



Academic Affairs

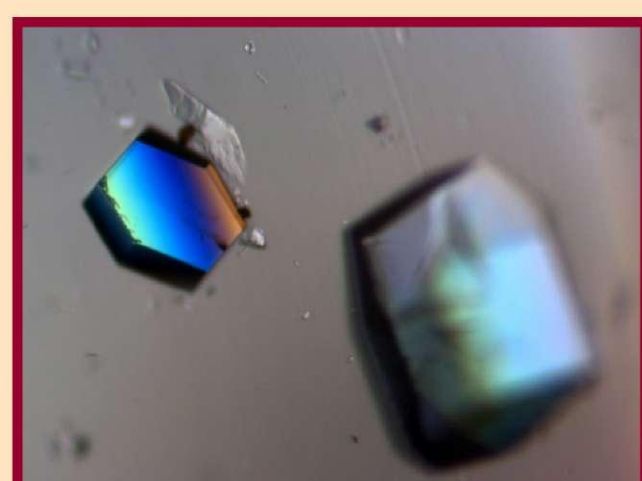
CHEMISTRY

Presented By:

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Overview of Degree with Learning Outcomes

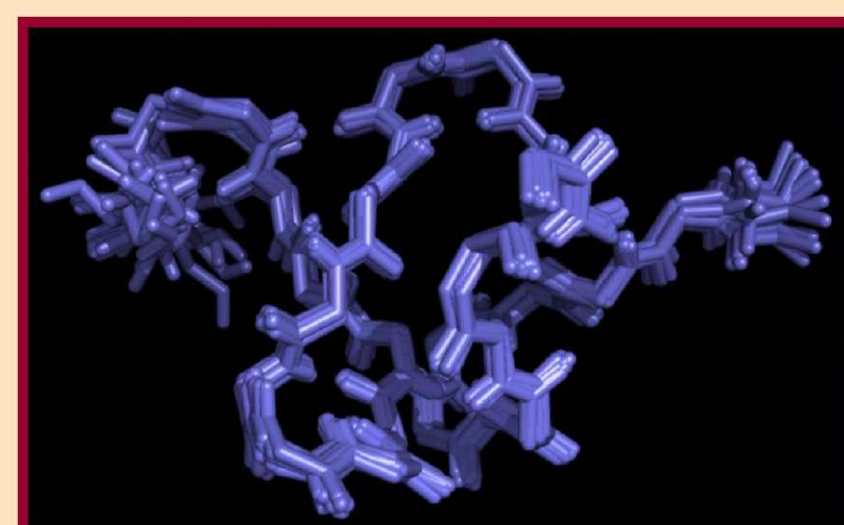
- Bachelor of Arts in Chemistry
- Bachelor of Science in Chemistry
- Bachelor of Science in Chemistry, Option in Biochemistry
- Minor in Chemistry
- Certificate in Chemistry



The Chemistry Program at CSUCI is based on a “Big Ideas” (fundamental concepts) approach to the discipline. Students will learn how to apply the “Big Ideas” skills to their analysis of concepts and problems. In addition to implementing the “Big Ideas” across the curriculum, students learn how to improve their analytical thinking, oral and written communication, and problem solving skills as individuals and in teams. The culmination of the degree involves a Chemistry Colloquium in conjunction with a service learning project, internship, or independent research experience. Writing skills are developed in all upper-division Chemistry courses.

STUDENTS GRADUATING FROM THE CHEMISTRY PROGRAM WILL BE ABLE TO:

- explain the fundamental concepts of Chemistry;
- evaluate a microscopic and macroscopic (real-life) problem and appropriately apply the fundamental concepts of Chemistry to the problem;
- formulate hypotheses and devise and perform experiments to test a hypothesis as individuals and in a team;
- explain key concepts in chemistry effectively through oral and written communication; and
- interpret and evaluate the chemical literature.



