

SUNY Potsdam
Student Learning Outcomes Assessment for 2011-2012-Chemistry
Assessment Plan

Department Name: Chemistry

Date Submitted and Academic Year: Fall 2011 for AY2011-2012

Department Mission Statement:

The Chemistry Department at SUNY Potsdam is listed among the approved programs in the United States by the American Chemical Society. The Department is committed to maintaining program approval which brings prestige to both the Department and the College and signifies the department's commitment to quality chemical education. In line with this commitment the department strives to

- provide a chemistry curriculum which addresses the fundamental areas of modern chemistry at both the introductory and advanced levels.
- provide a modern laboratory program which includes hands-on experiences with laboratory techniques, experimental design and instrumentation.
- promote faculty and faculty-student research activities.
- contribute important non-major courses to the College's General Education Program.

Connection to University Mission

The College Mission Statement states that "The State University of New York at Potsdam prepares students to act as engaged global citizens and to lead lives enriched by critical thought, creativity, and discovery." The Chemistry Department Mission is consistent with and supports this mission in that our learning objectives are designed to prepare students to enter the global scientific community with the skills necessary to critically evaluate scientific problems, generate innovative solutions to these problems, and test these solutions using creatively designed experiments. Furthermore, through the process of chemical research students, will make new discoveries to advance fundamental chemical knowledge.

Department Assessment Coordinator or Faculty Member Completing this Form:

Anthony A. Molinero

Update on prior years' "Application of Assessment Results:

Two years ago we revised our assessment plan by reducing the learning outcomes from 13 to 3. These three new learning outcomes were centered around three main themes – content, laboratory skills, and research. In addition, we decided to evaluate only graduating chemistry (BA and BS) and biochemistry majors. Next year's assessment, like this year's assessment report, will reflect those changes. Since the number of students we are evaluating each year is small we are in the process of establishing a baseline so we get an idea of what is "normal." We generally give the Major Field Test to all our graduating majors so that we can see how they compare nationally.

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Unfortunately, it has become cost prohibitive and it was not given this year nor is it likely to be given next year.

Intended Student Learning Outcome #1

The student will have an understanding of the major concepts and theoretical principles in chemistry as well as the ability to solve basic problems in chemistry in an efficient and accurate manner.

Connection to Department Mission

The mission of the SUNY Potsdam Chemistry Department includes the commitment to provide a chemistry curriculum which addresses the fundamental areas of modern chemistry at both the introductory and advanced levels. Basic problem solving skills are at the heart of this.

Links with other programs/departments

- *Gen Ed Component* **SP**

- *Related Courses* Calculus I & II (MATH 151 & 152) and University Physics I & II (PHYS 103 & 204) are cognate requirements.

Measurable Criteria and Assessment Method(s)

The measurable criteria are the basic content knowledge and problem solving skills of chemistry students. The methods of assessment are the exams, quizzes, and assignments in key courses and the Major Field Test in chemistry given to all our graduating majors. Courses included in the assessment include the lecture portion of General Chemistry (CHEM 105 & 106), Organic Chemistry (CHEM 341 & 342), Quantitative Analysis (CHEM 311), Physical chemistry (CHEM 451 & 452), Biochemistry (CHEM 425 & 426) and Inorganic Chemistry (CHEM 433).

Data Source/Results & Analysis

Application of Results/Action Plan for Improvement

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Intended Student Learning Outcome #2

The student will have a working knowledge of fundamental laboratory methodologies and the skills necessary to carry out basic experiments including the ability to use instrumentation.

Connection to Department Mission

The mission of the SUNY Potsdam Chemistry Department includes the commitment to provide a modern laboratory program which includes hands-on experiences with laboratory techniques, experimental design, and instrumentation. This learning objective supports a working knowledge of basic laboratory techniques.

Links with other programs/departments

- *Gen Ed Component* **LB**

- *Related Courses* The laboratory portion of University Physics I & II (PHYS 103 & 204) are cognate requirements. For biochemistry majors, the laboratory portion of Genetics (BIOL 311) and Microbiology (BIOL 320) are cognates as well.

Measurable Criteria and Assessment Method(s)

The measurable criteria would include knowledge of basic laboratory methodologies, data analysis, and data interpretation as well as laboratory skills. These can be measured using laboratory reports, quizzes, and exams. Courses included in the assessment include the laboratory portion of General Chemistry (CHEM 105 & 106), Organic Chemistry (CHEM 341 & 342), Quantitative Analysis (CHEM 311), Physical Chemistry (CHEM 451 & 452), Biochemistry (CHEM 425 & 426) and Inorganic Chemistry (CHEM 434).

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Intended Student Learning Outcome #3

The student will have the ability to design and carry out research projects; to record, analyze, and interpret experimental data; and to communicate their research data (or the results of their work) to chemists and non-chemists in the form of a research poster, oral presentation, or research paper.

Connection to Department Mission

The mission of the SUNY Potsdam Chemistry Department includes the commitment to provide a modern laboratory program which includes hands-on experiences with laboratory techniques, experimental design, and instrumentation. This learning objective supports a working knowledge of basic laboratory techniques and experimental design.

Links with other programs/departments

- *Gen Ed Component* None

- *Related Courses* Although there are not any specific courses to include here, research is strongly encouraged by the institution and essential component of the college mission. It is highly recommended to our majors and in line with the mission of the undergraduate research center at SUNY Potsdam.

Measurable Criteria and Assessment Method(s)

The measurable criteria would include an evaluation of laboratory skills, research papers, oral presentations, and poster evaluations. This is primarily evaluated using work from CHEM 497 Research Problems. It also includes work from our capstone courses, CHEM 308 and 309, where students write a research paper (CHEM 308) and give oral presentation of a research topic (CHEM 309).

Data Source/Results & Analysis

Application of Results/Action Plan for Improvement

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<i>Summary of Action Plans for 2011-2012</i>
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