Career Paths

CHEMISTRY

The field of chemistry features many sectors and pathways.

A bachelor's degree in chemistry is sufficient for entry-level positions such as lab coordinator, research assistant, product testing or analysis, and technical sales or service representative. Maintain a high grade point average and secure strong recommendations for graduate school admission, as a master's degree is sufficient for most applied research positions, industrial work, and some community college teaching. A Ph.D. degree is required for university teaching and advanced positions in management and research and development. Postdoctoral experience may be required for research positions in industry, universities, and government.

Develop strong computer, mathematics and science skills/knowledge and consider electives in computer science, engineering, business, public speaking and, writing. Seek coursework and opportunities to enhance laboratory skills as well as obtain part-time, volunteer, co-op, internship and/or research opportunities with professors to gain relevant experience. Develop contacts at government laboratories, research organizations, or in industry, and schedule informational interviews to learn about the profession and specific career paths.

Any Chemistry Discipline

Example Career Paths: Product development | Process development | Analysis | Testing | Biotechnology (using living organisms or cell processes to make useful products) | Consulting | Quality assurance/Quality control | Management | Environmental analyses | Forensics

Potential Employers: Government | Industries: chemical, pharmaceutical, biotechnology, food, feed, cosmetics, agricultural, environmental, petroleum, consumer products | Private research labs and organizations | Colleges and universities | Consulting firms

Professional Associations: American Chemical Society

Related Occupations: Chemist | Chemical Engineer | Materials Scientist | Biochemist | Quality Control Analyst | Forensic Science Technician | Chemistry Instructor | Director of Toxicology | Cytogenetic Technologist

Agricultural Chemistry

Example Career Paths: Agricultural production: crops and livestock | Agrichemicals development: herbicides, pesticides, fungicides, fertilizers, etc. | Agrichemicals testing | Environmental testing | Regulation

Potential Employers: Government | Food and feed industries | Agricultural chemical companies | Plant and animal breeders and growers

Professional Associations: Crop Life America | International Union of Pure and Applied Chemistry | American Society of Agronomy

Related Occupations: Agricultural Chemist | Agricultural Engineer | Agricultural Technician | Environmental Engineer | Agricultural Inspector | Biochemist | Soil Chemist | Agrochemical Research Scientist | Quality Assurance Chemist

Analytical Chemistry

Example Career Paths: Qualitative analysis | Quantitative analysis | Instrumentation design | Experimental design | Separations (mass spectrometry, chromatography) | Spectroscopy | Chemometrics/Statistics

Potential Employers: Government | Industries: chemical, pharmaceutical, biotechnology, food, feed, cosmetics, agricultural, environmental, petroleum, consumer products, legal, medical | Private research labs and organizations | Chemical instrumentation companies | Consulting firms

Professional Associations: Society for Applied Spectroscopy | Association of Analytical Chemists

Related Occupations: Analytical Chemist | Biochemist | Bioengineer and Biomedical Engineer | Quality Control Analyst | Pharmaceutical Analyst | Forensic Chemist | Toxicologist

Biochemistry

Example Career Paths: Healthcare | Pharmaceuticals | Environment | Agriculture | Food science | Cosmetics | Forensics

Potential Employers: Government | Industries: chemical, pharmaceutical, waste management, environmental, food, feed, healthcare, biotechnology, plant and animal breeders and growers | Private research labs and organizations | Public health departments | Hospital laboratories | Commercial medical laboratories

Professional Associations: American Academy of Forensic Science | American Society for Biochemistry and Molecular Biology

Related Occupations: Biochemist | Bioengineer and Biomedical Engineer | Medical and Clinical Laboratory Technologist | Quality Control Analyst | Pharmaceutical Scientist | Regulatory Affairs Chemist | Toxicologist

Chemical Engineering

Example Career Paths: Bulk chemicals (mass produced large quantities) | Fine chemicals (custom-produced small quantities) | Consumer products | Biotechnology | Pharmaceuticals | Electronics | Environmental safety and health | Fuels and energy conversion | Materials

Potential Employers: Government | Industries: agrichemicals, industrial bulk and fine chemicals, food, biotechnology, pharmaceutical, cosmetics, environmental textiles, petroleum, consumer products, automotive, pulp and paper, rubber, electronics, plastics, energy | Private research labs and organizations

