Learning Goals for Undergraduates

Chemistry plays a central role in the sciences because the goal of chemical study is understanding natural processes on an atomic and molecular level. Thus, graduating chemistry and biochemistry majors should experience the excitement of relating molecular properties to the order they observe in nature. As teachers, our challenge is to emphasize the connections between the molecular level structure and properties and functions of macroscopic matter.

This mission suggests the following outcomes for our educational process. At the end of their studies, graduating chemistry and biochemistry majors should:

- have a general knowledge of the basic areas of chemistry working knowledge of at least one area. A working knowledge is demonstrated by the ability to apply formal knowledge in a problem-solving environment.

- be proficient in basic laboratory skills (e.g., preparing solutions, chemical synthesis techniques, chemical and instrumental analysis and laboratory safety).

- have the ability to formulate and carry out strategies for solving scientific problems.

- have some understanding of the principles and applications of modern instrumentation, computation, experimental design, and data analysis.

- have had the opportunity to gain experience with a research project as part of an upper level course and the opportunity to participate in active, individual laboratory research within the university or in another appropriate setting.

- have the ability to communicate scientific information clearly and precisely, both orally and in writing.

- have the ability to read, understand, and use scientific literature.

- have some awareness of the broader implications of chemical processes (e.g., resource management, economic factors, and ecological considerations).

- have had the opportunity to work with others as part of a team to solve scientific problems.

- have had an introduction to the opportunities and requirements for careers available to those with training in chemistry.

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