Assessment of Student Learning Plan (ASLP): Chemistry

2018-19 Academic Year

University of Southern Maine

A. College, Department, Date

College _Science, Technology and Health_____
Department __Chemistry _____
Date _*May 14, 2019*_____

B. Contact Person for the Assessment Plan

Name and title__Caryn Prudenté, Professor and Department Chair__

C. Degree Program

Name of Degree Program__ Chemistry (BS and BA) and Biochemistry (BS)___

D. Assessment of Student Learning: Program Assessment

***Step 1: Identify the Student Learning Outcomes* (SLO's)**

a. *Are your student learning outcomes published on your department's website? Yes/No*

   i. *If yes, please provide the url:* _____

1. Students will have firm foundation in the fundamentals and applications of current chemical and scientific theories.
2. Students will be able to employ critical thinking and the scientific method to design and implement experiments and to interpret data / results.
3. Students will be able to use modern instrumentation and classical laboratory techniques, to design experiments, and to properly document their work in laboratory notebooks and in reports

4. Capable of using modern library searching and retrieval methods to obtain information about a specific topic, chemical, chemical technique, or an issue relating to chemistry.
5. Students can communicate information to their peers and to non-chemists

ii. *If no, please list 3-5 of the most important student learning outcomes for your program.* ***What will students know by the end of your program?***

b. *Please identify* ***which of your student learning outcome(s) were assessed this past academic year.***

c. *Do you have a* ***matrix or curriculum map*** *showing when your student learning outcomes are assessed and in which courses?* ***Yes****/No*

i. *If yes, do you have this map published on your website? Please provide the url or attach a copy of the curriculum map.* ***Attached***

Step 2: Assessment Methods Selected and Implemented

a. ***Identify which assessment measures (beyond individual student grading) were used to determine whether students achieved the stated learning outcomes for the degree.*** *(NOTE: Many undergraduate programs are using their recently approved Capstone courses to assess student learning. Assessment plans included in your Capstone Proposal in the CCC may be referred to as examples of assessment work in your program.)*

1. Classroom response systems (clickers and / or TopHat)
2. Observations of student behavior during group activities in the classroom and laboratory
3. Entry vs Exit scores on content appropriate questions
4. Capstone research experiences and presentation on work performed
5. Percentiles achieved on National American Chemical Society standardized final exams.

b. *Briefly describe when you implemented the assessment activity; if a rubric or other structured approach was used to assess student outcome achievement, please describe and/or attach the rubric.*

1. Throughout the academic year (CHY 113, 115, 116, and 233)
2. During group work sessions in CHY 115, 233, 251, 252, 373, 421 and 470
3. Exams administered in CHY 113

4. Students present both written and oral presentations of their semester long, faculty mentored research project to the department. Each faculty member assesses each students work. (CHY 470 = CHY and BCH capstone course)
5. Students in CHY 113, 115 and 253 take the ACS standardized exam and grades are compared to national standards.

> Example: Outcome 1 was measured during the fall semester -- all majors completed a problem-solving case study during the ___course. Case studies were graded on a rubric by two faculty members.
> Example: Outcome 2 was measured during the spring semester -- all majors in the capstone course completed a research project. Research projects will be reviewed and graded by a group of faculty.

Step 3: Using the Assessment results to Improve Student Learning

a. *Briefly describe your unit's process of reviewing the program assessment results (for example, annual discussion by faculty committee, etc.).* **As a department we discuss the program, expected outcomes, and curriculum annually.**

b. Identify the specific changes that have been or will be made to improve student learning based on these program assessment results. (For example, what changes will the program make at the assignment, course, or program level to improve student learning, based on the assessment results?)

We are updating / revising the 100 level laboratory manuals and will add a practical exam requirement to the course. Implementation planned for F2019.

The Department has purchased a computer and updated modeling software to enhance student learning in this sophisticated realm of molecular modeling.

c. *Date of most recent program review/self-study*? **Fall 2018**

E. Other Assessment Activities: *Briefly describe any additional assessment-related activities your program is using at the course level (for example, creating common assignments and/or assignment rubrics for use across different sections of required courses, examining student progress in entry-level courses, other assessment projects implemented by individual faculty, etc.).*

Grading rubrics are being developed for CHY 114, and are used in CHY 470 (Capstone). Preliminary plans are underway to develop a one semester organic chemistry course better suited for the general biology students.

F. Community Engagement Activities in your departmental curriculum:

a. Does your department have a student learning outcome that is related to any community engagement activities? If so, please state the outcome.

b. Please indicate if any of the community engagement activities listed below are included in your program's curriculum, by noting which activities are required or optional for students in your major.

Community Engagement Activity	*Required/Optional*	
Student Research (related to a community-based problem)	R	O
Student-Faculty Community Research Project	R	O
Internship, or a Field Experience	R	O
Independent Study (community-related project)	R	O
Capstone Course (community-related project)	R	O
Service-Learning (course-based)	R	O
Study Abroad, or an International Program	R	O
Interdisciplinary Collaborative Project (community related)	R	O
Student Leadership Activities (related to a team project)	R	O
Students/Faculty Community Leadership (e.g., advisory boards, committees, conference presentations)	R	O
Other activities (please list):	R	O

c. Please list any courses (i.e. EDU 400) that have a community engagement activity in your program.

Entry-level courses: _____ *Mid-level courses:* _____ *Upper-level courses:* _____

Chemistry Program Student Learning Outcomes:

Learning Outcome	Courses that address the learning outcome.	How is this outcome assessed in the course?	Other?
Firm foundations in the fundamentals and application of current chemical and scientific theories.	All of our CHY courses	Successful completion (C or better) of our CHY courses	
Able to design, carry out, record and analyze the results of chemical experiments.	CHY252/254 More emphasis on design ability in 254	Formal written reports with spectroscopic analyses. Assessment of laboratory notebooks	
Able to use modern instrumentation and classical laboratory techniques, to design experiments, and to properly record the results of their experiment.	CHY252/254 Any of our lab courses	Postlabs, proficiency exams, formal/laboratory reports	
Skilled in problem solving, critical thinking and analytical reasoning.	All CHY courses	Inclass exams and quizzes Inclass &/or take home exams and quizzes	
Able to identify and solve chemical problems and explore new areas of research.	CHY470	Presentation & final report	
Capable of using modern library searching and retrieval methods to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry.	CHY252/254 CHY421 CHY470	Literature assignment Bioinorganic presentation (421) Capstone presentation	
Knows the proper procedures and regulations for safe handling and use of chemicals and can follow the proper procedures and regulations for safe handling when using chemicals.	All CHY lab courses	Review and documentation of individual laboratory procedures in Lab Safety Plan	
Able to communicate the results of their work to chemists and non-chemists.	CHY470	Capstone presentation	
Find gainful employment in industry or government, be accepted at graduate or professional schools (law, medicine, etc.), or find employment in school systems as instructors or administrators.	All CHY courses	Need a better method to assess our graduates post USM employment/graduate education	