Professional Associations: American Institute of Chemical Engineers | Institution of Chemical Engineers

Related Occupations: Chemical Engineer | Chemist | Manufacturing Engineer | Materials Engineer | Bioengineer and Biomedical Engineer | Petroleum Engineer | Process Engineer | Polymer Engineer | Product Development Engineer

Geochemistry

Example Career Paths: Analysis | Testing | Environmental regulation | Environmental remediation

Potential Employers: Government | Environmental management firms | Consulting firms | Oceanographic research institutes | Mining companies

Professional Associations: Geochemical Society | European Association of Geochemistry

Related Occupations: Geochemist | Geoscientist | Hydrologist | Conservation Scientist | Industrial Ecologist | Soil and Plant Scientist | Atmospheric and Space Scientist | Hydrogeochemist | Climate Geochemist | Mining Geochemist | Volcanic or Geothermal Geochemist | Planetary Geochemist | Regulatory Scientist

Inorganic Chemistry

Example Career Paths: Analysis | Testing | Synthesis | Environmental remediation | Energy | Information technology | Consumer products

Potential Employers: Government | Industries (inorganic materials): Mining, microchip, computer manufacturers, ceramics, superconductive metals | Private research labs and organizations | Environmental management firms | Consulting firms

Professional Associations: Society of Biological Inorganic Chemistry | Federation of European Chemical Societies– Inorganic Chemistry Section

Related Occupations: Inorganic Chemist | Materials Scientist (Inorganic Focus) | Nuclear Engineer | Solid-State Chemist | Battery Chemist | Catalyst Chemist | Water Chemist | Pigment and Dye Chemist | Glass and Ceramics Chemist | Metallurgical Chemist | Crystallographer

Material Science

Example Career Paths: Metallurgy | Ceramics | Plastics/Polymers | Composites | Semiconductors and electronic materials | Optical materials | Biomaterials | Nanomaterials | Extraction/Synthesis | Processing

Potential Employers: Government | Industries: automotive, appliance, electronic, aerospace equipment, machinery, biomedical, communications, sporting goods, security, paint/coatings, alternative energy production | Private research labs and organizations | Airlines, railroads, and utility companies

Professional Associations: American Society for Materials International | Materials Research Society

Related Occupations: Materials Scientist | Materials Engineer | Environmental Science and Protection Technician | Battery Materials Scientist | Metallurgist | Ceramic Engineer | Polymer Scientist | Composites Engineer | Biomaterials Scientist | Quality Control Engineer | Technical Sales Engineer (Materials)

Organic Chemistry

Example Career Paths: Synthesis | Healthcare | Pharmaceuticals | Materials science | Consumer products | Biotechnology | Agrichemicals | Food science | Fuels

Potential Employers: Government | Industries: chemical, pharmaceutical, biotechnology, food, feed, cosmetics, agriculture, environment, petroleum, consumer product, rubber, plastics, elastomers, detergents, paints/coatings, dyes | Private research labs and organizations

Professional Associations: Biotechnology Innovation Organization | Organic Chemistry Frontiers

Related Occupations: Organic Chemist | Biochemist | Bioengineer and Biomedical Engineer | Medicinal Chemist | Organic Synthesis Chemist | Polymer Chemist | Cosmetic Chemist | Process Development Chemist | Organic Chemistry Professor

Physical Chemistry

Example Career Paths: Materials science | Chemical biology | Nanoscale science | Molecular modeling | Quantum computing | Biosensors

Potential Employers: Government | Industries: pharmaceutical, electronics, ceramics, plastics, surfactants and colloids, environmental, consumer products | Private research labs and organizations

Professional Associations: International Union of Pure and Applied Chemistry

Related Occupations: Physical Chemist | Bioengineer and Biomedical Engineer | Electrochemist | Spectroscopist | Combustion Scientist | Quantum Chemist | Computational Chemist | Surface Scientist | Thermodynamics Analyst

Polymer Chemistry

Example Career Paths: Synthetic macromolecules | Biological macromolecules | Analysis | Testing | Synthesis | Blending | Compounding | Consumer products

