

Components of a Program-Level Student Learning Assessment Plan*

1. **Mission Statement.** This section includes a brief description of the program's mission and focus and of how program learning goals relate in general to the missions of the program and of the college.

Mission

The departmental mission is help students understand the past and current practice of chemistry and prepare them to do the chemistry of the future. We seek to develop those characteristics of excellent scientists that can be acquired by education. In summary these include:

1. The ability to learn.
2. The ability to create new ideas, hypotheses, or alternatives and understand their relationship to existing chemical theory.
3. The ability to make scientifically defensible choices among alternatives.
4. The ability to plan, conduct and interpret the results of experiments.
5. The ability to present scientific work convincingly.

2. **Student Learning Outcomes.** Student Learning Outcomes are statements of what you intend students "to know, do, and care about" after successfully completing your program. Think in terms of knowledge, skills, attitudes, abilities, etc. What kinds of discipline-based knowledge should students develop in the program? What are the skills (lab, communication, technical, computer, etc.) that the graduates should have acquired? What kinds of attributes should the students develop (appreciation for diversity, understanding learning styles, etc.) during the program of study? Briefly describe the process for developing student learning goals and how they relate to institutional goals.

Goals

A. The Department should assist students in learning how to learn. More specifically:

1. Students should gain an appropriate base of information. We use the American Chemical Society guidelines to help us determine what is appropriate.
2. All chemistry students should learn the techniques of accessing existing information.
3. Students should become adept at interpreting laboratory data, both quantitative and qualitative, which assumes the ability to apply and interpret basic statistical tests. This also implies that the faculty will foster the professional maturation that allows one to regard anomalies with interest rather than frustration.
4. Students should be provided with the laboratory skills necessary for following instructions prepared by chemists for chemists.
5. Students should develop the ability to determine the relationship between specific chemical facts and general scientific principles: mathematical, physical, and chemical.

B. The Department should provide an environment in which students' talents are directed toward the formulation and analysis of new scientific ideas.

1. Students should be made constantly aware of the fact that scientific progress depends upon the existence of gaps, misconceptions, and glossed-over anomalies in our present level of understanding.
2. The most important goal of laboratory work should be developing in students the ability to design and undertake their own potentially useful original investigations.
3. Serious efforts should be undertaken in the classroom toward illustrating the role of creativity in science.
4. Students should have practice in relating specific chemical facts to general scientific principles: mathematical, physical, and chemical.

C. The Department should emphasize opportunities for students to express themselves and describe their findings, both orally and in writing.

1. Students must gain sufficient experience in delivering oral accounts of their scientific efforts so that they will be perceived as chemistry professionals by other chemistry professionals.
2. Students should become sensitive to the differing needs of different audiences, and gain experience in dealing with this diversity, particularly in the case of oral presentations.
3. Students should learn to defend their scientific beliefs, which suggests the value of engaging in debates based on scientific issues.
4. Interested students should be encouraged to acquire teaching experience by serving as laboratory assistants or tutors.
5. Students should master the fundamentals of written scientific English in a wide variety of formats.
6. Students should be provided with ample opportunity to interact with other chemistry professionals, including visiting scientists.

3. **Assessment Tools and Methods.** Next, each program will identify or create appropriate assessment tools and methods for gathering evidence regarding student learning. Effective assessment programs entail a combination of direct and indirect measures and may include both quantitative and qualitative information. Assessment tools include tests, portfolios, course-embedded measures, capstone evaluations, and others. In addition, this section should describe why particular measures were chosen, and how, when, and by whom they will be administered.

See Attached Worksheet.

4. **Time line for Implementation.** Each program will identify a realistic timeframe for implementation of the assessment plan. Will a pilot of tools and methods be conducted, if so when? When will data be collected and the results analyzed? [In order to meet the progress timeline for the Middle States Periodic Review Report, programs should plan to start gathering assessment data no later than **Fall 2009.**]

With the exception of the graduate survey, this plan is ongoing. Some of the results have been tracked for 10 years or more.

5. **Analysis of Results.** Following the collection of data, the program will need to carefully analyze the results. Who will conduct the analysis? How will the results be shared with the faculty? What types of thresholds and comparisons will be used?

Administered by the course faculty, alumni, department chair, or supervisor of research students/IR

6. **Program for Improvement.** The goal of assessment is to improve student learning, and thus, the critical step in improving student learning is to use the results of assessment to make changes to the curriculum, course exercises, and activities. Identify the strategies that the program will use to link the analysis of results to program improvements.

The Department has made curricular changes based on the results of the assessments in this plan. For example, course content will be adjusted based on the results of the ETS Chemistry exam. A sophomore seminar course was created in response to senior exit survey results.

*Sources: *Student Learning Assessment: Options and Resources* (Middle States Commission on Higher Education, 2003); *Student Outcomes Assessment Plan* (Indiana State University, 1995); Barbara E. Walvoord, *Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education* (Jossey-Bass, 2004).