CHEMISTRY (B.A.)

The Bachelor of Arts in Chemistry program will not be enrolling new students as of the Fall 2019 semester. Students currently enrolled in this degree program will continue through graduation.

Overview Information

Introduction

The Math & Science Department prides itself in preparing students for careers in science-related fields. The Chemistry major can prepare students for professional programs including chemical analysis, industrial chemistry, and laboratory management. In addition, graduates may pursue research careers in the area of chemical engineering and environmental chemistry. Concordia also has a highly-respected program for those who wish to teach chemistry at the junior and senior high school levels.

Desired Student Outcomes

Those successfully completing Concordia’s Bachelor of Arts in Chemistry program will be able to:

Knowledge
1. Understand the basic principles of the chemistry of life
2. Understand the nature of chemical bonding
3. Demonstrate a knowledge of complex and simple equilibria

Skills
1. Utilize safe laboratory practices
2. Utilize available chemical analysis tools
3. Perform chemical data analysis
4. Write publication-style reports of laboratory results
5. Locate, recognize and comprehend current research articles
6. Perform original scientific research

Attitudes
1. Understand and practice scientific ethics
2. Appreciate the ability of chemistry to improve quality of life or to cause ecological or health problems
3. Appreciate the chemical nature of life

Every student graduating with a B.A. degree in chemistry will successfully complete a Senior Project. This requirement can be met either by completing an extensive practicum in their field of interest outside of the university or by carrying out original research and writing and thesis based on the research that must be defended before a panel of faculty members in a public defense. In either case, the student will work closely with a faculty mentor who will guide them through the process. It is our belief that a primary goal of a college education should be to turn a student from one who gains knowledge to one who produces knowledge.

Admission Requirements

All requirements must be met as listed in the Admission – Undergraduate section of this catalog. In addition, students seeking admission to an undergraduate program offered by the College of Arts & Sciences (with the exception of University Studies) must apply for admission to the college. This generally occurs during the spring semester of a student’s sophomore year for traditional students, or at the end of the first semester in residency for transfer students, provided the following criteria are met:

1. Completion of 45 credits with a cumulative GPA of at least 2.50.
2. Successful completion of 30 credits in courses required to meet the general education requirements of the university.
3. Successful completion of at least one required program or major course taken on Concordia’s campus. Provisional acceptance of transfer students may occur, pending successful completion of such a course.
4. Successful completion of all discipline-specific requirements as provided by the faculty of the department teaching the discipline. This may include an interview, successful completion of a standardized test of basic knowledge, skills, and attitudes appropriate to the field of study, or another evaluation tool (e.g., portfolio of work). See Program-specific Admission Requirements for possible additional requirements.

Notification of successful or unsuccessful completion of the process of admission to the College of Arts & Sciences will be made by the appropriate Department Chair. The student will be notified of the results by the Dean.

Program-specific Admission Requirements

Students seeking admission to the Chemistry major must successfully complete a standardized test covering basic knowledge in the field of Chemistry. This generally occurs during the spring semester of a student’s sophomore year for traditional students, or at the end of the first semester in residency for transfer students. It is the student’s responsibility to schedule this appointment through the Chair of the Math & Science Department.

Graduation Requirements

All requirements must be met as listed in the Graduation Information section of this catalog. In addition, students seeking to graduate from a program offered by the College of Arts & Sciences must successfully complete a capstone experience (internship/practicum or thesis) which includes presenting a synopsis of the experience at the College of Arts & Sciences Senior Symposium (https://www.cu-portland.edu/academics/colleges/college-arts-sciences/student-research-and-projects/senior-symposium). See Program-specific Graduation Requirements for possible additional requirements.

Program-specific Graduation Requirements

The Chemistry major has no additional graduation requirements.

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Curricular Requirements

Bachelor of Arts in Chemistry

Major Requirements (78-80 credits)

Chemistry Core (63 credits)

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<td>CHM 211</td>
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<td>CHM 212</td>
<td>INORGANIC CHEMISTRY II</td>
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<td>CHM 345</td>
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<tr>
<td>CHM 414</td>
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### Chemistry (B.A.)

