CAREERS IN CHEMISTRY & BIOCHEMISTRY

Academia and Industry
• Basic and Applied Research
• Development
• Management
• Production
• Technical Service
• Marketing and Sales

Education
• High Schools
• Technical & Junior Colleges
• Four-year Colleges
• Universities

Government
• National Laboratories - NIH, DOE, DOD
• Agricultural Research
• National Institute of Standards & Technology
• Regulatory and Enforcement Agencies - FBI, FDA, EPA

Non-Traditional Careers
• Information Specialist - Chemistry Librarian
• Independent Consultant
• Chemical Safety Engineer
• Clinical Chemist or Biochemist
• Forensic scientist

Chemistry and Biochemistry degrees provide a strong foundation for other professions
• MD, DDS, DVM
• MBA
• Pharmacy
• Patent Law
• Corporate Law

WHERE ARE THE JOBS?

MEDIAN BASE SALARIES

| All chemists | $93,000 |
| Industry | $108,000 |
| Government | $106,100 |
| Academia | $74,300 |
| Bachelor’s | $72,000 |
| Master’s | $85,000 |
| Ph.D. | $102,000 |

| Bachelor’s | Industry | $75,000 |
| Government | $73,400 |
| Academia | $44,000 |
| Master’s | Industry | $92,000 |
| Government | insufficient data |
| Academia | $58,300 |
| Ph.D. | Industry | $126,000 |
| Government | $116,300 |
| Academia | $76,900 |

NOTE: Median annual base salaries for chemists employed full-time as of March 1, 2014.
SOURCE: ACS salary and employment survey 2014, Chemical and Engineering News 2014, cen.acs.org

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The Discipline

Chemists and Biochemists study the fundamental processes that govern our existence including atoms and their structures, and how they bond to form molecules. They study the mechanisms of life including the transfer of information from DNA to RNA and to proteins. They work to develop simplifying models (theories) that permit the correlation and explanation of observations about matter. Chemical principles are fundamental to the understanding of subjects ranging from the molecular biology of life to the structure of rocks and minerals. Chemistry and Biochemistry provide an essential foundation in the medical sciences, in engineering disciplines, especially in chemical engineering, in the electronics industry, in energy and environmental areas, in materials science, in pharmacy and medicine, and in virtually all manufacturing areas.

Chemistry and Biochemistry are active branches of science that are vital to human existence. Health and disease, energy needs, environmental concerns, and requirements for new materials all involve major contributions from chemists and biochemists. Examples of the diverse areas of interest to chemists and biochemists include gene splicing, biomarkers of disease, DNA replication and RNA evolution, synthesis of new materials (including medicines, catalysts, and nanoparticles), spectroscopic study of molecular structure and reactivity, analysis of contaminants or warfare agents, and study of transient complexes and radicals important for energy production, manufacturing, and atmospheric processes.

Chemistry and Biochemistry involve far more than test tubes and beakers. They include recombinant DNA technology, working with a variety of sophisticated instruments such as mass spectrometers, calorimeters, chromatographs, ultracentrifuges, lasers, X-ray diffractometers, electron microscopes and nuclear magnetic resonance spectrometers, all of which are used by undergraduate chemistry and biochemistry students at BYU. Computers also play an important role in chemistry and biochemistry. Applications vary from computer simulation of molecules and their evolutionary relationships to collection and analysis of data.

“Chemistry has become the very essence of our lives. In fact, when you reflect on it, the greatest of all chemists was the Creator... I am sobered by the thought that during my lifetime there have been more scientific discoveries than in all of the generations that preceded my lifetime; more of discovery in the last 80 years than in all the generations of men before that. This is the great age of science. This is the age of chemistry.”

President Gordon B. Hinckley

Degrees

The BYU Department of Chemistry and Biochemistry offers four baccalaureate degrees. The Chemistry Bachelor of Science degree is the preferred degree for chemistry majors (approved by the American Chemical Society) especially those who desire an advanced degree (MS, PhD) in chemistry. It also provides excellent preparation for those individuals in preprofessional programs (e.g., medicine, dentistry, business, law). The Biochemistry Bachelor of Science degree provides excellent preparation for students preparing for health-related fields (medicine, dentistry, veterinary medicine) or for those who desire an advanced degree (MS, PhD) in biochemistry, biology, or the health sciences. The Chemistry Education Bachelor of Science degree provides preparation for professional high school teaching. High school chemistry teachers will find opportunities available and will know the satisfaction of guiding good students into essential and rewarding careers.

Curriculum

The strength of a degree in chemistry or biochemistry is the versatility it provides. At BYU chemistry and biochemistry courses are taught by highly qualified faculty members. Laboratory work, which begins in the freshman year, is an important part of the curriculum because it allows students to experience the nature of the science. Faculty members supervise these laboratories, with the assistance of graduate and qualified undergraduate students. Upon completion of a series of core courses in chemistry, physics, biology and mathematics, students study specific advanced topics in an area of their choice. Students are also encouraged to have a research experience with a faculty mentor. Undergraduates find that doing research in a laboratory with faculty members, graduate students, and/or visiting scientists gives added insight and intellectual stimulation. A degree in chemistry or biochemistry provides excellent preparation for graduate study, work in industry, or pursuit of other professions such as medicine, dentistry, business, and law.