UNIVERSITY OF WISCONSIN
WHITEWATER

ACADEMIC ASSESSMENT

Chemistry Education

Mission Statement

The mission of the Department of Chemistry, as a member of the College of Letters & Sciences, is to:

- Create an environment that supports learning and research;
- Improve student's ability to analyze problems and develop appropriate solutions;
- Establish and maintain a community of scholars and students who aspire to high standards of achievement; and
- Model in ourselves and encourage in our students the ideas of civic responsibility and engagement, as well as personal and professional integrity.

As a science department, we regard our mission to include:

- Teaching students systematic methods for evaluating evidence and information by helping them to build and test scientific hypotheses and theories;
- Fostering students' critical thinking skills such as drawing conclusions, inferring relationships, solving problems, and making predictions about the natural world; and
- Improving science literacy for student citizens, consistent with the philosophy of liberal studies.

As a department of chemistry, we are committed to providing:

- A rigorous, effective, and up-to-date curriculum for chemistry majors and minors, with depth of study for those students who desire to pursue advanced study in or a career related to chemistry or science education;
- Effective and engaging courses for students who choose to take chemistry courses as either part of the breadth of a liberal arts education or whose majors or career goals require them;
- A safe, relevant laboratory environment for practical exploration of chemical principles, methods, and techniques;
- Relevant educational experiences in the chemical sciences through public outreach with emphasis on the UW-Whitewater service area;
- Hands-on learning experiences in all areas of the curriculum which include the partnership of students, faculty, and staff in research and other scholarly activities;
- Well-informed and accurate academic advising through supportive and constructive advising sessions;
- A well-maintained collection of state-of-the-art instruments for student, faculty, and staff use;

- Opportunities tied to environmental sustainability as part of both our curriculum and our research endeavors in order to emphasize responsible citizenry to the global community.
- Support for the development of faculty and staff teaching innovations and research interests; and
- A strong disciplinary identity, in part by maintaining accreditation with the American Chemical Society while providing opportunities for interdisciplinary study and research through collaborations with other disciplines and departments.

Student Learning Outcomes

Student learning outcomes (SLOs) are statements of what a student will know or be able to do when they have completed a program. They represent the knowledge and skills a program has determined are most important for students to gain from that program. The most useful SLOs are specific and measurable so the program can accurately assess the degree to which students have achieved each outcome, and they align with college and institution mission and values. Data on achievement of SLOs is used to make improvements in the program and increase student success.

Chemistry Department Student Learning Goals (BSE):

Subject Matter

- Demonstrate a command of the body of general knowledge relevant to the areas of Organic, Inorganic, Analytical, Biochemical and Physical chemistry as identified by the American Chemical Society.
- Demonstrate an understanding of major concepts and themes in chemistry, such as the energy based fundamentals of bond formation, the resultant spectral phenomena related thereto, stoichiometry, properties of chemicals.
- Demonstrate an understanding of the fundamental chemical and physical laws or theories, such as these in kinetics and thermodynamics.

Cognitive Development

- Think critically and solve problems creatively.
- Read and understand representative scientific literature.
- Present effectively and articulately in both oral and written platforms.
- Understand the frontier developments in chemistry and related career opportunities in order to make informed decisions about future studies and career goals.

Skills

- Apply the scientific method to test hypotheses; Collect data precisely and accurately; Analyze data and report results scientifically.
- Perform instrument calibrations and sample treatment. Apply various and appropriate methods to analyze samples.
- Demonstrate an understanding and practice of safe laboratory procedural techniques and subsequent waste disposal.
- Conduct thorough reviews of chemistry literature in some fields.
- Be a group member and a team player to fulfill a team work.

In addition, students who major in Chemistry Education will also meet the following education standards from the Interstate New Teacher Assessment and Support Consortium (INTASC):

- **[Standard 1: Content Pedagogy]** He or she must understand the central concept and structure of discipline and it must be created in such a way that students can learn from it effectively.

- **[Standard 2: Student Development]** The teacher must be able to understand the student's ability to grasp things and must come up with the methods that can offer better personality development of the students.

- **[Standard 3: Diverse Learners]** The teacher must know that the students have different capabilities of learning and based on that must train them.

- **[Standard 4: Multiple Instructional Strategies]** The teacher must be able to understand and use a variety of instructional strategies so that they are able to solve problems, think critically and show better performance.
- **[Standard 5: Management and Motivation]** The teacher must be able to understand individuals and create a learning environment to encourage positive social interactions, self-motivation and active learning engagement.

- **[Standard 6: Technology and Communication]** The teacher should use verbal, non-verbal and media communication to impart knowledge in the students for their better understanding of the subject matter.

- **[Standard 7: Planning]** It is highly recommended that the teacher must be able to plan various things for students such as curriculum, community and students, and knowledge of subject matter.

- **[Standard 8: Assessment]** The teacher assesses the students formally or informally to evaluate the social, intellectual and physical development of the students.

- **[Standard 9: Reflective Practice: Professional Development]** The teacher is considered a reflective practitioner who can evaluate the effects of the choices and actions on others and prepares students to face the world professionally as well.

- **[Standard 10: School and community Involvement]** The last standard of INTASC standards is to develop the relationship amongst students, colleagues, society, parents and various other agencies to support learning and well-being.