

CHEMISTRY, BA

Bachelor of Arts in Chemistry (315000BA)

More on the Chemistry major (<https://www.uakron.edu/chemistry/undergraduate.dot>)

Program Description

Chemistry is an experimental science that seeks to understand the structure and function of molecules. Chemists synthesize new materials, and study their properties and how they interact with other compounds. The BS degrees offered by the department prepare students for independent laboratory work and research. The BA degree is less strongly focused on research and prepares students for professional degrees like medicine, dentistry and pharmacy.

Admission, Retention and Graduation

The student must maintain a minimum 2.00 grade point average. The student must obtain a grade of C- or better in all required chemistry courses.

The following information has official approval of **The Department of Chemistry** and **The Buchtel College of Arts & Sciences**, but is intended only as a supplemental guide. Official degree requirements are established at the time of transfer and admission to the degree-granting college. Students should refer to the Degree Progress Report (Stellic) which is definitive for graduation requirements. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

Three year accelerated option: for first time students who have earned credits for at least the first year of courses. Credits can be earned through qualifying scores on appropriate Advanced Placement (AP) exams or through [College Credit Plus Program \(CCP\)](#) courses. Credits for qualifying AP scores or [CCP](#) courses are determined by the appropriate academic department. Departments may assign varied course credit, depending on the student's score on an AP exam or [grade in a CCP](#) course. Students may also receive credit by examination or via placement tests, where appropriate.

Requirements Summary

| Code | Title | Hours |
|--------------------|--|------------|
| | General Education Requirements (https://bulletin.uakron.edu/undergraduate/general-education/) | 36 |
| | College of Arts & Sciences Requirements | 14 |
| | Chemistry Requirements | 31-33 |
| | Physics Requirements | 8 |
| | Mathematics Requirements | 8 |
| | Advanced Chemistry Electives | 5 |
| | Additional Credits for Graduation * | 18-16 |
| Total Hours | | 120 |

* Bachelor's degrees require a minimum of 120 credit hours for graduation.

Recommended General Education Courses

| Code | Title | Hours |
|--|---|-----------|
| Students pursuing a bachelor's degree must complete the following General Education coursework. Diversity courses may also fulfill major or Breadth of Knowledge requirements. Integrated and Applied Learning courses may also fulfill requirements in the major. | | |
| Students are not required to enroll in the specific courses listed below. However, to facilitate successful degree completion, the academic department strongly encourages completion of the following recommendations. | | |
| Academic Foundations | | 12 |
| <i>Mathematics, Statistics and Logic: 3 credit hours</i> | | |
| MATH 221 | Analytic Geometry-Calculus I | |
| MATH 222 | Analytic Geometry-Calculus II | |
| <i>Speaking: 3 credit hours</i> | | |
| <i>Writing: 6 credit hours</i> | | |
| Breadth of Knowledge | | 22 |
| <i>Arts/Humanities: 9 credit hours</i> | | |
| <i>Natural Sciences: 7 credit hours</i> | | |
| CHEM 151 | Principles of Chemistry I | |
| CHEM 152 | Principles of Chemistry I Laboratory | |
| CHEM 153 | Principles of Chemistry II | |
| BIOL 111 | Principles of Biology I | |
| BIOL 112 | Principles of Biology II | |
| PHYS 261 & PHYS 262 | College Physics I and College Physics II | |
| PHYS 291 & PHYS 292 | Elementary Classical Physics I and Elementary Classical Physics II | |
| <i>Social Sciences: 6 credit hours</i> | | |
| Diversity | | |
| Domestic Diversity | | |
| Global Diversity | | |
| Integrated and Applied Learning | | 2 |
| <i>Select one class from one of the following subcategories:</i> | | |
| Complex Issues Facing Society | | |
| Capstone | | |
| <i>Review the General Education Requirements page for detailed course listings.</i> | | |
| Total Hours | | 36 |

College of Arts & Sciences Requirements

| Code | Title | Hours |
|--|-----------------|-----------|
| Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language. | | |
| 2 Year Language Proficiency | | 14 |
| 101 | Beginning I | |
| 102 | Beginning II | |
| 201 | Intermediate I | |
| 202 | Intermediate II | |

SLPA 222 Survey of Deaf Culture in America (American Sign Language option only)

