



Central Washington University

Degree Program Student Learning Outcome Assessment Plan

Department: Chemistry

Program: BS-Chemistry

Revised Winter 2016

Student Learning Outcome (performance, knowledge, attitudes)	Related CWU Strategic Outcome(s) http://www.cwu.edu/strategic-planning/	Method(s) of Assessment (What is the assessment?)*	Who Assessed (Students from what courses - population)**	When Assessed (term, dates)***	Standard of Mastery/ Criterion of Achievement (How good does performance have to be?)
<p>1. Chemistry majors will master the concepts and skills, including experimental techniques, designated in curriculum learning outcomes for courses in General, Analytical, Biochemistry, Inorganic, Organic, and Physical chemistry, which are needed to graduate and successfully pursue career pathways.</p>	<p>1.1.1 Students will achieve programmatic learning outcomes.</p>	<ul style="list-style-type: none"> - Mean GPA of students in required courses, by course. - Percent of students in required courses receiving a D, F, or W. - Student exit survey. - Mean percentile for students taking American Chemical Society (ACS) content exams, by course. - Tracking of student progress through curriculum to determine student persistence and overall success. 	<p>3 populations of students:</p> <ul style="list-style-type: none"> - Chemistry BS graduates. - Chemistry majors in all required courses for BS degree in chemistry, including Biochemistry specialization. - All students enrolled in courses that serve many non-majors, in addition to Chemistry majors, e.g. General Chemistry and Organic Chemistry. 	<ul style="list-style-type: none"> - Quarterly. - Annual review of student exit portfolios. 	<ul style="list-style-type: none"> - All graduates maintain an overall GPA of at least 2.0 and a GPA for courses within the major of at least 2.25. - The <u>mean</u> GPA for majors in required courses is at least 2.50. - The percentage of majors completing any required course with a grade of C- or higher is at least 80%. - Mean ACS exam scores (percentiles) for graduates and all majors, by course, are at or above national averages. - The mean response to item 2 of the Exit Survey by graduates is at least 4 on the scale of 1 to 5 for both lecture and laboratory courses. - Fewer than 10% of declared majors abandon the BS degree program in a given academic year.

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2. Write and speak clearly in the language and style of the discipline.	1.1.1 Students will achieve programmatic learning outcomes. 3.1.2 Sustain the number of courses that include research, scholarship, and creative expression skills as key outcomes.	- Grades and other performance evaluations in relevant courses that require presentations, written abstracts and reports, preparation of chemical diagrams or structures, etc. - Evaluation of research reports for students working in faculty research groups.	- Chemistry majors enrolled in relevant courses described under "Method of Assessment".	- Quarterly. - Annual review of student exit portfolios.	- The mean GPA for majors in relevant courses is at least 2.50. - Research reports written by majors are judged satisfactory by research advisors. - All majors in the CHEM 488 course receive a satisfactory evaluation on their oral presentation.
3. Demonstrate critical thinking skills needed to develop explanations, support qualitative and quantitative problem solving, and design experiments to test hypotheses.	1.1.1 Students will achieve programmatic learning outcomes. 1.1.3 Students and faculty will be increasingly engaged in the learning process in and outside of the classroom.	- Grades in relevant courses. - Scores on selected questions on ACS content exams, which are deemed to require critical thought.	- Chemistry majors in all required courses for BS degree in chemistry.	- Quarterly. - Annual review ACS exam results.	- Mean ACS exam scores (percentiles) for graduates and all majors, by course, are at or above national averages. - mean scores for majors on the critical thinking subsets of ACS test questions for selected courses are at least 60%.

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4. Use computers and the modern software of the discipline to fulfill designated curricular outcomes in lab and lecture courses that require data acquisition and analysis, instrument control, computation and display of molecular structure, or preparation of written reports or oral presentations.	1.1.1 Students will achieve programmatic learning outcomes. 3.1.2 Sustain the number of courses that include research, scholarship, and creative expression skills as key outcomes.	- Grades in relevant courses. - Survey of faculty teaching relevant courses.	- Chemistry majors in relevant courses.	- Quarterly. - Annual survey of faculty instructors.	- All majors receive a grade of C+ or better for lab and lecture courses required significant use of computer hardware and software. - The results of the faculty survey indicate all faculty are confident that majors in their courses are able to use computer-based tools and methods to successfully accomplish course objectives.
5. Retrieve and critically analyze chemical literature.	1.1.1 Students will achieve programmatic learning outcomes. 3.1.2 Sustain the number of courses that include research, scholarship, and creative expression skills as key outcomes.	Course grades in relevant courses, including: -CHEM 488. -Student Research CHEM 295, CHEM 395, and/or CHEM 495.	- Chemistry majors in relevant courses.	- Quarterly. - Annual review of student research evaluations.	- All majors receive a grade of C+ or better on their oral presentation in CHEM 488. - Research reports written by majors are judged satisfactory by research advisors.

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6. Practice health and safety protocols that are integral to the discipline.	1.1.1 Students will achieve programmatic learning outcomes. 3.1.2 Sustain the number of courses that include research, scholarship, and creative expression skills as key outcomes.	<ul style="list-style-type: none"> - Grades in laboratory courses - Percentage of students participation in laboratory safety training sessions - Number of reported lab incidents/accidents 	<ul style="list-style-type: none"> - Chemistry majors and all other students taking laboratory courses. - Chemistry majors and other students working in faculty research labs. - Chemistry majors employed as TA's by the department. 	- Annual review.	<ul style="list-style-type: none"> - 100% of students enrolled in lab courses receive laboratory safety training sufficient for required lab procedures. - All research students receive a grade of B or better. <p>The number of lab incidents and accidents reported annually continues to decline.</p>
7. Work effectively in group situations.	1.1.1 Students will achieve programmatic learning outcomes. 3.1.2 Sustain the number of courses that include research, scholarship, and creative expression skills as key outcomes.	<ul style="list-style-type: none"> - Grades in laboratory courses. - Grades in student research courses: CHEM 295, CHEM 395, and/or CHEM 495. - Student exit survey. - Survey of faculty teaching relevant courses. 	<ul style="list-style-type: none"> - Chemistry majors and all other students taking laboratory courses. - Chemistry majors and other students working in faculty research labs. 	- Annual review.	<ul style="list-style-type: none"> - All majors receive a grade of C+ or better in laboratory courses. - All majors participating in faculty research groups receive a grade of B or better.

Assessment Cycle

Analysis and Interpretation: December

Improvement Actions: Completed by June

Dissemination: Completed by June

Year	15-16	16-17	17-18	18-19	19-20	20-21
1	X	X	X	X	X	X
2			X			
3		X				X
4				X		
5	X				X	
6			X			
7	X				X	

Assessment Oversight

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