.25	9.99		32.7	8.6	41	51	56	5	205
Gen. Chem. 2005	Sp2014	34.45	11.51		30.5	9.7	41	54	41	-13	-533
Total Students							275	Average		-7	-1
Organic Chemistry											
Organic 1st term 2010 ZL	Sp 14	39.39	11.74		29.3	6.8	23	52.2	21	-31.2	-717.6
First term organic 2006 DD	Fall 2013	37.83	9.81		37.3	10.3	48	51	49.1	-1.9	-91.2
Organic Chemistry 2004 DD	Spring 2014	39.22	12.16		40.1	12	43	51	52.3	1.3	55.9
Total Students							114	Average		-11	-7
Biochemistry											
Biochemistry 2012 SB	Spring 2014	32.9	8.9	839	34.1	8.14	10	53	55.3	2.3	23
Total Students							10	Average		2	2
Physical Chemistry											

2006 P Chem (Quantum) RF	F13	29.2	7.8		29.3	6.1	12	51	49.7	-1.3	-15.6
2006 P Chem (Thermo) RF	S14	26.4	7.0		24.1	4.5	16	52	40.7	-11.3	-180.8
Total Students							28	Average		-24	-7
Inorganic Chemistry											
Inorganic 2014 MC	F2013	31.79	8.95	--	20.6	7.98	18	51	35	-16	-288
Inorganic 2009 MC	Sp2014	31.79	8.95	482	38	7.5	7	51	69.3	18.3	128.1
Total Students							25	Average		1.15	-6.396
Analytical Chemistry											
Analytical Chemistry 2007 CK	F 2013	27.52	7.08	707	28.11	6.21	19	52.12	55.55	3.43	65.17
Total Students							19	Average		3	3
Instrumental Analysis											
Instrumental Methods 2009 CK	S 2014	24.12	6.57		26.41	5368	18	51.96	66.64	14.68	264.24
Total Students							18	Average		15	15

2013-14 AY MFAT scores

1	Cumulative %tiles on Major Field Achievement Test																
2						Institutional Performance											
3						%tile score											
4																	
5		# Students		Overall		Physical		Organic		Inorganic		Analytical		National Mean	Biochem	Crit Think	
6				current yr	cumulative	current yr	cumulative	current yr	cumulative	current yr	cumulative	current yr	cumulative				
7	semester	number	Cumulative	%tile	%tile	%tile	%tile	%tile	%tile	%tile	%tile	%tile	%tile	%-tile	%-tile	%-tile	
8	S 1995	5	5	77	77	72	72	71	71	78	78	84	84	50			
9	S-1996	6	11	87	82	91	82	71	71	83	81	96	91	50			
10	S-1997	7	18	49	69	52	71	48	62	65	75	25	65	49			
11	AY 97-98	10	28	95	79	94	79	93	73	91	80	91	74	49			
12	AY 98-99	6	34	46	73	9	67	44	68	51	75	68	73	49			
13	AY 99-00	9	43	66	71	59	65	64	67	75	75	71	73	49			
14	AY 00-01	9	52	44	67	51	63	40	62	32	68	54	70	49			
15	AY 01-02	6	58	85	69	76	64	80	64	76	69	99	73	50			
16	AY 02-03	2	60	75	69	75	64	75	65	80	69	60	72	50			
17	AY 03-04	9	69	55	67	60	64	25	59	50	66	65	71	50			
18	AY 04-05	6	75	80	68	75	65	65	60	85	68	85	72	50			
19	AY 05-06	4	79	88	69	82	66	85	61	78	68	84	73	50			
20	AY 06-07	5	84	35	67	50	65	10	58	45	67	50	72	50	1	75	
21	AY 07-08	11	95	55	66	80	66	40	56	70	67	60	70	50	5	80	
22	AY 08-09	10	105	25	62	40	64	10	52	60	67	25	66	45	10	10	
23	AY 09-10	14	119	60	62	80	66	35	50	65	67	65	66	50	45	55	
24	AY 10-11	7	126	55	61	80	67	25	48	55	66	80	67	50	30	50	
25	AY 11-12	5	131	77	62	88	67	59	49	82	66	62	66	46	32	79	
26	AY 12-13	4	135	60	62	60	67	58	49	67	67	36	66	51	21*	60*	
27	AY 13-14	4	139	96	63	98	68	87	50	99	67	98	66	46	46*	58*	

