

# CHEMISTRY

**What is Chemistry?** (from <http://www.bls.gov/oco/ocos049.htm>)

“Do you know someone whose life was saved by the injection of epinephrine after a bee sting, an airbag, or tempered glass, which doesn't shatter on impact? Then you need to thank a chemist.” *From [Jobweb.com](http://www.jobweb.com)*

“Everything in the environment, whether naturally occurring or of human design, is composed of chemicals. Chemists and materials scientists search for and use new knowledge about chemicals. Chemical research has led to the discovery and development of new and improved synthetic fibers, paints, adhesives, drugs, cosmetics, electronic components, lubricants, and thousands of other products. Chemists and materials scientists also develop processes such as improved oil refining and petrochemical processing that save energy and reduce pollution. Applications of materials science include studies of superconducting materials, graphite materials, integrated-circuit chips, and fuel cells. Research on the chemistry of living things spurs advances in medicine, agriculture, food processing, and other fields.”

**What is this career like?** (from <http://www.bls.gov/oco/ocos049.htm>)

“Many chemists and materials scientists work in research and development (R&D). In basic research, they investigate the properties, composition and structure of matter and the laws that govern the combination of elements and reactions of substances to each other. In applied R&D, these scientists create new products and processes or improve existing ones, often using knowledge gained from basic research. For example, synthetic rubber and plastics resulted from research on small molecules uniting to form large ones, a process called polymerization. R&D chemists and materials scientists use computers and a wide variety of sophisticated laboratory instrumentation for modeling, simulation and experimental analysis.

The use of computers to analyze complex data has allowed chemists and materials scientists to practice combinatorial chemistry. This technique makes and tests large quantities of chemical compounds simultaneously to find those with certain desired properties. Combinatorial chemistry has allowed chemists to produce thousands of compounds more quickly and inexpensively than was formerly possible, and has assisted in the sequencing of human genes. Specialty chemists, such as medicinal and organic chemists, work with life scientists to translate this knowledge into new drugs.

Developments in the field of chemistry that involve life sciences will expand, resulting in more interaction among biologists, engineers, computer specialists and chemists.

Chemists also work in production and quality control in chemical manufacturing plants. They prepare instructions for plant workers that specify ingredients, mixing times and temperatures for each stage in the process. They also monitor automated processes to ensure proper product yield and test samples of raw materials or finished products to ensure that they meet industry and government standards, including regulations governing pollution. Chemists report and document test results and analyze those results in hopes of improving existing theories or developing new test methods.”

**Related Career Titles** (from <http://www.uncwil.edu/stuaff/career/Majors/chemistry.htm>)

Agricultural Scientist	Cytotechnologist	Occupational Safety Spec.
Assayer	Environ. Health Specialist	Perfumer
Biochemist	Fire Protection Engineer	Pharmaceutical Sales Rep
Brewer Lab Assistant	Food Scientist Technician	Physician
Cepalometric Analyst	Forensic Chemist	Planner
Chemical Oceanographer	Genetic Counselor	Plastics Engineer
Chemistry Technologist	High School Teacher	Product Tester
Clarifying Plant Operator	Hospital Administrator	Quality Assurance Mgr.
College Professor	Hydrologist	Risk Manager
Color Development Chem.	Industrial Hygienist	Science Lab Technician
Crime Lab Analyst	Molecular Biologist	Soil Scientist
System Analyst	Tissue Technologist	Toxicologist
Underwater Technician	Vector Control Assistant	Veterinarian
Wastewater Treatment Chem	Water Purification Chemist	Yeast Culture Developer
Anesthesiologist	Chemistry Professor	Clinical Specialist
Computer Software Eng.	Co-op Extension Agent	Dentist
Entomologist	Environmental Engineer	EPA Inspector
FDA Inspector	General Surgery Resident	Hydrogeologist
Industrial/Institutional Buyer	Lawyer	Medical Technologist
Metallurgist	Museum Curator	Nurse
Occupational Health Spec.	Optometrist	Patent Agent
Pharmacist	Product Development Mgr	Psychiatrist
Radiologist	Scientific Photographer	Senior Report Writer
Specification Writer	Water Scientist	

Learn more about the occupations listed above by going to <http://www.bls.gov/oco/home.htm>.

**How do you get ready?** (from <http://career.utk.edu/students/majors.asp>)

- Undergraduate degree sufficient for entry-level positions such as lab coordinator, research assistant, product testing or analysis, technical sales, or service representative.
- Maintain high grade point average and secure strong recommendations for graduate school.
- Master's degree sufficient for most applied research positions, industrial work and some community college teaching.
- Find research opportunities with professors and other experts in the field to gain experience.
- Ph.D. required for university teaching and advanced positions in management and research and development. Postdoctoral experience is preferred for research positions in industry, universities and government.
- Advanced degrees help speed career advancement.
- Develop strong computer, mathematics and science skills/knowledge.

