

Kansas State University
Chemistry Department's Assessment Plan
Assessment Coordinator: Yasmin Patell
Revised Fall 2017

Student Learning Outcomes	Assessment Plan
Graduates from the chemistry degree program will have demonstrated:	The outcomes will be assessed in rotation, with two or three outcomes being assessed each year.
SLO#1: an understanding of major concepts, theoretical principles and experimental findings in chemistry.	Description of the assessment tool(s): SLO #1 will be assessed using specific lecture exam grades, in the foundation courses Honors Chemistry I (CHM 220) and Honors Chemistry II (CHM 250) or the equivalent Chemistry I (CHM 210), Chemistry II (CHM 230) and Chemical Analysis (CHM 371).
SLO#2: an ability to work effectively in diverse teams in both classroom and laboratory.	Description of the assessment tool(s): SLO #2 will be assessed using lab report grades and practical performance points in Honors Chemistry I (CHM 220) and Honors Chemistry II (CHM 250), where students work in teams and develop teamwork skills in all lab experiments. This outcome will also be assessed using group report grades in Inorganic II (CHM 712).
SLO#3: an ability to employ critical thinking and efficient problem-solving skills in the four basic areas of chemistry (analytical, inorganic, organic, and physical).	Description of the assessment tool(s): SLO #3 will be assessed using laboratory report grades in CHM 316 (Environmental Science: A Chemistry Perspective Laboratory), CHM 532 (Organic Chemistry Laboratory), CHM 596 (Physical Methods Laboratory), and CHM 657 (Inorganic Techniques).
SLO#4: an ability to conduct experiments, analyze data, and interpret results, while observing responsible and ethical scientific conduct.	Description of the assessment tool(s): SLO #4 will be assessed using individual report grades from the Senior Thesis Research project, CHM 599. This outcome will also be assessed using lab report grades for the synthetic experiments in Organic Chemistry Lab (CHM 532) where the student works independently on a lab project.
SLO#5: effective written and oral communication skills, especially the ability to transmit complex technical information in a clear and concise manner.	Description of the assessment tool(s): SLO #5 will be assessed using two different assessment rubrics for both written and oral communication skills, for the Senior Thesis Research project, CHM 599. This outcome will also be assessed using lab notebook points in Inorganic Techniques (CHM 657) which specifically address writing skills. Our chemistry majors give research presentations during the undergraduate symposium at the American Chemical Society (ACS) Midwest Regional Meetings and the ACS National Meetings, in addition to research group meetings and seminars. These presentations will also be assessed.

SLO#6: the ability to use modern instrumentation for chemical analysis and separation.	Description of the assessment tool(s): SLO #6 will be assessed using specific laboratory report grades, in Chemical Analysis (CHM 371), Physical Methods Lab (CHM 596) and Inorganic Techniques (CHM 657), where all students gain hands-on experience with modern instrumentation.
SLO#7: the ability to use computers for chemical simulation and computation.	Description of the assessment tool(s): SLO #7 will be assessed using the computational chemistry experiments in our introductory lab classes. The relevant lab reports in Chemistry I (CHM 210) and Honors Chemistry I (CHM 220) that specifically address this outcome, will be used for this assessment.
SLO#8: the ability to employ modern library search tools (e.g. SciFinder) to locate, retrieve, and evaluate scientific information.	Description of the assessment tool(s): SLO #8 will be assessed using a specific lab project in Inorganic Techniques (CHM 657) where the students need to use modern library search tools to locate, retrieve and evaluate scientific information. The lab project is entitled "SciFinder Scholar and the Chemical Literature". A science librarian teaches our majors about modern library search tools in Frontiers of Chemistry (CHM 200). The library staff are willing to work with us to develop an additional assessment tool for this.
SLO#9: a familiarity with, and application of safety and chemical hygiene regulations and practices.	Description of the assessment tool(s): SLO #9 will be assessed using lab performance points in Honors Chemistry I (CHM 220), Chemical Analysis (CHM 371), Organic Chemistry Lab (CHM 532) and Inorganic Techniques (CHM 657). All chemistry majors attend seminars on safe lab practices in Frontiers of Chemistry (CHM 200) and need to be familiar with the chemistry departments Chemical Hygiene Plan. Safe lab practices are stressed during weekly pre-lab presentations in every lab class.
SLO#10: an ability to gain entry into professional schools, graduate programs, or the job market.	Description of the assessment tool(s): Job placement data and a Senior Exit Survey will be used to assess this outcome as well as our degree program.

All ten outcomes will be assessed in rotation as follows:

Student Learning Outcome	Semester Outcome will be Assessed
SLO# 1 and SLO#2	Fall2015-Spring 2016
SLO# 3 and SLO# 4	Fall2016-Spring 2017
SLO# 5, SLO# 6 and SLO# 7	Fall2017-Spring 2018
SLO# 8, SLO# 9, and SLO# 10	Fall2018-Spring 2019