Chem 493: Seminar Assessment Rubric Categories

Topic: (10 pts) _____

A Level	Topic is narrow enough to include specific material while having breadth of interest. Topic is highly chemical in nature.
B Level	Topic is good but either slightly too specific or too broad. Chemistry content is good.
C Level	Topic is too broad and may not contain enough chemistry
D Level	Topic contains little specific chemistry and is broad and non-specific or not appropriate for the audience.

Content: (35 pts) _____

A Level	The presentation contains sufficient chemistry and is relevant to the topic, correct, well-documented and current. Excellent handling of post-seminar questions. Speaker exhibits an excellent command of the topic.
B Level	The presentation contains a good amount of material with minimal tangents or dated material. Handled most post-seminar questions well. Speaker exhibits a good command of the subject with minimal corrections needed.
C Level	Presentation content is lacking significantly in one or more areas. Content questions handled erratically with additional preparation by the speaker needed to master the topic.
D Level	Presentation had little to no chemistry and showed little preparation or documentation. Failure to address questions and speaker showed little to no understanding of topic.

Organization: (20 pts) _____

A Level	Introduction provides a good overview and each topic flows naturally from the previous one. The presentation "tells a story" and at an appropriate level for the audience. Time management is excellent.
B Level	Introduction pertinent and attracted the audiences attention. A few transition problems and/or limited disorganization. Time management is good.
C Level	The "story" is somewhat disorganized. Introduction, transitions and topic flow is not smooth or refined. Seminar is overly long or short.
D Level	No organization evident with the audience quite lost. Poor transitions and topic flow. Extremely poor time management.

Presentation: (20 pts) _____

A Level	Presenter maintains excellent eye contact and appropriate strength of voice and engages the audience. Dress, posture pointer use and/or mannerisms are excellent. Speaks the presentation without reading slides.
B Level	Infrequent problems with voice tone, eye contact, posture, pointer use and/or mannerisms. Appropriate attire and audience engagement. Limited reading of slides.
C Level	Voice tone, eye contact, pointer use and/or mannerisms poor at times. Significant reading of slides. Attire and audience engagement needs improvement.
D Level	Consistently poor voice, eye contact, pointer use and/or mannerisms to the point of distraction for the listeners. Presentation was read.

Graphics, Diagrams, Figures: (10 pts) _____

A Level	Graphics, diagrams, figures and tables are all appropriate to the presentation, correct, discussed in detail and are easy to read and follow.
B Level	Most graphics are readable and pertinent to the presentation and discussed adequately. Some modification/addition of graphical data would have made the presentation more effective.
C Level	Insufficient use of graphics, diagrams, figures, etc. Multiple visual aids difficult to read, insufficiently explained or superfluous to the presentation.
D Level	No visual aids presented when it would have been appropriate. Visuals presented are unreadable, illegible, inappropriate and/or not discussed.

Use of PowerPoint: (5 pts) _____

A Level	All slides readable, attractive and well-organized. Color schemes/fonts appropriate and legible. Time spent on each slide appropriate. PowerPoint used as a tool for the presentation and not distracting from it. No typos or mistakes.
B Level	Most slides readable and generally follow presentation. Time spent on each slide could use slight improvement. Limited typos.
C Level	Some slides not readable or clear. Time management of slides poor. Numerous typos and/or mistakes on slides.
D Level	Overall slides not readable or clear and significant lack of organization on the slides evident. PowerPoint is a distraction rather than a presentation tool.