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<td>CHM 442</td>
<td>PHYSICAL CHEMISTRY I</td>
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<td>CHM 443</td>
<td>PHYSICAL CHEMISTRY II</td>
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<td>MTH 211</td>
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<td>MTH 212</td>
<td>CALCULUS II</td>
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<td>MTH 231</td>
<td>RESEARCH &amp; STATISTICAL TECHNIQUES</td>
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<td>PHY 211</td>
<td>GENERAL PHYSICS I</td>
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<td>CHEMICAL QUANTITATIVE ANALYSIS</td>
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<tr>
<td>CHM 361</td>
<td>INSTRUMENTAL ANALYSIS</td>
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#### Senior Project (3-5 credits)

- One of the following:
  - CHM 492 & CHM 493 & CHM 494
    - SENIOR THESIS PREPARATION and CHEMISTRY THESIS I: LITERATURE REVIEW AND PROJECT DESIGN and CHEMISTRY THESIS II: RESEARCH, WRITING, AND DEFENSE
  - CHM 496

- Emphasis Area (12 credits)

  - Twelve (12) credits to create an emphasis. These must be in addition to the required courses.

#### Total Credits

- 78-80

### General Education Requirements – B.A.

#### Freshman (50 credits)

- Freshman Foundation (15 credits)
  - WR 121 ENGLISH COMPOSITION 3
  - SCI 110 INTRODUCTION TO SCIENCE 3
  - or Lab Science
  - HUM 152 HOW THE WEST CAME TO BE 3
  - LDR 198 CONCORDIA COMMITMENT 1
  - MTH 110 MATH FOR LIFE 3
  - or above (excluding MTH 231)
  - ESS 260 HEALTH AND FITNESS FOR LIFE WITH LAB 2

- Spiritual Formation (6 credits)
  - REL 211 HISTORY AND LITERATURE OF THE OLD TESTAMENT 3
  - or REL 221 HISTORY AND LITERATURE OF THE NEW TESTAMENT 3
  - REL 401 FAITH FOR LIFE 3

- Intercultural Experiences (11 credits)
  - HUM 351 CHALLENGES OF GLOBAL DIVERSITY 3
  - REL 371 WORLD RELIGIONS 2

- Foreign Language

- Studies in Arts & Sciences (18 credits)
  - Natural Science 3
  - Fine Arts 3
  - WR 30X (upper division Writing course) 3
  - Electives (6 credits) – at least three must be upper division credits outside major 6

- Total Credits

- 49

### Elective Requirements

A minimum of 124 semester credits must be successfully completed in order to graduate from Concordia University with a bachelor's degree. After fulfilling all General Education and major requirements, the student must complete enough Elective credits to bring the total number of credits to 124 or more.

**Note:**

HUM 351 and REL 401 are courses that must be completed at Concordia.

The student should be aware of the prerequisite courses needed for each major course. In many cases these prerequisites should be taken to satisfy the General Education requirements, especially in the Math and Science areas.

The student is responsible for completing the graduation requirements listed for the chosen major, including General Education and Elective credits, and other requirements as stated by the program. The student is also responsible for meeting the residency requirement by completing, at Concordia University, a minimum of 30 of the last 45 semester credits toward the degree. While it is the intent of the University to meet students' needs, it may not be possible to provide every class option needed by every student every term.

### Chemistry Minor (16 credits)

This 16-credit minor is available for all CU undergraduate students who are not pursuing a Chemistry major.

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<td></td>
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**Contact Information**

*College of Arts & Sciences*

*Math & Science Department*

**Disciplines:** Astronomy, Biology, Chemistry, Geography, Geology, Mathematics, Physics, Science

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CATALOG: catalog.cu-portland.edu/undergraduate/colleges/cas/chemistry/
WEBSITE: http://www.cu-portland.edu/academics/colleges/college-arts-sciences/undergraduate-programs/chemistry