

Degree: BA/BS in Chemistry & Forensic Chemistry
2023-2024 Assessment ~~Plan~~Report

	Student Learning Outcome #1	Undergraduate Chemistry students will demonstrate competency in oral communication skills.
PLAN	Assessment Method(s)	Undergraduate students will make a formal presentation at the end of a senior level course. A committee of reviewers will evaluate the presentations using the following assessment rubric developed by the chemistry faculty members. This was chosen because these are skills in which our undergraduates must exhibit competency as working chemists. An indirect assessment will also be performed as a survey after the completion of the senior level course.
	Proficiency	Students will score an average of 3.0/4.0 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3/4.0 on the rubric.
	Results of Assessment	87.5% of the students scored an average of 3.3/4.0 on the rubric. The average score was 3.8/4.0.
S T U D Y	Analysis of Results	<p>The oral presentation skills of chemistry undergraduate students were assessed during a formal presentation at the end of a senior level course and assessed by a review committee.</p> <p>We plan to increase the benchmark expectations in the next year, as the number of students assessed was limited. According to this year's results from the rubric, preparedness was the weakest component. We will mainly focus on improving preparedness next year.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel ready to give an oral presentation.</p>

ACT	Improvement Plan for 2024-2025	<p>Since the weakest component was preparedness, we plan to emphasize the importance of practicing in advance and as much as they can. We plan to offer more opportunities for students to practice giving oral presentations as course or research project assignments.</p>
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	Student Learning Outcome #2	Undergraduate Chemistry students will demonstrate expertise in standard scientific writing and the use of English in preparing reports.
PLAN	Assessment Method(s)	In CHEM 4x71 Introduction to Research, and CHEM 4381 Chemical Communications, Scientific writing skills of undergraduate students will be evaluated by a committee of reviewers using an assessment rubric developed by the chemistry faculty members. An indirect assessment will also be performed as a survey after the completion of the senior level course.
	Proficiency	Students will score an average of 2.75 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3 on the rubric.
	Results of Assessment	30% of students scored an average of 3.3/4.0 on the rubric. The average score was 3.1/4.0, which is well above our expectations for students being proficient in this area.
S T U D Y	Analysis of Results	<p>Undergraduate Chemistry students scientific writing skills were assessed by a review committee as part of a CHEM 4x71 Introduction to Research, and CHEM 4381 Chemical Communications course. The assignments to evaluate writing skills were more focused on biochemistry topics this year.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel confident to write reports of any kind.</p>

ACT	Improvement Plan for 2024-2025	<p>The action plan is to have two tracks of topics to be covered, one with more focus on chemistry and the other one on biochemistry to offer students more opportunities to write on topics more related to their expected field of interests. We anticipate that this will impact the average score and the percentage of students who score 3.3/4.0 and above will increase.</p> <p>According to this year's results from the rubric, we will mainly focus on improving the quality of information presented during the written assignments.</p>
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	Student Learning Outcome #3	Our students will be able to effectively perform chemical research at an introductory level.
PLAN	Assessment Method(s)	Chemistry majors in CHEM 4x71 (Introduction to Research courses where x = 2, 3, 4 credit hours) are trained to function as professional chemists. A review committee will evaluate a representative section of final research presentations using the following assessment rubric developed by the chemistry faculty members. This was chosen because these are skills in which our undergraduates must exhibit competency as working chemists. An indirect assessment will also be performed as a survey after the completion of the senior level research course.
	Proficiency	Students will score an average of 3.0/4.0 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3/4.0 on the rubric.
	Results of Assessment	85% of students scored an average of 3.4/4.0 on the rubric. Average score was 3.6/4.0.
S T U D Y	Analysis of Results	<p>A committee evaluated the students' research results using a rubric developed by the chemistry faculty members. Committee were external and internal qualified chemists.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel confident to develop a methodology and analyze data to perform chemical research.</p>

