



# Bachelor's Degrees in Chemistry/Biochemistry

College of Natural Sciences and Mathematics

## Why major in a chemistry/ biochemistry related field?

Because of its broad scope, contemporary chemistry and biochemistry offers exciting employment opportunities in rapidly growing technical fields, such as materials science, polymers, biotechnology, pharmaceutical and medicinal chemistry, and environmental science. At California State University, Fullerton, our chemistry and biochemistry majors are solidly trained to enter any of these fields and more. This is because chemistry is the central science with connections to physics and mathematics, biology and medicine, and earth and environmental science. In fact, a recent graduate has become an astronaut!

According to the American Chemical Society, which is the national professional association for chemists, "Many predict a growing role for chemistry as we confront the major issues confronting the world in the 21st Century: providing energy, responding to regulation, protecting the environment, improving health, and feeding the world. This is an exciting time to be planning for your career."

## Why choose Cal State Fullerton?

**National Reputation** - National agencies consider Cal State Fullerton's chemistry and biochemistry department to be one of the best undergraduate programs in the nation. The Research Corporation, which funds scientific research across the country, ranked Cal State Fullerton as one of the top five campuses in the nation for undergraduate research opportunities. In addition, one of our faculty members has been honored by the American Chemical Society for outstanding research at an undergraduate institution.

**Preparation for Graduate Work** - The department has an outstanding record of success in having its graduates earn doctoral degrees in chemistry and biochemistry or professional degrees in medicine, pharmacy and related fields.

**Student Participation in Research** - Every undergraduate in our department does an undergraduate research project as part of the graduation requirements. Our graduates report being well prepared for careers in industrial research or graduate study as a result of these opportunities. We have nationally-funded programs that provide summer financial support for undergraduates to do research in our state-of-art laboratories.



**CALIFORNIA STATE UNIVERSITY, FULLERTON**

P.O. Box 6848, Fullerton, CA 92834-6848

The California State University

**High Quality Faculty** - Five chemistry and biochemistry faculty members have been named Cal State Fullerton's Outstanding Professor in the last 20 years—more than any other academic department on campus. Another faculty member was one of five professors in the nation to receive the 2000 Henry Dreyfus Teacher-Scholar Award.

### **What career opportunities are available?**

**Bachelor of Science in Chemistry** - Students who intend to become practicing laboratory chemists, either right after graduation or after pursuing an advanced degree, choose our B.S. degree in chemistry. Our graduates who hold a B.S. in chemistry are working in industry, at universities, and in government laboratories. They are doing laboratory research, quality control, computer programming, teaching, and scientific management.

**Bachelor of Science in Biochemistry** - Students who want to enter the fields of health professions, biochemistry, pharmaceutical or medicinal chemistry, or biotechnology select our B.S. degree in biochemistry. Holders of this degree have become medical doctors, pharmacists, dentists or allied health professionals, or have pursued careers in universities, government or the health industries.

**Bachelor of Arts in Chemistry** - Students who wish to use chemistry in their careers but not work as chemists can satisfy a broad variety of interests by taking the B.A. in chemistry. Some of the many possibilities for a person with this degree are sales, marketing or management in a chemistry-related industry; forensics; patent law; technical writing; art conservation; and high school teaching.

**Minors in Chemistry** - Students who have interests in chemistry, but prefer to major in another discipline, can choose a minor in chemistry or biotechnology. Please consult the university catalog for minor requirements.

### **What courses are required?**

Course requirements for the major vary with the degree you choose, but all of our degrees require the following course work in chemistry:

- General chemistry with laboratory, (Chem 120A,B) (10 units)
- Organic chemistry (Chem 301A, 301B or 305) (6 units)
- Organic chemistry laboratory (Chem 302 or 306A,B) (2-4 units)
- Quantitative chemistry with laboratory, (Chem 315, 316) (4 units)
- Physical chemistry (Chem 371A,B and Chem 355, or Chem 361A,B) (6-9 units)
- Chemical computation (Chem 210) (2 units)
- Career options (Chem 390) (1 unit)
- Senior research (Chem 495) (2-3 units)
- Other (3-11 units)

Additionally, there are requirements in related fields:

- Calculus (Math 150A,B; plus 250A,B for B.S. Chemistry only) (8-16 units)
- Physics with laboratory, (Phys 225, 226, 227, 225L, 226L or Phys 211, 212, 211L, 212L) (8-9 units)
- Biology (for B.S. Biochemistry only) (10 units minimum)

Because many courses have prerequisites, you are strongly encouraged to consult an adviser in the Chemistry/Biochemistry department office before enrolling.

Equivalent courses taken at community colleges, other CSU campuses, and UC campuses are fully transferable. Consult our department or your school's articulation document for details.

### **What's special at Cal State Fullerton?**

An outstanding feature of chemistry and biochemistry at Cal State Fullerton is active student participation in the research performed by our faculty members. Every one of our majors gets involved! Nationally-funded programs provide financial support for student research projects. The Research Experience for Undergraduate Program, which is funded by the National Science Foundation, supports about five students each summer. The Minority Biomedical Research Support Program, funded by the National Institutes of Health, supports 24 students selected from biochemistry and biology majors on a year-round basis. This program provides minority students with research experience and encourages them to pursue advanced degrees in biomedical research. In addition, our faculty members have research grants that include financial support for undergraduate researchers.

Cal State Fullerton also is the home of the Center for Molecular Structure, a California State University system facility equipped with state-of-the-art X-ray diffraction machines and computing facilities dedicated to determining molecular structures. In addition, we have one of the first emphases in environmental chemistry to be approved by the American Chemical Society.

### **How can students get involved?**

The Chemistry and Biochemistry Student Association, which is open to all students with an interest in our subject, carries out a variety of activities. These include social events, as well as opportunities for involvement in profession-related activities, such as volunteering at national meetings. Many students with interests in the health professions become active in the Student Health Professions Association. Chemistry and biochemistry majors present research posters at local, regional and national meetings. Students also work part-time in the department office, as stockroom assistants, graders and tutors. These employment opportunities enhance their academic success, as well as making them more competitive for future jobs.

**Who advises me?**

Students who are about to enroll for the first time at Cal State Fullerton are advised by the department chair or vice chair. Each chemistry and biochemistry major is assigned a faculty adviser with whom to meet every semester before registering for classes. Continuing students are free to choose whichever faculty members they wish to have as their advisers. When a student becomes involved in research, the faculty research director normally takes over the advising role as well. Our program of regular academic advising leads to improved student success and ensures that our students graduate in the shortest possible time.

**Where is additional information available?**

You are welcome to visit the department website, at <http://chemsrvr2.fullerton.edu>, to get acquainted with our faculty members and to access course and program descriptions. But we also encourage you to visit us on campus, where you can pick up a copy of our undergraduate handbook, speak with an adviser, view our students' recent research posters, and pick up copies of flyers describing all programs and research areas.

See for yourself how your ambitions can become reality by selecting chemistry or biochemistry at Cal State Fullerton. Don't wait—start making your plans today!

For more information regarding the Department of Chemistry and Biochemistry, please telephone 714-278-3621 or visit the department office, McCarthy Hall-580.