- Obtain part-time, volunteer, co-op, internship or summer experience.
- Obtain practical experience using various laboratory equipment and high-tech scientific equipment and data.
- Complete an undergraduate research project.
- Consider electives in computer science, engineering, business, public speaking, and writing.
- Join related student professional organizations.

**Related Major Skills** (from <http://www.uncwil.edu/stuaff/career/Majors/chemistry.htm>)

Developing theories	Science and math ability
Conduct research	Perseverance
Attending to data	Analytical skills
Curiosity	Follow-through skills
Utilizing formulas	Perform experiments
Process data	Observation and decision making
Work independently and in groups	Technological skills
Oral and written communication	Remain objective

**What about the future?** (from <http://www.bls.gov/oco/ocos049.htm>)

“Employment of chemists and materials scientists is expected to grow 9 percent over the 2006-16 decade, about as fast as the average for all occupations. Job growth will occur in professional, scientific and technical services firms as manufacturing companies continue to outsource their R&D and testing operations to these smaller, specialized firms.

Chemists should experience employment growth in pharmaceutical and biotechnology research, as recent advances in genetics open new avenues of treatment for diseases. Employment of chemists in the non-pharmaceutical chemical manufacturing industries is expected to decline over the projection period, along with overall declining employment in these industries.”

Learn more about the employment outlook of chemists by going to <http://www.bls.gov/oco/ocos049.htm>.

**Available at Albright College Career Development Center’s Resource Library**

- [Great Jobs for Chemistry Majors](#), by Mark Rowh
- [Career Opportunities in Science](#), by Susan Echaore-McDavid
- [Careers for Competitive Spirits and Other Peak Performers](#), by Jan Goldberg
- [Careers for Environmental Types and Others Who Respect the Earth](#), by Jane Kinney and Michael Fasulo
- [Careers for Geniuses and Other Gifted Types](#), by Jan Goldberg
- [Careers for Introverts and Other Solitary Types](#), Blythe Camenson
- [Careers for Scientific Types and Others With Inquiring Minds](#), by Jan Goldberg
- [Opportunities in Chemistry Careers](#), by John H. Woodburn
- [Opportunities in Energy Careers](#), by John H. Woodburn
- [Opportunities in Environmental Careers](#), by Odom Fanning

- [Opportunities in Forensic Science Careers](#), by Blythe Camenson
- [Opportunities in Medical Technology Careers](#), by Karen Karni
- [Opportunities in Pharmacy Careers](#), by Fred Gable
- [Opportunities in Research and Development Careers](#), by Jan Goldberg
- [Opportunities in Science Technician Careers](#), by JoAnn Chirico
- [The Complete Guide to Environmental Careers in the 21st Century](#), The Environmental Careers Organization

### **Disclaimer**

Links to Internet sites are provided for your convenience and do not constitute an endorsement by Albright College or the Career Development Center.

Links found at <http://www.uncwil.edu/stuaff/career/Majors/chemistry.htm>.

### **Job and Internship Search Links**

- The American Society of Forensic Sciences <http://www.aafs.org>
- ChemJobs.net <http://www.chemjobs.net>
- HireHealth <http://www.hirehealth.com>
- Pharmaceutical Jobs <http://hirerx.com>
- Health Care Job Store <http://www.healthcarejobstore.com>
- Health Care Job <http://healthcarejob.com>
- MedHunters.com <http://www.medhunters.com>
- Chemistry jobs <http://www.chemistryjobs.com>
- Nature jobs <http://www.nature.com/naturejobs>
- JobSpectrum from the American Chemical Society <http://www.cen-chemjobs.org>
- Science Careers: comprehensive databases to search for jobs, career interests, employer profiles, career fairs and job descriptions <http://www.sciencecareers.org>
- Chemistry internships at Pfizer <http://www.pfizer.com>
- Biospace <http://www.biospace.com>

### **Career Planning Links**

- Chemist (Occupational Outlook Handbook) <http://stats.bls.gov/oco/ocos049.htm>
- Journal of Young Investigators Science Career Center <http://www.jyi.org/SCC/Index.php>
- Organic Chemistry Jobs Worldwide <http://www.organicworldwide.net/jobs/>
- American Association for Clinical Chemistry <http://aacc.jobcontrolcenter.com/search.cfm>
- Chemist Jobs <http://www.chemistjobs.com>
- iHireChemists.com <http://www.ihirechemists.com>

## Professional Association Links

- American Chemical Society <http://portal.acs.org/portal/acs/corg/content>
- RSC's Chemical Science Network <http://www.chemsoc.org>
- American Academy of Forensic Sciences <http://www.aafs.org>
- American Society of Crime Laboratory Directors <http://www.asclld.org>
- Chemical and Engineering News Online <http://pubs.acs.org/cen/index.html>
- Forensic Chemistry Network <http://www.geocities.com/CapeCanaveral/4329/>
- American Institute of Chemical Engineers <http://www.aiche.org>
- American Institute of Chemists <http://www.theaic.org>