ACT	Improvement Plan for 2024-2025	<p>We plan to increase the benchmark expectations in the next year, as only a limited number of students were surveyed. According to this year's results from the rubric the quality of data analysis was the weakest component. We will therefore mainly focus on improving the quality of data analysis next year. Students will focus on performing more hands-on experiments, they will aim to gain experience on analyzing the data.</p>
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	Student Learning Outcome #4	Undergraduate Chemistry students will demonstrate competency in in presenting data using graphics.
PLAN	Assessment Method(s)	Undergraduate students will make a formal presentation at the end of a senior level course. A committee of reviewers will evaluate the data presentation skills using graphics with the following assessment rubric developed by the chemistry faculty members. This was chosen because these are skills in which our undergraduates must exhibit competency as working chemists. An indirect assessment will also be performed as a survey after the completion of the senior level course.
	Proficiency	Students will score an average of 3.0/4.0 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3/4.0 on the rubric.
	Results of Assessment	85% of students scored an average of 3. <u>3</u> 4/4.0 on the rubric. The average score was 3.6/4.0.
S T U D Y	Analysis of Results	<p>The data presentation skills of chemistry undergraduate students were assessed during a presentation of their research project/final class/capstone and assessed by a review committee.</p> <p>We plan to increase the benchmark expectations in the next year, as the number of students assessed was limited. According to this year's results from the rubric, delivery was the weakest component. We will mainly focus on improving delivery next year.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel ready to present their data.</p>

ACT	Improvement Plan for 2024-2025	<p>We plan to increase the benchmark expectations in the next year. Since the weakest component was delivery, we plan to offer more opportunities for students to practice giving oral presentations as course or research project assignments.</p>
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	Student Learning Outcome #5	Undergraduate Chemistry students will demonstrate competency in using literature search tools.
PLAN	Assessment Method(s)	In CHEM 4x71 Introduction to Research, and CHEM 4381 Chemical Communications, literature searching skills will be evaluated by a committee of reviewers. These skills include the ability to determine a research problem from a scientific paper or review, design search strategy, conduct a search using the known scientific database, and evaluate scientific results. An indirect assessment will also be performed as a survey after the completion of the senior level course.
	Proficiency	Students will score an average of 2.75 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3 on the rubric.
	Results of Assessment	100% of students scored an average of 3.7/4.0 on the rubric.
S T U D Y	Analysis of Results	<p>Undergraduate Chemistry students' literature searching skills using search tools were assessed by a review committee as part of a CHEM 4x71 Introduction to Research, and CHEM 4381 Chemical Communications course. The skills were evaluated using the assignments in the course.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel confident to use the literature search tools.</p>

ACT	Improvement Plan for 2024-2025	We plan to increase the benchmark expectations in the next year. To improvement plan involves giving more assignments in literature search so the students could gain more experience using the search tools.
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	Student Learning Outcome #6	Our students will be able to develop methodology to effectively perform chemical research at an introductory level.
PLAN	Assessment Method(s)	Chemistry majors in CHEM 4x71 (Introduction to Research courses where x = 2, 3, 4 credit hours) are trained to function as professional chemists. A review committee will evaluate the developed methodology using the following assessment rubric developed by the chemistry faculty members. This was chosen because these are skills in which our undergraduates must exhibit competency as working chemists. An indirect assessment will also be performed as a survey after the completion of the senior level research course.
	Proficiency	Students will score an average of 3.0/4.0 on the rubric.
DO	Benchmark	80% of students will score an average of 3.3/4.0 on the rubric.
	Results of Assessment	85% of students scored an average of 3. <u>34</u> /4.0 on the rubric. Average score was 3.6/4.0.
S T U D Y	Analysis of Results	<p>A committee evaluated the students' research results using a rubric developed by the chemistry faculty members. Committee were external and internal qualified chemists.</p> <p>The survey results after completing their research project/final class/capstone indicated that the students themselves feel confident to develop a methodology and analyze data to perform chemical research.</p>

ACT	Improvement Plan for 2024-2025	<p>We plan to increase the benchmark expectations in the next year, as only a limited number of students were surveyed. According to this year's results from the rubric the quality of data analysis was the weakest component. We will therefore mainly focus on improving the quality of data analysis next year. Students will focus on performing more hands-on experiments, they will aim to gain experience on analyzing the data.</p>
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