ASSESSMENT ACTIVITIES

Chemistry has developed a comprehensive five-step assessment plan of their learning outcomes. This year, the Chemistry program chose to assess the degree to which students are able to explain Geometric Structure as related to chemistry, and discriminate when it can be applied to a chemical problem. Using embedded assessment techniques, they seeded exams in six appropriate courses with different types of questions (multiple choice, short answer) and with assignments (literature review, student

survey) designed to provide appropriate data for their evaluation and review. Based on the assessment data collected from students in six Chemistry courses, the Chemistry program determined that “students met the outcome at a ‘passing’ level. In all of the classes, at least 83% of the students demonstrated that they could partially meet the learning outcome.” Further, based on this assessment cycle, Chemistry plans to change their assessment strategy to make it more useful.

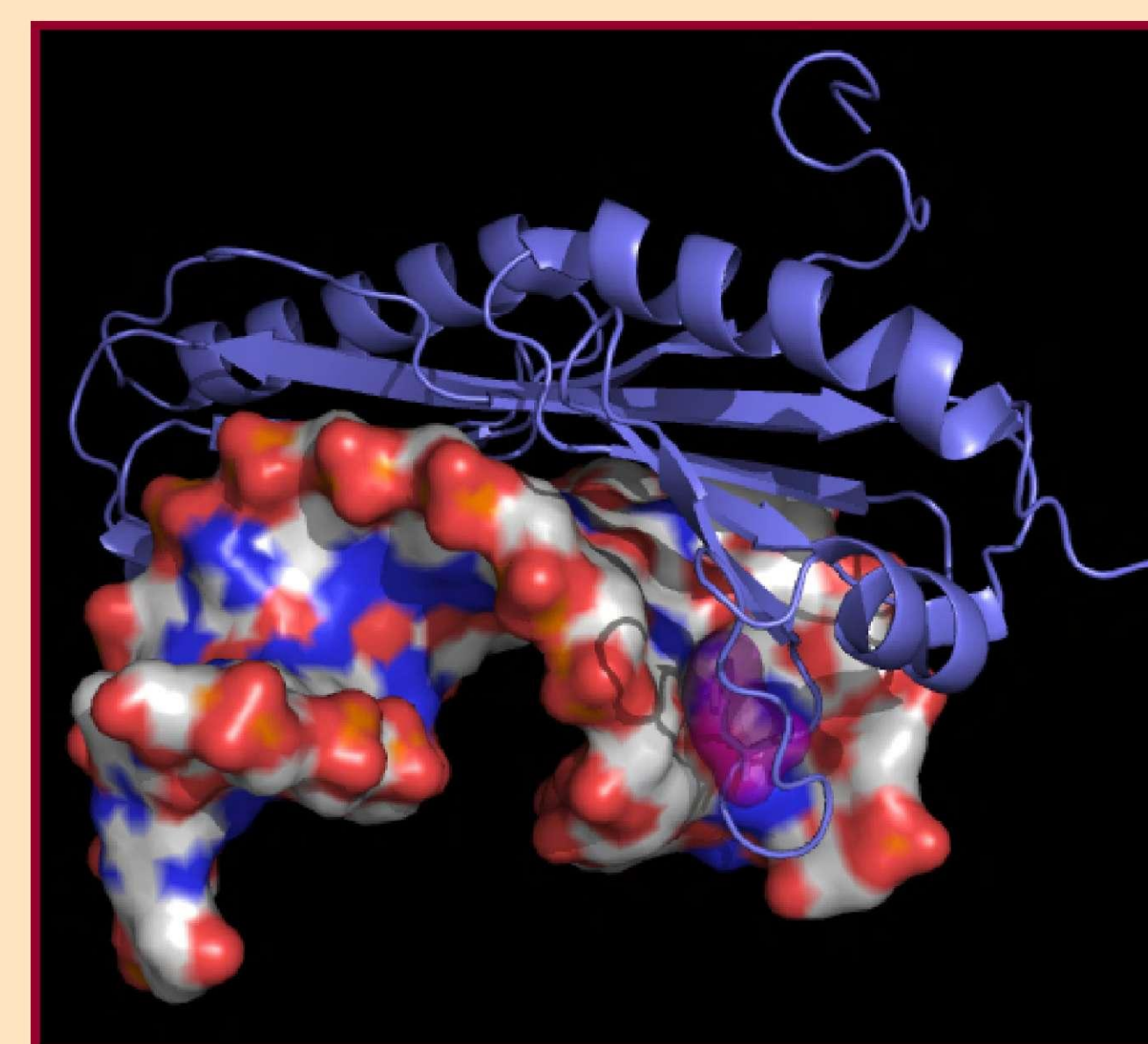
Careers

Graduates from the Bachelor of Arts or Bachelor of Science in Chemistry will receive an excellent preparation for securing entrance to a professional program (i.e., medical, veterinary, dentistry, or pharmacy), to graduate school in Chemistry or Biochemistry, and for employment in the academic, private, or public sector as chemists, biochemists, forensic scientists, and materials scientists.

The Bachelor of Arts in Chemistry is designed to provide a broad preparation in the Chemical Sciences. Required courses prepare students in four of the five traditional sub-disciplines of Chemistry: analytical, inorganic, organic, and physical chemistry. The Bachelor of Arts in Chemistry can also serve as the depth of study necessary for securing a Single Subject Credential in Science for teaching at the high school and middle school level. Additional courses in geology, astronomy, and biology are recommended to meet the breadth requirements for this credential.

The Bachelor of Science in Chemistry provides an excellent breadth and depth of preparation

