

ASSESSMENT PLAN: MS Chemistry

Date Updated: 11/19/2019

PROGRAM MISSION

[CSUEB Missions, Commitments, and ILOs, 2012](#)

PROGRAM LEARNING OUTCOMES (PLOs)

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

PLO 1	demonstrate specialized knowledge in the chemical sciences beyond the undergraduate level. (ILO 6)
PLO 2	work effectively and safely in a laboratory environment using modern chemical/biochemical instrumentation and methods to test hypotheses or design solutions to problems. (ILO 1 & 6)
PLO 3	understand, organize, and critically assess information from the chemical literature. (ILO 1 & 6)
PLO 4	present complex chemical information via oral and written reports. (ILO 2 & 6)
PLO 5	work collaboratively in teams to solve chemical problems. (ILO 4 & 6)

Year 1: 2018-2019

1. Which PLO(s) to assess	PLO 1
2. Is it aligned to an ILO?	Yes
3. If yes, list ILO.	demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.
4. Course name and number	Chem 631 (Graduate Organic Chemistry)
5. SLO from course	<ol style="list-style-type: none"> 1. predict the geometric structure, reactivity and other properties of organic molecules 2. predict the conformational preference of organic molecules and the stereochemical preference in reactions 3. describe different types of reactive intermediates and their importance in reactions 4. evaluate and apply different techniques for the determination of mechanisms of organic reactions 5. predict products or design syntheses of carbon-carbon bond formation reactions 6. determine structure of organic molecules through use of IR, NMR, and mass spectrometry.
6. Assessment activity	Embedded exam questions
7. Assessment Instrument	Final Exam
8. How data will be reported	Qualitative: Report percentage of students able to demonstrate mastery of individual student learning outcomes.

9. <i>Responsible person(s)</i>	Instructor for Chem 631, Assessment Rep
10. <i>Time (which semester(s))</i>	Fall 2018
11. <i>Ways of closing the loop</i>	Internal assessment of results with planning to address shortcomings

Year 2: 2019-2020

1. <i>Which PLO(s) to assess</i>	PLO 2
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	think critically and creatively and apply analytical and quantitative reasoning to address complex challenges and everyday problems; demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.
4. <i>Course name and number</i>	Chem 651 (Graduate Physical Chemistry)
5. <i>SLO from course</i>	<ol style="list-style-type: none"> 1. Demonstrate and apply the mathematical models of quantum theory 2. Formulate and apply quantum theory to model the behavior of atoms and molecules 3. Utilize approximation techniques and assess their validity 4. Develop the semi-classical theory of interaction between light and matter
6. <i>Assessment activity</i>	Embedded Exam Questions
7. <i>Assessment Instrument</i>	Final Exam
8. <i>How data will be reported</i>	Quantitative , report to include proportion of students in each level 0%, 25%, 50%, 75%, 100% correct for each question
9. <i>Responsible person(s)</i>	Instructors for Chem 651, Assessment Rep
10. <i>Time (which semester(s))</i>	Fall 2019
11. <i>Ways of closing the loop</i>	Internal assessment of results with planning to address shortcomings

Year 3: 2020-2021

1. <i>Which PLO(s) to assess</i>	PLO 3
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	think critically and creatively and apply analytical and quantitative reasoning to address complex challenges and everyday problems; demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.
4. <i>Course name and number</i>	Chem 631 (Graduate Organic Chemistry)
5. <i>SLO from course</i>	<ol style="list-style-type: none"> 1. predict the geometric structure, reactivity and other properties of organic molecules 2. predict the conformational preference of organic molecules and the stereochemical preference in reactions 3. describe different types of reactive intermediates and their importance in reactions 4. evaluate and apply different techniques for the determination of mechanisms of organic reactions 5. predict products or design syntheses of carbon-carbon bond formation reactions 6. determine structure of organic molecules through use of IR, NMR, and mass spectrometry.
6. <i>Assessment activity</i>	Embedded Exam Questions
7. <i>Assessment Instrument</i>	Final Exam

8. <i>How data will be reported</i>	Quantitative , report to include proportion of students in each level 0%, 25%, 50%, 75%, 100% correct for each question
9. <i>Responsible person(s)</i>	Instructors for Chem 631, Assessment Rep
10. <i>Time (which semester(s))</i>	Fall 2020
11. <i>Ways of closing the loop</i>	Internal assessment of results with planning to address shortcomings

Year 4: 2021-2022

1. <i>Which PLO(s) to assess</i>	PLO 4
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	communicate ideas, perspectives, and values clearly and persuasively while listening openly to others; demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.
4. <i>Course name and number</i>	Chem 651 (Graduate Physical Chemistry)
5. <i>SLO from course</i>	<ol style="list-style-type: none"> 1. Demonstrate and apply the mathematical models of quantum theory 2. Formulate and apply quantum theory to model the behavior of atoms and molecules 3. Utilize approximation techniques and assess their validity 4. Develop the semi-classical theory of interaction between light and matter
6. <i>Assessment activity</i>	Embedded Exam Questions
7. <i>Assessment Instrument</i>	Final Exam
8. <i>How data will be reported</i>	Quantitative , report to include proportion of students in each level 0%, 25%, 50%, 75%, 100% correct for each question
9. <i>Responsible person(s)</i>	Instructors for Chem 651, Assessment Rep
10. <i>Time (which semester(s))</i>	Fall 2021
11. <i>Ways of closing the loop</i>	Internal assessment of results with planning to address shortcomings

Year 5: 2022-2023

1. <i>Which PLO(s) to assess</i>	PLO 5
2. <i>Is it aligned to an ILO?</i>	Yes
3. <i>If yes, list ILO.</i>	demonstrate expertise and integration of ideas, methods, theory and practice in a specialized discipline of study.
4. <i>Course name and number</i>	Chem 631 (Graduate Organic Chemistry)
5. <i>SLO from course</i>	<ol style="list-style-type: none"> 1. predict the geometric structure, reactivity and other properties of organic molecules 2. predict the conformational preference of organic molecules and the stereochemical preference in reactions 3. describe different types of reactive intermediates and their importance in reactions 4. evaluate and apply different techniques for the determination of mechanisms of organic reactions 5. predict products or design syntheses of carbon-carbon bond formation reactions 6. determine structure of organic molecules through use of IR, NMR, and mass spectrometry.
6. <i>Assessment activity</i>	Embedded Exam Questions
7. <i>Assessment Instrument</i>	Final Exam

8. <i>How data will be reported</i>	Quantitative , report to include proportion of students in each level 0%, 25%, 50%, 75%, 100% correct for each question
9. <i>Responsible person(s)</i>	Instructors for Chem 631, Assessment Rep
10. <i>Time (which semester(s))</i>	Fall 2022
11. <i>Ways of closing the loop</i>	Internal assessment of results with planning to address shortcomings