Students must also complete a minimum of 40 credits (excluding workshops) consisting of either:

Upper-level (300/400) courses both in and outside of the student's major;

or other courses outside the major department approved by the student's major department chair (permission should be obtained prior to enrollment); these may not include workshops

Chemistry Requirements ¹

| Code | Title | Hours |
|-------------------------------------|---|--------------|
| CHEM 151 | Principles of Chemistry I | 3 |
| CHEM 152 | Principles of Chemistry I Laboratory | 1 |
| CHEM 153 | Principles of Chemistry II | 3 |
| CHEM 154 | Qualitative Analysis | 2 |
| CHEM 263 | Organic Chemistry Lecture I | 3 |
| CHEM 264 | Organic Chemistry Lecture II | 3 |
| CHEM 265 | Organic Chemistry Laboratory I | 2 |
| CHEM 266 | Organic Chemistry Laboratory II | 2 |
| CHEM 380 | Advanced Chemistry Laboratory I | 2 |
| CHEM 423 | Analytical Chemistry I | 3 |
| CHEM 424 | Analytical Chemistry II | 3 |
| Select one of the following: | | 4-6 |
| CHEM 305 | Physical Chemistry for the Biological Sciences | |
| -or- | | |
| CHEM 313 & CHEM 314 | Physical Chemistry Lecture I and Physical Chemistry Lecture II | |
| Total Hours | | 31-33 |

¹ If a grade of less than C- is earned in a required chemistry course, the student must successfully repeat that course within a year.

Physics Requirements

| Code | Title | Hours |
|-------------------------------------|---|----------|
| Select one of the following: | | 8 |
| PHYS 261 & PHYS 262 | College Physics I and College Physics II | |
| -or- | | |
| PHYS 291 & PHYS 292 | Elementary Classical Physics I and Elementary Classical Physics II | |
| Total Hours | | 8 |

Mathematics Requirements

| Code | Title | Hours |
|--------------------|-------------------------------|----------|
| MATH 221 | Analytic Geometry-Calculus I | 4 |
| MATH 222 | Analytic Geometry-Calculus II | 4 |
| Total Hours | | 8 |

Advanced Chemistry Electives

| Code | Title | Hours |
|---|-----------------------------------|----------|
| Select at least five credits of the following: | | 5 |
| CHEM 199 | Introductory Seminar in Chemistry | |

| | | |
|--------------------|---|----------|
| CHEM 381 | Advanced Chemistry Laboratory II | |
| CHEM 399 | Internship in Chemistry ¹ | |
| CHEM 401 | Biochemistry Lecture I | |
| CHEM 402 | Biochemistry Lecture II | |
| CHEM 463 | Advanced Organic Chemistry | |
| CHEM 472 | Advanced Inorganic Chemistry | |
| CHEM 480 | Advanced Chemistry Laboratory III | |
| CHEM 497 | Honors Project in Chemistry | |
| CHEM 498 | Special Topics in Chemistry ² | |
| CHEM 499 | Research Problems in Chemistry ² | |
| PLYS 403 | Polymer Chemistry | |
| PLYS 404 | Polymer Physics | |
| PLYS 405 | Polymer Science Laboratory | |
| Total Hours | | 5 |

¹ May be repeated for a total of six credits.

² May be repeated for a total of eight credits.

Recommended Sequence

| 1st Year | | Hours |
|------------------------|---|-----------|
| Fall Semester | | |
| CHEM 151 | Principles of Chemistry I | 3 |
| CHEM 152 | Principles of Chemistry I Laboratory | 1 |
| MATH 149 | Precalculus Mathematics | 4 |
| | Writing Requirement | 3 |
| | Speaking Requirement | 3 |
| Hours | | 14 |
| Spring Semester | | |
| CHEM 153 | Principles of Chemistry II | 3 |
| CHEM 154 | Qualitative Analysis | 2 |
| MATH 221 | Analytic Geometry-Calculus I | 4 |
| | Writing Requirement | 3 |
| | Social Science Requirement ³ | 3 |
| Hours | | 15 |