in Chemistry suitable for obtaining a position at a chemical or pharmaceutical industry, or for admission to graduate school in Chemistry or Biochemistry. Students may select either the general Bachelor of Science in Chemistry or the Biochemistry Option within the Bachelor of Science in Chemistry. The Biochemistry Option overlaps substantially with the requirements for the minor in Biology and students are encouraged to obtain the Biology minor in addition to the Bachelor of Science in Chemistry, Biochemistry Option.



Accomplishments

- Four new laboratory courses developed. Two required labs were developed and taught for the first time during the 2005-2006 Academic Year: CHEM 372 Physical Chemistry Lab (Simon Garrett) and CHEM 461 Biochemistry II (Blake Gillespie). In addition, two elective laboratory courses were developed and taught for the first time during the 2006-2007 Academic Year: CHEM 450 Instrumental Analysis (Simone Aloisio) and CHEM 415 Molecular Structure Determination (Blake Gillespie and Phil Hampton)
- International course. Simone Aloisio and Amy Denton taught UNIV 392 Japan during the Spring 2006 semester which included a Spring Break trip to visit Japan.
- Amgen Foundation Grant. A \$950,000 grant was funded by Amgen Foundation to

acquire and install state of the art molecular structure elucidation technology including Nuclear Magnetic Resonance (NMR) spectroscopy, X-ray crystallography, and gas chromatography-mass spectrometry (GC-MS). The equipment, located at CSU Channel Islands, can be used remotely by local Educational Partners. This technology was implemented in the CSUCI Chemistry curriculum in Fall 2006. In addition to this equipment, two 3D computer-aided molecular visualization systems were purchased on the grant and these systems have already been used by local community college partners.

- First Chemistry Majors to Graduate. Chemistry’s first B.S. candidate graduated in Spring 2006. This Spring, approximately six B.S. Chemistry majors will graduate.

- Hands-on use of modern instrumentation
- Research as a requirement for the degree
- Assessment of program and course outcomes
- Interdisciplinary research and teaching
- Drug Discovery and Development (CHEM/ ECON/ BUS 341): this interdisciplinary general education course integrates Business, Chemistry, and Economics content as it relates to the drug discovery and development process