

Goals for Chemistry and Biochemistry Undergraduate Programs

Competencies that all students must demonstrate to complete the program successfully:

1. Knowledge and comprehension in areas of chemistry - Graduates should have a foundation of knowledge in chemistry suitable for the pursuit of further study in the discipline. In order to achieve the goals of any one of our chemistry degrees, knowledge is required from the related areas of introductory physics and calculus. *Students earning a B.S. degree as opposed to a B.A. degree are expected to distinguish themselves both in terms of superior grasp of the fundamental areas and by displaying knowledge from the advanced lecture courses taken only by B.S. degree students.*

2. Scientific problem-solving skills - Graduates should understand valid scientific approaches to problem solving and be able to design experiments to test a hypothesis. *Students earning a B.S. degree are expected to be able to design experiments drawing upon a wider range of methods including those they uniquely gain experience with in advanced laboratory courses that B.S degree majors complete.*

3. Data analysis/quantitative skills - Graduates should be able to draw valid conclusions from experimental data and observations. Graduates should be able to carry out statistical and linear regression analysis of data. Graduates should be able to identify the main possible sources of error in laboratory measurements.

4. Laboratory skills - Graduates should be able to carry out the basic techniques of preparative and analytical chemistry. An appreciation some aspects of chemical spectroscopy should be achieved. Graduates should be able to keep accurate records of experiments. Graduates should be able to work effectively in the laboratory individually or as a part of a small team. Graduates should have an awareness of the basic aspects of safe laboratory practices. *Students earning a B.S. degree are expected to be display more advanced skills in preparative and analytical chemistry.*

5. Communication skills - Graduates should be able to communicate scientific ideas clearly both orally and in written form. This includes the effective presentation of quantitative data and of scientific concepts or procedures using diagrams and/or figures.

6. Library/Information skills - Graduates should be able to search for and retrieve information from scientific journals, databases, and handbooks, especially those widely used by professional chemists.

7. Computer/software skills - Graduates should be proficient in the use of software widely used by practicing scientists, including word processors, scientific plotting and analysis software, and spreadsheets. *Students earning a B.S. degree are expected to be display more sophisticated skills in the use of the aforementioned software.*