Potential Employers: Government | Industries: adhesives, paints/coatings, synthetic rubber, synthetic fiber, agricultural chemicals, packaging, automobile, aerospace equipment, biomedical

Professional Associations: American Chemical Society – Division of Polymer Chemistry | Society of Plastics Engineers

Related Occupations: Polymer Chemist | Materials Scientist | Materials Engineer | Chemical Engineer | Formulation Chemist | Biomaterials Chemist | Process Development Chemist | Quality Control/Analytical Chemist | Research Scientist

Education

Example Career Paths: Teaching, educational | Research

Potential Employers: Universities and colleges | Medical and other professional schools | Public and private schools, K-12

Professional Associations: American Chemical Society – Division of Chemical Education | National Science Teachers Association

Related Occupations: Chemistry Teacher, Postsecondary | Chemistry Tutor | High School Chemistry Teacher | Middle School Chemistry Teacher | STEM Academic Advisor | Chemistry Lab Instructor | Curriculum Developer/Instructional Designer | Chemical Education Researcher

Healthcare

Example Career Paths: Medicine | Dentistry | Optometry | Podiatry | Pharmacy | Veterinary medicine | Allied health: occupational therapy & physical therapy | Medical technology | Nuclear medicine

Potential Employers: Hospitals | Medical centers and clinics | Private and group practice | Health networks | Nursing homes | Rehabilitation centers | Colleges or universities | Correctional facilities | Large corporations | Armed services | Government agencies | State and local public health departments

Professional Associations: American Association of Pharmaceutical Scientists | International Society for Pharmaceutical Engineering

Related Occupations: Pharmaceutical Chemist | Physician | Dentist | Optometrist | Pharmacist | Veterinarian | Occupational Therapist | Physical Therapist | Health Information Technologist | Clinical Laboratory Scientist/Medical Laboratory Technician | Clinical Chemist | Toxicologist | Neurochemist | Formulation Chemist | Quality Control Chemist | Medicinal Chemist

Other Professional Opportunities

Example Career Paths: Sales | Marketing | Technical writing | Scientific journalism | Scientific illustration | Intellectual property/Patent law | Informational specialists

Potential Employers: Medical/Pharmaceutical companies | Product development departments in industries: Chemical, pharmaceutical, biotechnology, food, feed, cosmetics, agricultural, environmental, petroleum, consumer products | Publishing firms: Books, scientific and research journals, technical press, large newspapers | Software firms | Regulatory agencies | Environmental management organizations | Waste management firms | Law firms | Legal departments of corporations | Private practice | Colleges and universities | Special libraries

Professional Associations: National Association of Science Writers | Society for Technical Communication

Related Occupations: Chemist | Biochemist | Bioengineer and Biomedical Engineer | Data Scientist | Research and Development | Toxicologist | Science Writer or Editor | Science Communicator | Scientific Software Designer | Regulatory Affairs Specialist | Chemical Safety Evaluator | Environmental Health Scientist | Pollution Analyst | Remediation Scientist | Policy Advisor | Hazardous Water Chemist | Recycling Process Developer | Wastewater Treatment Analyst | Patent Agent | Technical Advisor | Consultant | Pharmaceutical Sales Representative | Technical Marketing Specialist | Market Analyst

Preparing for your Career

- Develop strong verbal, written, teamwork and problem-solving skills.
- Choose courses with laboratory components to build experimental and instrumentation skills.
- Gain experience in area of interest through internships, research with professors and/or complete a senior research project.
- Maintain awareness of current environmental issues including policy, conservation, and industry trends.
- Seek extensive laboratory and research experience along with courses in quantitative, qualitative, and instrumental analyses.
- Pursue advanced instrumentation and computer skills along with knowledge of statistics.
- Develop excellent communication skills for work with other disciplines including materials scientists, physicists, and engineers.
- Seek experimental design and analytical research chemistry experience.

This resource was adapted from What Can I Do With My Major.
For more, visit https://web.uri.edu/career/wcidwmm/

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What Can I Do With This Major? features 100 major profiles with information on common career paths, types of employers that hire in the field, and strategies to maximize opportunities. Scroll to the...

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