

in teaching or in industrial, technical, or graduate work. We offer a four-year program with three tracks leading to baccalaureate degrees:

2. Briefly describe the ways in which your program's mission statement is aligned with the USM mission.

USM's Department of Chemistry is comprised of active and engaged faculty who are committed to involving students in scientific research and has been a leader in providing students with meaningful research experiences early in the curriculum.

Diversity, Equity, and Inclusion

If your program has diversity, equity, and inclusion related goals, or a diversity, equity, and inclusion statement; please provide a link to the statement and/or goals. Then, briefly describe any assessment activities related to your program statement/goals regarding diversity, equity, and inclusion.

Assessment of Student Learning: Program Assessment Steps

Step 1: Program-level Student Learning Outcomes (SLO's)

- a. Please provide the **URL** for your **program-level student learning outcomes** as published on your department's website:

<https://usm.maine.edu/sites/default/files/chy/CHY%20curriculum%20connections%202017.pdf>

<https://usm.maine.edu/chy/writing-chemistry>

- b. Please provide the **URL** of your **curriculum assessment map** showing when your student learning outcomes are assessed and in which courses:

If your program's curriculum assessment map is **not** published, please complete the template (on page 6 of this document), and include it with your ASLP, or attach your own version.

- c. Please list the program learning outcomes which were assessed since the submission of your last ASLP (May 2019).

1. Students will have firm foundation in the fundamentals and application of current chemical and scientific theories.
2. Students will be able to design, carry out, record and analyze the results of chemical experiment.
3. Students will be able to use modern instrumentation and classical laboratory techniques, to design experiments, and to properly record the results of their experiments.
4. Students will be able to identify and solve chemical problems and explore new areas of research.
5. Students can use modern library searching and retrieval methods to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry.

Step 2: Assessment Methods Selected and Implemented /Summary of Results

- a. **Identify the assessment measures (evidence of student learning) that were used to determine whether students achieved the stated learning outcomes for the degree.**
Please check all the measures used since the submission of your last ASLP (May 2019), on the chart below. Also indicate when you implemented the assessment activity.

<u>Check Assessment Methods Used this Academic Year</u>	<u>When Implemented</u>		
<input type="checkbox"/> Artistic Exhibition/Types of Performance	Fall	Spring	Summer
<input checked="" type="checkbox"/> Class assignments/Exams/Papers (completed in course)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Capstone Project (written project, non-thesis paper)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Comprehensive or licensure exam (created by external org)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Exit Exam (created by department or program)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Exit Interview (individual or indiv self-reports of outcomes)	Fall	Spring	Summer
<input type="checkbox"/> Employer meetings/discussions on student outcomes	Fall	Spring	Summer
<input type="checkbox"/> Focus Groups (self-reports of outcome attainment)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Internship/Fieldwork (evaluations of performance)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Oral Performance/conference presentation	Fall	Spring	Summer
<input type="checkbox"/> Portfolio of student work	Fall	Spring	Summer
<input type="checkbox"/> Reflection Essays (self-report of outcome achievement)	Fall	Spring	Summer
<input checked="" type="checkbox"/> Research Papers (used for course & program assessment)	Fall	Spring	Summer
<input type="checkbox"/> Supervisor/Employer Evaluation (performance outside of class)	Fall	Spring	Summer
<input type="checkbox"/> Student Survey information (student self-reports on outcomes)	Fall	Spring	Summer
<input type="checkbox"/> Thesis/Dissertation (used for course & program assessment)	Fall	Spring	Summer
<input type="checkbox"/> Other: please explain			

- b. **Briefly describe the implementation process** (i.e. where were students assessed, what courses, what class levels, or any other specific details, etc).

In the chemistry curriculum students are assessed regularly at all levels of the program. In all of our courses quizzes and exams are used throughout the semester. In 100 and 200 level courses ACS comprehensive exams are used to compare USM student with national trends. Students are assessed via weekly laboratory reports, reflections or via practical exams.

- c. **Provide a brief summary (numerical or narrative) of your assessment results** (e.g., . an illustration of the rubric-based scores, percentage of those who met the learning outcome you assessed, number of students assessed and findings, copies of instruments or rubrics used, etc.)

Typically, the overall average score on the ACS standardized exams is equal to or just about the national average.

- d. **Provide a brief summary of what your program learned or concluded from the evidence you collected** (e.g., did your program meet the expected goal or benchmark, does the new knowledge raise additional questions, do you need to collect additional types of data, did you get insights about the assessment procedures or about teaching and learning in your program?, etc.)

Student's ability to write comprehensive lab reports or project reports continue to decline.

Step 3: Using the Assessment results to Improve Student Learning

- a. Who interpreted or analyzed the results that were collected this past year? (check all that apply)

- Program instructors/faculty
- Faculty committee
- Ad hoc faculty group
- Dept Chair/Program Director/Dean
- Faculty advisor
- Students (assistants, interns)
- Other: please explain

b. How did they evaluate, analyze, or interpret those results? (check all that apply)

- Used a rubric or scoring guide(s) for an assignment, paper, etc.
- Scored exams/tests/quizzes
- Used professional judgments (no rubric or scoring guide)
- Compiled or reviewed survey results
- Reviewed qualitative methods (interviews, focus groups, open-ended responses)
- External organization scored/analyzed data (licensure, comp exams)
- Other: please explain

c. Indicate how the program will use (or has used) the results (check all that apply):

- Assessment procedure change (student outcomes, curriculum map, rubric, evidence collected, sampling procedure, communications with faculty, etc.)
- Course changes (course content, courses offered, new course, pre-requisites, course requirements, etc.)
- Course pedagogy changes (teaching)
- Personnel or resource allocation changes
- Program policy changes (admission requirements, student probation policies, course feedback forms, etc.)
- Student's out-of-course experiences (co-curricular requirements, program website, program handbook, student workshops, etc.)
- Student Advising experiences (advisor-advisee relationship, communication of changes or expectations, etc.)
- Results indicated no action needed, students met expectations
- Other: please explain

d. Briefly explain each of the program changes/improvements indicated above.

- e. Indicate when the program improvements (noted above) will be implemented or if you already made program changes (e.g., during the summer months, beginning of the fall semester, etc.).

Other Assessment Activities: Briefly describe any additional assessment-related activities being done at the course level (e.g., common assignments and/or assignment rubrics for use across different sections of required courses, examining student progress in entry-level, capstone, or other courses, other assessment projects implemented by individual faculty, etc.)

Curriculum Assessment Map of Student Learning Outcomes –Template

Curriculum Map					
Required Courses- Used for Assessing Program-Level Student Learning Outcomes					
Program-Student Learning Outcomes	CHY 115	CHY 253	CHY 373	CHY 461	Capstone/ Internship Course
Critical thinking, problem solving, and application of advanced math	Introduced & Practiced via quizzes, HW and in class study groups	Reinforced	Advanced through application of calculus to quantum mechanics		Outcome assessed using research-based project
Develop broad and deep understanding of chemical principles that dictate chem/phy properties of matter		Introduced & Practiced	Reinforced	Assessed by ability to apply chemical principles to complicated biochem systems	
Students will be able to communicate their knowledge of chemistry in oral and written form		Practiced & Reinforced through notebook entries on experimental details		Assessed via scientific journal article of semester long research project	Weekly journals detailing semester long research project
Students will be able to operate analytical instruments such as IR, NMR, GCMS, AA, etc, and be able to interpret the resulting data to identify unknowns chemical structure	Introduced	Practiced and evaluated via a practical exam	Reinforced		