# Biology, BS, BA

**Emphases:** Biology; Cellular/Molecular; Ecology/Biodiversity; Environmental
**Department:** Biology Department
**College:** College of Science

## Overview

### About This Degree

Biology is the study of living organisms and life, and their origin, structure, function, growth, evolution, distribution, and taxonomy. There are many specialty areas that students can major in within biology. Biologists can find careers in research, healthcare, teaching, science writing, administration and management, government, and industry. Studying biology teaches students to ask questions, make observations, evaluate evidence, and solve problems.

The Biology Department offers courses that fulfill the majority of graduate program prerequisites for students hoping to go on to health professions careers following their undergraduate degree. Students who receive health professions advising from USU can be in any major.USU medical school and dental school applicants have a consistently high acceptance rate. USU's health profession students have the opportunity to receive advanced education in human anatomy and physiology, and the human dissection course offered by the department gives students hands-on preparation not available at most other universities.

Biology majors at USU have the unique opportunity to work with faculty mentors on research projects. Faculty is also involved in multiple USTAR (Utah Science Technology and Research) groups and in national and international collaborative research efforts.

Students will receive a **BS** by completing all required courses in their major. To receive a **BA**, students must also gain proficiency in one or more foreign languages.

### Distance Education

The BS in biology is available through USU's Regional Campuses and Distance Education program.

## Career Options

Most biology majors continue on to graduate or professional schools and pursue the following careers:

- Professor at a college and university biology
- Genetic councilor
- Physician
- Dentist
- Physician's assistant
- Pharmacist
- Medical technologist
- Physical therapist
- Research scientist
- Environmental scientist
- Epidemiologist
- Forensic scientist
- Physiologist

Students with a bachelor's degree in biology can puruse the following careers:

- Research and development for pharmaceutical companies
- Pharmaceutical sales representative
- Environmental educator
- Research technician

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 biology program has additional requirements:

- **Freshman:** New freshmen admitted to USU in good standing qualify for admission to this major.
- **Transfer Student:** Transfer students from other institutions and students transferring from other USU majors need a 2.25 transfer 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**.

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

# 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 Society for Biochemistry and Molecular Biology:** ASBMB is a nonprofit scientific and educational organization. The society's purpose is to advance the science of biochemistry and molecular biology through publication of scientific and educational journals: the *Journal of Biological Chemistry*, *Molecular and Cellular Proteomics*, and the *Journal of Lipid Research*; organization of scientific meetings; advocacy for funding of basic research and education; support of science education at all levels; and promoting the diversity of individuals entering the scientific workforce.

**American Society of Microbiology:** ASM is the largest life science professional organization with members throughout the world. The society advances the microbiological sciences as a vehicle for understanding life processes and to apply and communicate this knowledge for the improvement of health and environmental and economic wellbeing worldwide.

**Ecological Society of America:** ESA conducts research, teaches, and uses ecological science to address environmental issues, such as biotechnology, natural resource management, ecological restoration, ozone depletion and global climate change, ecosystem management, species extinction and loss of biological diversity, habitat alteration and destruction, and sustainable ecological systems.

**American Society for Cell Biology:** ASCB was founded in 1960 to bring the varied facets of cell biology together. The society's purpose is to promote and develop the field of cell biology. Its objectives are achieved through the scholarly dissemination of research at its annual meeting and summer meetings and in its publications. The ASCB strives to ensure the future of basic scientific research by providing training and development opportunities for students and young investigators, and also by keeping Congress and the American public informed about the

importance of biological research.

**Biology Club:** This USU club provides information to students interested in majors associated with the Department of Biology. The club hosts guest speakers and other activities designed to educate students about academic and career possibilities.

USU houses various clubs for each desired health occupation: Pharmacy Club, Pre-SOMA (Students Osteopathic Medical Association) Club, Predental Club, Prephysician Club, and Physician Assisting Club. These clubs meet each month to offer students educational opportunity through prestigious guest speakers, networking, and career guidance. There are also clubs that involve prehealth majors and service: HOSA (Health Occupation Students of America), Operation Smile, Medical Unity, and Aggies for Africa.

**Beta Beta Beta National Honor Society:** Beta Beta Beta (TriBeta) is a society for students, particularly undergraduates, dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research.

## 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.

**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.

**Center for Integrated BioSystems:** The CIB leads a progressive, interdisciplinary effort in research, core services, and education serving agriculture and life sciences. The CIB is where the first hybrid animal, a mule, was cloned, and was named one of "30 Awesome College Labs" by Popular Science magazine. The CIB has a research program with several active projects in diverse areas of life science that encompass plant, animal, and microbe functional genomics.

**Energy Dynamics Laboratory:** EDL bridges the gap between academia and industry, confronting the challenges of prototyping, deployment, and commercialization of enabling technologies for renewable and advanced energy systems. USU researchers originate projects to derive energy from non-fossil fuels, such as biofuels, wind, and solar power. With EDL's collaboration, research develops through pilot projects to commercial application.

**Energy Laboratory:** This lab seeks to develop solutions to America's most intractable energy problems through scientific and technological innovation. It provides a cohesive framework permitting faculty, students, and partnering institutions to focus on contemporary energy-related research issues.

**Environmental Quality Laboratory:** The EQL is located at the Utah Water Research Lab and is equipped for analyses of organic and inorganic constituents in air, water, and soil. The EQL consists of chemistry, microbiology, radiological and analytical instrumentation laboratories, two constant-temperature rooms, and research project areas.

**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.

**Institute for Natural Systems Engineering:** The INSE is a recognized leader in the development, testing, and application of multi-disciplinary assessment methods for aquatic ecosystems and instream flow assessment methodologies.

**Intermountain Herbarium:** The Intermountain Herbarium serves as a primary source of information on the flora and fungi of the Intermountain region, both native and introduced, and fosters increased understanding and appreciation of the floristic diversity of the area.

**Metabolic Engineering Laboratory:** Research areas in this lab include the discovery and identification of bioactive natural products, biosynthetic mechanisms of pharmaceutically important compounds, characterization and development of biocatalysts for structural modification, as well as improvement of useful enzymes using protein-engineering approaches. Combinatorial biosynthesis of novel biologically significant compounds for drug discovery is also being investigated.

**Synthetic Biomanufacturing Center:** SBC uses the chemical makeup present in single-cell organisms to transform raw materials into environmentally friendly products, such as low-cost bioplastics, biodiesel, light energy, and pharmaceuticals.

**USDA Pollinating Insects Research Unit (Bee Lab):** The Bee Lab focuses on research of crop pollination by bees. Research emphasis areas include the development and improvement of management systems for bee populations, biological studies of bees, plant-pollination systems, and bee biosystematics.

**Utah Botanical Center:** The UBC, located in Kaysville, Utah, is home to research and demonstration projects focused on sustainable living in the Intermountain West. Studies of water conservation, horticulture, water quality enhancement, wetland ecology, integrated pest management, urban forestry, agriculture, fish and wildlife, highway enhancement, and storm-water management combine to make the center a living laboratory.

**Water Initiative:** Utah State University supports a broad community of students and faculty engaged in water education, research, and outreach. The USU Water Initiative provides an overarching umbrella for the activities of this community aimed at fostering interdisciplinary collaboration and collegial sharing of ideas related to water across the departments and colleges of USU.