DEPARTMENT OF
CHEMISTRY
CHEMISTRY.MINES.EDU

PROGRAM SCOPE
The Department of Chemistry offers an outstanding educational environment for undergraduate students. The Mines chemistry major gives students hands-on experiences in their classes, access to world-class laboratory facilities, opportunities to participate firsthand in innovative research and preparation for careers in chemistry, medicine, energy, environmental work and beyond.

AREAS OF STUDY
The undergraduate chemistry major grounds students in the fundamentals of modern chemistry, provides experience with contemporary instrumentation in the field and involves students in research. The core coursework introduces the disciplines of organic, analytical, inorganic, biological and physical chemistry, supported by a variety of practical experimental experiences in the laboratory.

The undergraduate biochemistry degree focuses on the interface between chemistry and biology. Biochemistry majors will investigate biochemical challenges affecting the environment, diseases and treatment utilizing technical tools found in modern laboratories around the world while studying important fundamental and historical discoveries.

DEGREES
- Biochemistry
- Chemistry Tracks:
  - Biochemistry
  - Chemistry
  - Environmental Chemistry

AMERICAN CHEMICAL SOCIETY
With more than 150,000 members, the American Chemical Society (ACS) is the largest professional society in the world. The ACS Student Chapter at Mines brings students interested in chemistry and its value in society together. By bringing in chemists to speak about their research, helping perform outreach for the university and community and engaging students in a social setting outside of the classroom, the chapter brings the undergraduate chemistry experience to life.

CAREER OPPORTUNITIES
Professional chemists apply their knowledge in areas ranging from environmental processes to medical professions to the development of new materials for renewable energy.

Starting salaries are up to $75K for a BS chemistry degree, with highest salaries determined by the specific field and/or geographic location. Many of our chemistry majors attend graduate or professional school, which greatly increases earning potential.

~90% PLACEMENT OUTCOMES WITHIN THREE MONTHS OF GRADUATION*

POTENTIAL JOB TITLES
- Agricultural or Food Scientist
- Biochemist or Biophysicist
- Chemical Engineer
- Chemist
- Chief Technical, Program Managers and/or Operating Officer
- College Professor or High School Teacher
- Entrepreneur
- Environmental Scientist
- Geoscientist
- Materials Engineer
- Medical Doctors, Dentists, Veterinarians

AT LEAST HALF OF MINES CHEMISTRY FACULTY PARTICIPATE IN RESEARCH ACTIVITIES WITH NATIONAL LABORATORIES.

*Information is from the 2018-19 Mines Career Center Outcomes Survey
At Mines, career-building experiences start on day one with peer group activities in the classroom and hands-on laboratory experiments. Each class is taught by a PhD chemist with years of experience in both chemistry research and in teaching students of all interests.

The Mines Chemistry Department offers the opportunity for sustained, in-depth undergraduate research with faculty invested in your future. Undergraduate research offers insights into career possibilities by exposing students to topics and concepts not covered in the classroom.

**CHEMISTRY RESEARCH AREAS OF FOCUS**

**ANALYTICAL AND BIOANALYTICAL CHEMISTRY:**

Instrument design and development for applications in energy science, materials design, pharmaceuticals, nanoscience, surface chemistry, polymer science, radiochemistry, and environmental studies.

**BIOCHEMISTRY:**

Protein structure, dynamics, and interactions, metabolic pathways and bioinformatics with applications in drug design and delivery, algal biofuels, extracellular vesicles, and coral biology.

**COMPUTATIONAL CHEMISTRY:**

Molecular and materials modeling and simulations, statistical mechanics, and bioinformatics with applications in materials and drug design and environmental chemistry.

**ENERGY:**

Photovoltaics, nuclear fuels, fuel cells, water splitting, batteries/energy storage, hydrogen storage and hydrogen carriers, methane hydrates.

**ENVIRONMENTAL CHEMISTRY:**

Experimental and theoretical studies towards understanding chemical processes in the natural environment as well as detecting and minimizing the effects of anthropogenic contaminants.

**INORGANIC, MATERIALS AND NANO CHEMISTRY:**

Design, synthesis, and characterization of inorganic, nanoscale, and organic-inorganic hybrid materials with applications in catalysis, drug delivery, energy, and biomimetics. Detection and behavior of nanoparticles in the natural environment.

**ORGANIC AND POLYMER CHEMISTRY:**

Design, synthesis, and characterization of organic, polymer, and organic-inorganic hybrid materials with applications in renewable energy, radiation detection, catalysis, and water purification.

**RADIOCHEMISTRY:**

Fundamental and applied studies of f-elements and other elements involved in the nuclear fuel cycle, including chemical and biological separations, environmental behavior and nuclear forensics.