

# Major Possibilities: Chemistry and Biochemistry



## Summary

- Southwestern's Chemistry and Biochemistry Department is accredited by the American Chemical Society (ACS) and offers an option for students to pursue an ACS-certified BS degree in chemistry, recommended for students wishing to enter graduate school in chemistry or a related field.
- The extra rigor and additional requirements of the ACS-certified degree are valued by potential employers and graduate schools alike. Employers realize that a certified graduate may be better prepared for technical employment.
- The biochemistry major is a good fit for students planning to go into pharmacy school or other fields in the health sciences.

## Chemistry major synopsis

The flexibility of the chemistry degree program allows students to prepare for a number of career options, not to mention graduate or professional school. In addition to their regular course work, chemistry majors are strongly encouraged to become involved in laboratory research while at Southwestern. All chemistry majors are required to complete a capstone experience based on a laboratory research project. In addition, all chemistry majors must participate in a literature seminar course to prepare them for their capstone experience. Students can earn either a BA or BS in chemistry, depending on which supporting courses the students take.

## Biochemistry major synopsis

The biochemistry curriculum is designed to guide students in developing a strong foundation in the fundamentals of chemistry and biology. It is shaped by suggestions of the educational division of the American Society for Biochemistry and Molecular Biology (ASBMB) for an undergraduate curriculum leading to a major in biochemistry and consists of chemistry courses and biology courses, along with other supporting courses from the mathematics and physics departments. Biochemistry majors must participate in research, either at Southwestern University or at another institution, to fulfill their capstone requirements. The education biochemistry majors receive will equip them with the skills and understanding needed for graduate study in chemistry, biochemistry, molecular biology or a related area. Graduates may also choose to pursue a career in industry or one of the health-related professions.

## Sample job titles

### Government

Agricultural Research Service  
Centers for Disease Control and Prevention  
Food and Drug Administration  
National Aeronautics and Space Administration  
National Bureau of Standards  
National Institute of Health  
Nuclear Regulatory Commission  
State Environmental Management Agencies  
U.S. Department of Agriculture  
U.S. Department of Defense  
U.S. Department of Energy Labs  
U.S. Department of Health and Human Services  
U.S. Environmental Protection Agency

### Industry and Commerce

Beverage Manufacturers  
Biotechnology Firms  
Chemical Manufacturers  
Chemical Patent Attorney  
Electronics Companies

Environmental Chemist  
Food Manufacturers  
Oil and Gas Co.  
Paint Manufacturers  
Pharmaceutical Manufacturers  
Plastics Manufacturers  
Pulp and Paper Companies  
Research and Development Chemist  
Rubber and Detergent Manufacturers  
Salesperson  
Specialty Chemical Co.  
Textile Companies

### Service and Education

Environmental Engineer  
Lab Technician  
Pharmacy Technician  
Quality Analyst  
Research Assistant  
Waste Treatment Specialist

## Sample internship employers of SU students

Baylor Medical Center  
Bexar County Forensic Toxicology Lab  
ExxonMobil Patient Services – Irving  
Federal Bureau of Investigations

FDA Office of Orphan Products Development – Washington, DC  
REU with NSF Chemistry Research Program (UNT)  
Sun Star Geriatrics Healthcare  
Total Port Arthur Refinery

## **Possible internship sites**

Abbot Laboratories  
CDS International - Germany  
Center for Science in the Public Interest  
Genentech – Oceanside, CA

National Institutes of Health  
SMART Program – Southwestern University  
Union Carbide – Houston, TX

## **Sample full-time employers of SU grads**

Certified Pharmacy Technician (Best Med, Inc)  
Chemist (Celanese)  
Clinical Research Coordinator  
Dental Assistant (Brazos Valley Pediatric Dentistry)  
Drilling Technician (Midstates Petroleum Company, Inc.)  
Environmental Chemist (Phillips 66)  
HHMI Coordinator (Southwestern University)  
Laboratory Technician (Iso-Tex Diagnostics)  
Medical Assistant (Pediatric Associates of Austin)

Pharmacy Technician (Brackenridge Hospital)  
Pharmacy Technician (Kroger Pharmacy)  
Quality Analyst (Colgate-Palmolive Co.)  
Research Assistant (Encysive Pharmaceuticals)  
Research & Development Chemist (Lamberti USA)  
Research Technician (UT Southwest Medical Center)  
Surgical Technician Assistant (Texas Eye Surgical Care)  
Wastewater Operator (Pflugerville Utilities)

## **Professional associations**

American Association for Clinical Chemistry: [www.aacc.org](http://www.aacc.org)  
American Chemical Society: <http://portal.acs.org/portal/acs/corg/content>  
American Association of Pharmaceutical Scientists: <https://www.aaps.org/default.aspx>  
American Institute of Chemists: [www.theaic.org](http://www.theaic.org)  
American Society for Biochemistry and Molecular Biology: [www.asbmb.org](http://www.asbmb.org)  
Chinese-American Chemical Society: [www.cacshq.org/](http://www.cacshq.org/)  
Geochemical Society: [www.geochemsoc.org/](http://www.geochemsoc.org/)  
Materials Research Society: [www.mrs.org](http://www.mrs.org)  
Society of Environmental Toxicology and Chemistry: [www.setac.org](http://www.setac.org)

## **Additional Web resources**

BioLink: [www.bio-link.org/home/resources](http://www.bio-link.org/home/resources)  
Chemical Week: [www.chemweek.com](http://www.chemweek.com)  
Environmental Chemistry: <http://acsenvr.com>  
Science Careers: <http://jobs.sciencecareers.org/>  
Science Jobs: <http://jobs.newscientist.com/>  
Southwestern's Chemistry and Biochemistry Web page: [www.southwestern.edu/departments/chemistry/](http://www.southwestern.edu/departments/chemistry/)  
Undergraduate Research Experience: [www.nsf.gov/crssprgm/reu/](http://www.nsf.gov/crssprgm/reu/)  
UC Santa Barbara Directory of Chemistry Associations: <http://guides.library.ucsb.edu/content.php?pid=50952&sid=438716>  
Chemical and Engineering News: <http://cen.acs.org/departments/employment.html>  
Women in Chemistry: <http://cen.acs.org/collections/womenchem.html>  
Women Chemists Committee: <http://womenchemists.sites.acs.org/>

## **Career Services resources**

Alternative Careers in Science  
Career Opportunities in Forensic Science  
Career Opportunities in Science  
Exploring Health Care Careers (Vols. 1 & 2)  
Great Jobs for Chemistry Majors  
Opportunities in Animal and Pet Care Careers  
Opportunities in Biological Science Careers  
Opportunities in Biotechnology Careers  
Opportunities in Chemistry Careers  
Opportunities in Dental Care Careers

Opportunities in Eye Care Careers  
Opportunities in Forensic Science Careers  
Opportunities in Occupational Therapy  
Opportunities in Pharmacy Careers  
Opportunities in Physical Therapy Careers  
Opportunities in Speech-Language Pathology  
Top 20 Biotechnology & Pharmaceutical Firms  
Vault Career Guide to Biotech  
Winning the Games Scientist Play