# Biochemistry, BS

**Department:** Chemistry and Biochemistry Department
**College:** College of Science

## Overview

### About This Degree

Biochemistry is the basic science that addresses the molecular basis of life and seeks to explain the chemical properties and changes that occur in living organisms. The core courses for the major are in the areas of general, organic, and biological chemistry, general biology, calculus, general physics, and laboratory courses.

Students may choose from two physics tracks:

- **Life Sciences:** This is typically preferred by students with a more biological inclination.
- **Science-Engineering:** This is preferred by students with a more mathematical/physical inclination.

At USU, chemistry majors have the opportunity to conduct undergraduate research from the beginning of their studies, first as laboratory assistants and eventually moving on to their own research projects. Unique to USU, many undergraduates in the department are able to publish research papers. This gives USU students a competative advantage should they apply for graduate programs.

The College of Science has top-notch faculty, with three Carnegie Professors, recognized for their outstanding commitment to teaching undergraduate students. Awardees are selected from universities throughout the nation.

## Career Options

Because of the excellent research experience undergraduates in biochemistry gain at USU, they are well-prepared for graduate school, as well as the following careers:

- Work in research and development
- Chemical industry
- Biotechnology
- Quality control
- Pharmaceutical industry
- Medical laboratory technology
- Laboratory Technician
- Quality control technician
- Associate chemist
- Technical sales representative
- Analytical chemist
- Clinical technician

Furthermore, a bachelor's degree in biochemistry provides a solid scientific foundation for further postgraduate study in a variety of subjects, including chemistry, biochemistry, molecular biology, medicine, and patent law.

Career Services provides counseling and information on hundreds of job and internship opportunities and even helps students apply and interview.

## What it takes

### Admissions Requirements

In addition to Utah State University's admissions requirements, the biochemistry program has additional requirements:

- **Freshmen:** New freshmen admitted to USU in good standing qualify for admission to this major.
- **Transfer Students:** Transfer students from other institutions need a 2.2 GPA for admission to this major. Students transferring from other USU majors need a 2.0 GPA for admission to this major.

International students have additional admissions requirements.

### Major Requirements

Click here to see course requirements for the **Bachelor of Science**.

## Contact

### Advising

All new USU students participate in a New Student Orientation program, where they receive detailed information about major requirements, registering for classes, and other important advising information.

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## Get Involved

### Professional Organizations, Honor Societies, and Clubs

**American Chemical Society:** With more than 161,000 members, the American Chemical Society is the world's largest scientific society and one of the world's leading sources of authoritative scientific information. It also publishes numerous scientific journals and databases, holds major research conferences, and provides educational, science policy, and career programs in chemistry.

**Chemistry and Biochemistry Club:** Utah State's chemistry and biochemistry club is open to students in all fields of study. It focuses on three main areas: career exploration, including fieldtrips and guest speakers; community service, including teaching and demonstrations for kids of all ages; and student and faculty networking, including national conventions, departmental seminars, club socials, and the other student leadership opportunities.

### Labs, Centers, Research

With the second oldest undergraduate research program in the nation, USU offers students a wide range of opportunities to gain hands-on research experience. The Undergraduate Research and Creative Opportunities program allows students to apply for grants and receive funding. USU's Honors Program prepares students for excellent graduate programs by helping them build relationships with professors, participate in research projects, take smaller, more intensive classes, and develop leadership skills.

**Biotechnology Center:** This center houses modern research laboratories for faculty and their students from a variety of academic disciplines. Among these faculty members are members of the ADVS Department who have expertise in animal molecular genetics, viral disease diagnostics, reproductive physiology, and embryo cloning.

**Center for Advanced Nutrition:** The CAN provides a multi-disciplinary venue for the discussion, discovery, and dissemination of information about the biological, physiological, and psychological mechanisms of proper nutrition. The scope of discovery is broad and falls into four distinct but overlapping focus areas: bioactive foods, nutrition and the brain, ingestive behavior, and personalized nutrition.

**Chemistry Store/Instrument Shop:** The department has an electronics shop staffed by a full-time professional. A fully staffed machine shop and a fully equipped wood/machine shop are available. The department also has a chemistry research and teaching storeroom and a computer-based inventory that is extensive for both chemicals and glassware.

**Electron Paramagnetic Resonance Facility:** This laboratory is equipped with a Bruker EMXplus spectrometer. It is

used in experiments involving room temperature, time scans (kinetics studies), 2D, and cryogenic experiments.

**Institute for Antiviral Research:** The IAR is comprised of a recognized team of scientists representing a spectrum of disciplines, who are researching ways to control viral diseases. The IAR has been involved with the pre-clinical development of several FDA-approved drugs, including Tamiflu, which was recently used to combat H1N1. The main areas of emphasis are respiratory diseases such as influenza and infections caused by emerging viruses, including West Nile virus.

**Nuclear Magnetic Resonance Facility:** This facility is equipped with two high-field multinuclear spectrometers, a Bruker ARX-400 system with a Bruker 52-mm-bore magnet, and a JEOL ECX-300 with an Oxford 54-mm-bore magnet. These instruments are available for use by USU researchers and students.