CHEMISTRY
Chemistry Department

Faculty
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Statement of philosophy
The chemistry department strives to foster in students an intuitive knowledge of chemistry by emphasizing key concepts and their integration. Since chemistry is inherently experimental, the department is committed to providing students with ample laboratory experience in order to develop the tools necessary to become successful experimentalists. This is accomplished in courses and through individual projects with faculty mentors.

Chemists need to be able to effectively communicate their ideas to their peers and to society. Accordingly, an emphasis on the development of writing and oral skills through laboratory reports, oral presentations and research papers helps our majors gain experience in communication.

The faculty strives to remain abreast of modern chemical techniques while being aware of the benefits and responsibilities of living in a technological society. Our department follows guidelines of the American Chemical Society, so chemistry majors receive instruction comparable to that at larger institutions while benefiting from individualized attention that is the hallmark of Central College.

Chemistry is often referred to as the central science. All physical and natural sciences are touched by chemistry. A chemistry major opens the door to such diverse career options as basic research, medicine, pharmacology, public health, biochemistry, teaching, industrial lab work, environmental testing and forensic science. In addition, chemistry majors at Central are eligible for admission to the chemical engineering programs at Washington University in St. Louis and Iowa State University following completion of their third year.

Study abroad opportunities
The chemistry department encourages all chemistry students to study abroad. The Option I sequence of courses allows for convenient study abroad in the fall semester of the fourth year.

American Chemical Society certification
What does our American Chemical Society certification mean? According to the American Chemical Society, a department that follows and meets the guidelines for certification produces graduates with the background necessary to enter graduate school or employment in which a strong background in chemistry is needed. An ACS approved department will “assure students that they have high quality programs in chemistry. For the student, a certified degree in chemistry is a valuable personal credential that serves as a national-level recognition for successfully completing a rigorous academic chemistry curriculum in an ACS-approved department...The extra rigor and additional requirements of the certified degree are valued by potential employers and graduate schools alike.” (Undergraduate Professional Education in Chemistry Guidelines and Evaluation Procedures, Spring 2003, American Chemical Society Committee on Professional Training)

In connection with our ACS certification, students in our department have on-line access to all American Chemical Society publications.

Major Communication Skills
The communications skills for the chemistry major are evaluated as follows: In the spring of the second year (or upon declaration of the major), the department will make a preliminary judgment with respect to reading, writing and speaking skills based on lab reports, other writing assignments, class presentations and performances on skills tests such as the PSAT, ACT, URE and reading labs. Students deemed to be weak in one or more skills will be advised of the weakness and possible remedial activities. Diagnostic and self-help materials for writing skills will be made available. Final assessment will be made at the end of CHEM 363, Physical Chemistry Lab: Advanced.

Chemistry Major Requirements (55 credits)
1. Complete all of the following:
   CHEM 131 General Chemistry (4)
   CHEM 151 Inorganic Chemistry (4)
   CHEM 235 Organic Chemistry I (4)
   CHEM 236 Organic Chemistry II (4)
   CHEM 241 Analytical Chemistry (4)
   CHEM 361 Physical Chemistry I (3)
   CHEM 362 Physical Chemistry II (3)
   CHEM 363 Physical Chemistry Lab: Kinetics (1)
   BIOL 131 Introduction to Cells (4)
   MATH 131 Calculus I (4)
   MATH 132 Calculus II (4)
PHYS 111  General Physics I (5)
PHYS 112  General Physics II (5)

2. **Complete at least 6 credits from the following:**
   Note: Students pursuing the ACS version of the major (see below) must take CHEM 320
   CHEM 320  Biochemistry (4)
   CHEM 382  Environmental Chemistry (4)
   CHEM 430  Advanced Organic Chemistry (3)
   CHEM 447  Instrumental Analysis (4)
   CHEM 452  Advanced Inorganic Chemistry (3)
   CHEM 463  Advanced Physical Chemistry (3)

**American Chemical Society Certified Chemistry Major Requirements (64 credits)**
*Note: For other ACS course options and updates to the requirements for ACS certification, please see the department chair.*

1. Complete all of the above courses listed in part 1 of the Central College chemistry major. (49)

2. **Complete the following courses: (8)**
   CHEM 320  Biochemistry (4)
   CHEM 447  Instrumental Analysis (4)

3. **Complete one elective from the following list (3)**
   CHEM 382  Environmental Chemistry (4)
   CHEM 430  Advanced Organic Chemistry (3)
   CHEM 452  Advanced Inorganic Chemistry (3)
   CHEM 463  Advanced Physical Chemistry (3)

4. Complete two units of research and prepare a final thesis on your work, including safety. (4)
   CHEM 470  Investigations in Chemistry

**Chemistry Minor Requirements (19 credits)**

1. **Complete all of the following:**
   CHEM 131  General Chemistry (4)
   CHEM 235  Organic Chemistry I (4)
   CHEM 236  Organic Chemistry II (4)
   CHEM 241  Analytical Chemistry (4)

2. **Complete one of the following options:**
   CHEM 151  Inorganic Chemistry (4)
   or
   3 credits in chemistry at the 300-level or higher