

# CNM ANNUAL STUDENT LEARNING ASSESSMENT REPORT

*Due to the Student Academic Assessment Committee by October 15*



## PART 1: REPORT INFORMATION

Report Year and Contact Information			
<u>2017-2018</u> Academic Year	<u>Mark Pecak, Carol Martinez</u> Contact Person	<u>MPecak@cnm.edu, camartinez@cnm.edu</u> CNM Email	<u>X-50014, X-50231</u> CNM Office Extension
Subject of this Report			
MSE--GE_LABSCI_CHEM--General Education Chemistry			

## PART 2: CONTEXT IN WHICH THE ASSESSMENT TOOK PLACE

Program/Area Highlights and Successes
<p>(Wherever applicable, include course completion rates, job placement outcomes, and licensing examination pass rates. See the program information dashboard at <a href="https://livecnm.sharepoint.com/sites/Dashboards/SitePages/Program%20Information%20Dashboard.aspx">https://livecnm.sharepoint.com/sites/Dashboards/SitePages/Program%20Information%20Dashboard.aspx</a> (access restricted to CNM employees) and other reports at <a href="https://www.cnm.edu/depts/opie">https://www.cnm.edu/depts/opie</a>.)</p> <p>Enrollment in CHEM 1010 continued to grow this year, with a duplicated enrollment of 97 students in 4 sections, with a C-Pass rate of 73.2% The fill-rate of the online sections of the course was 78.7%. CHEM 1410 served 2,172 students in 61 sections with an overall C-pass rate of 57.7%. The C-pass rate of F2F classes was 61.8%. The duplicated enrollment in CHEM 1710 was 1,269 students in 32 sections, with a C-pass rate of 51.1%. In F2F sections the C-pass rate is 56.9%.</p>
Changes Implemented During the Past Year in Support of Student Learning
<p>In CHEM 1010, the Connect software platform was added as a requirement for the course. Formative self-assessment is encouraged by setting some of the practice problems so that the students can keep attempting the problem until they get the correct answer. The students earn points for their work. Students also get points for doing practice problems as they are reading each chapter.</p>

**PART 3: REPORT ON ASSESSMENT OF STUDENT LEARNING**

Assessment Method	Type of Assessment Tool	Population or Course(s) Assessed	Graduate Learning Outcome(s) Assessed	Mastery Level (E.g., "Minimum score of 3 on a rubric scaled 0-4" or "Minimum score of 75%")	Targeted % Achieving Mastery	Outcome
Grade selected questions on lab practical using a common rubric.	Direct & Internal	CHEM 1492	Properly operate laboratory equipment to collect relevant and quality data.	70% of students should be able to determine the density of both a liquid and a solid unknown.	70%	Target met
Evaluate student responses to a series of related questions on the final.	Direct & Internal	CHEM 1710	Utilize mathematical techniques to evaluate and solve scientific problems.	70% of students should be able to answer a set of four mathematical questions correctly.	70%	Target partially met

**Summary of Assessment Findings**

Students in CHEM 1492 were asked to determine the density of both a liquid and a solid unknown. The students had to use a laboratory balance to make a set of three mass measurements, and two different graduated cylinders to make three volume measurements. The students then had to use their measurements to calculate the density of the two unknowns. 72.9% of the 888 students assessed passed the density determinations on the lab practical. Four mathematically-oriented questions were assessed on the CHEM 1710 Common Final. While 76 % of students had correct responses to two of the four questions, the other two questions had 46% correct answers. The questions with the lower percent correct were both "word problems" that involved more than one step to solve the problem.

**Interpretation of Assessment Findings**

Over 70% of CHEM 1492 students were successfully able to make measurements and interpret data to determine the density of two unknowns. This is a hands-on multi-step process. Over 70% of CHEM 1710 students were able to do calculations that involved straightforward calculations on a written final, but the success rate dropped dramatically when the problems were multi-step word problems. It appears that students are better able to negotiate through a series of measurements or calculations in the hands-on laboratory environment than on a written exam.

**Action Plan in Support of Student Learning** (Describe changes to be made that are based at least in part on the assessment interpretation. If the assessment did not yield useful information, describe changes to be made in the assessment methodology and/or criteria.)

The department is interested in searching for more interactive, low-cost alternatives for instructional materials. Each instructor utilizes different teaching methods such as handouts, test correction, etc. to improve weak areas. As group, faculty can consider demonstrating problem-solving methods for students to help them learn to solve word problems. It will be necessary to write a new cycle plan for this program area in light of the need to assess Essential Skills.

*Please select all of the following that characterize the types of changes described in the above action plan:*

- Assessment criteria revision
- Assessment methodology revision
- Assignment revision
- Budgetary reallocation
- Change in teaching approach
- Course content revision
- Curricular Revision
- Faculty training/development
- Process revision

Recommendations, Proposals, and/or Funding Requests	Budget Needed

**PART 4: REMAINING YEARS IN CURRENT ASSESSMENT CYCLE PLAN** (including any revisions) – **OR -- UPCOMING ASSESSMENT CYCLE PLAN** (if this was the final year)

<b>Years of Full Cycle</b>	<b>Next Year's Assessment Focus</b> (Describe how the next planned assessment is expected to provide information that can be used toward improving student learning.)
2017-2022	TBD based on new cycle plan.

<b>Graduate Learning Outcomes to Be Assessed</b>	<b>Years in which Assessment Is Planned</b>	<b>Population/Courses to Be Assessed</b>	<b>Planned Assessment Approach</b>
Employ critical thinking skills to judge the validity of information from a scientific perspective.	Fall 2019- Spring 2021	CHEM 1410 Lecture Final	Direct/Internal. Evaluate student responses to selected questions on multiple choice final.
Apply the scientific method to formulate questions, analyze information/data and draw conclusions.	Fall 2021-Spring 2022	CHEM 1492 Lab Final	Direct/Internal. Evaluate student responses to selected questions on multiple choice final.
Properly operate laboratory equipment to collect relevant and quality data.	Fall 2017-Spring 2019	CHEM 1492 Lab Practical	Direct/Internal. Grade selected questions on lab practical using a common rubric.
Utilize mathematical techniques to evaluate and solve scientific problems.	Fall 2017-Spring 2019	CHEM 1710 Final	Direct/Internal. Evaluate student responses to a series of related questions on the final.
Communicate effectively about scientific ideas and topics, in both oral and/or written formats.	Fall 2019-Spring 2021	CHEM 1092 Writing Assignment	Direct/Internal. Evaluate student responses to writing assignment using a rubric.
Relate science to personal, social or global impact.	Fall 2021-Spring 2022	CHEM 1010 Discussion Posts	Direct/Internal. Evaluate student responses to discussion post prompts using a rubric.