

## Program Overview: Bachelor of Science, Chemistry



### About This Major . . .

Chemistry students gain a unique perspective on the composition, properties, and reactivity of the substances surrounding them. Students gain problem-solving skills that can be applied in chemistry labs, in other classes, and in day-to-day life. By having chemistry faculty with a diverse range of specialties (analytical chemistry, biochemistry, inorganic chemistry, physical chemistry, and organic chemistry), chemistry majors have the opportunity to learn about each of these fields, and they are provided with a wide variety of research opportunities. Through research, students can synthesize new compounds and make other new scientific discoveries. In addition, chemistry students are trained to independently use modern instrumentation, including a 300 MHz NMR, liquid chromatography, mass spectrometer, and ICP atomic emission spectrophotometer.

Our graduates have been successful in finding jobs in the chemical industry and secondary education, as well as being placed in graduate, pharmacy, and medical schools. As of summer 2014 all of the chemistry majors who have applied to medical school have been admitted. Our graduates have completed PhD programs at the University of Denver, Arizona State University, University of Utah, and University of Wyoming in chemistry, biomedical engineering, and environmental engineering.

The bachelor's degree in Chemistry culminates in two courses designed to bridge students' coursework with their entry into the workforce, a medical degree program, or graduate school. The Advanced Laboratory course helps students to synthesize knowledge from various chemical disciplines and apply it to solving chemical problems in a practical manner. This is similar to the type of process that they are likely to experience after graduation. Our Communicating in the World of Chemistry course couples with our Advanced Laboratory course to help students express themselves in a professional manner while applying for and entering their new positions.

For more information on what you can do with this major, go to <http://coloradomesa.edu/career/students/explore/major.html> and select Chemistry under Biological and Physical Sciences.

**All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning.**

By completing a chemistry major, you will be able to:

1. demonstrate fluency in the concepts from the major fields of chemistry (inorganic, organic, physical, and analytical). (Specialized Knowledge)
2. utilize mathematics to solve chemical problems. (Quantitative Fluency)
3. employ proper experimental techniques. (Applied Learning)
4. interpret chemical information from peer-reviewed publications. (Critical Thinking)
5. communicate chemical topics effectively, both verbally and in writing. (Communication Fluency)

### Program Highlights:

#### Spread the Word

By joining the Chemistry Club, which stages fun and educational chemistry demonstrations for CMU students and local K-12 students.

#### Launch your Career

With a position in chemistry research, medicine, or teaching.

#### Take the Next Step

By completing an advanced degree in chemistry, biomedical engineering, or pharmacy, or by becoming a medical doctor. Our chemistry majors have received advanced degrees from the University of Denver, Arizona State University, and other major research universities.

## Program Requirements

A student must follow CMU graduation requirements by completing 120 semester credit hours, including 40 credits of coursework at the 300+ level. See the “Undergraduate Graduation Requirements” in the catalog for additional graduation information. Students should work closely with a faculty advisor when selecting and scheduling courses prior to registration. In general, CMU’s programs of study are based on two curriculum groups:

### 1. Essential Learning

CMU’s Essential Learning program provides the foundation of skills and information that cuts across all fields of study and the support for advanced concepts that students will later encounter in their majors. Before moving into work at the 300+ level, students complete the Maverick Milestone and its co-requirement, Essential Speech. This pair of courses is a capstone experience where students integrate what they have learned from their foundation courses by making connections between diverse areas of knowledge. The capstone also is an opportunity for students to work with disparate ideas, a critical skill expected of all CMU graduates that will aid them in solving the complex and unscripted problems they will encounter in their personal, professional, and civic lives.

### 2. What You Will Study in This Major. . .

#### Foundational Courses

These courses build your problem-solving skills and provide you with concepts and tools that you will apply in your chemistry courses.

- Calculus I and II
- General Physics I or Fundamental Mechanics and Lab
- General Physics II or Electromagnetism and Optics and Lab

#### Core Courses

Here you learn the essential knowledge and skills for each sub-discipline of chemistry.

- General Chemistry I and II and Labs
- Analytical Chemistry and Labs
- Organic Chemistry I and II and Labs
- Physical Chemistry I and II
- Inorganic Chemistry I
- Instrumental Analysis and Lab
- Advanced Laboratory I
- Communication in Chemistry
- Calculus III

#### Chemistry Electives

These courses allow you to explore more advanced concepts in areas of chemistry that you find especially interesting.

- Environmental Chemistry
- Biochemistry I and II
- Inorganic Chemistry II
- Advanced Organic Chemistry
- Research

#### Electives

Electives are an opportunity for you to supplement or complement your core courses with additional work in mathematics and science, or explore any other discipline that may interest you. A strategic selection of electives can help you “cross-pollinate” your understanding of physics with concepts from other fields.

Chemistry majors generally take a variety of electives; however, advanced courses in physics, mathematics, and biology are common. For example, Cellular Biology, Genetics, Microbiology, Modern Physics, Quantum Theory, and Differential Equations are electives frequently taken by CMU chemistry majors.

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For more information about this major, go to: <http://www.coloradomesa.edu/chemistry/index.html> or contact the Department of Physical and Environmental Sciences, 232 Wubben Hall, 970.248.1993.