| 2nd Year | | Hours |
|------------------------------|--|--------------|
| Fall Semester | | |
| CHEM 263 | Organic Chemistry Lecture I | 3 |
| CHEM 265 | Organic Chemistry Laboratory I | 2 |
| MATH 222 | Analytic Geometry-Calculus II | 4 |
| PHYS 261 or PHYS 291 | College Physics I or Elementary Classical Physics I | 4 |
| Select one of the following: | | 3-4 |
| | Beginning Language I | |
| SLPA 101 | American Sign Language I | |
| Hours | | 16-17 |
| Spring Semester | | |
| CHEM 264 | Organic Chemistry Lecture II | 3 |
| CHEM 266 | Organic Chemistry Laboratory II | 2 |
| PHYS 262 or PHYS 292 | College Physics II or Elementary Classical Physics II | 4 |
| | Social Science Requirement ³ | 3 |
| Select one of the following: | | 4-3 |

| | | |
|------------------------|---|--------------|
| | Beginning Language II | |
| SLPA 102 | American Sign Language II | |
| | Hours | 16-15 |
| 3rd Year | | |
| Fall Semester | | |
| CHEM 305 | Physical Chemistry for the Biological Sciences ² | 4 |
| CHEM 423 | Analytical Chemistry I | 3 |
| | Arts Requirement ^c | 3 |
| | Free Elective | 3 |
| | Select one of the following: | 3 |
| | Intermediate Language I | |
| SLPA 201 | American Sign Language III | |
| | Hours | 16 |
| Spring Semester | | |
| CHEM 424 | Analytical Chemistry II | 3 |
| SLPA 222 | Survey of Deaf Culture in America (Sign Language students only) | 2 |
| CHEM:3/4xx | Upper-Level Chemistry Elective ¹ | 3 |
| | Humanities Requirement ³ | 3 |
| | Free Elective | 3 |
| | Select one of the following: | 3 |
| | Intermediate Language II | |
| SLPA 202 | American Sign Language IV | |
| | Hours | 17 |
| 4th Year | | |
| Fall Semester | | |
| CHEM 380 | Advanced Chemistry Laboratory I | 2 |
| | Upper Level Chemistry Electives ¹ | 2 |
| | Complex Issues Requirement ^{3,4} | 3 |
| | Arts/Humanities Requirement ³ | 3 |
| | Free Elective | 4 |
| | Hours | 14 |
| Spring Semester | | |
| | Upper Level Electives | 7 |
| | Domestic Diversity Requirement ^{3,4} | 3 |
| | Global Diversity Requirement ^{3,4} | 3 |
| | Hours | 13 |
| | Total Hours | 121 |

³ Courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at <https://bulletin.uakron.edu/undergraduate/general-education/>. It is recommended that General Education courses be selected to satisfy major or minor requirements, or to double dip between multiple tiers (i.e., Chemistry majors are encouraged to take SOCIO 100 Introduction to Sociology and/or SOWK 244/344 Death and Dying to satisfy the Domestic Diversity Requirement, as well as part of the Social Science Requirement).

⁴ If requirement has been satisfied by previous coursework, credits should still be filled as general electives.

Student must obtain a grade of C- or better in all required chemistry courses. If a grade of less than C- is obtained in a required chemistry course, the student must successfully repeat the course within a year.

A student who plans to enter the Cooperative Education Program in chemistry should plan to take the foreign language in the first two years. Completion of the second year of a foreign language or demonstrated equivalent competence is required.

¹ Students pursuing the Bachelor of Arts in Chemistry must take at least 5 credits to fulfill the Upper-Level Chemistry course requirements. CHEM 381 Advanced Chemistry Laboratory II, CHEM 399 Internship in Chemistry, CHEM 401 Biochemistry Lecture I, CHEM 402 Biochemistry Lecture II, CHEM 463 Advanced Organic Chemistry, CHEM 472 Advanced Inorganic Chemistry, CHEM 480 Advanced Chemistry Laboratory III, CHEM 497 Honors Project in Chemistry, CHEM 498 Special Topics in Chemistry, CHEM 499 Research Problems in Chemistry, PLYS 403 Polymer Chemistry, PLYS 404 Polymer Physics, PLYS 405 Polymer Science Laboratory

² Students pursuing a Bachelor of Arts in Chemistry can choose to take CHEM 305 Physical Chemistry for the Biological Sciences, or CHEM 313 Physical Chemistry Lecture I and CHEM 314 Physical Chemistry Lecture II. CHEM 313 is offered in the Fall and CHEM 314 is offered in the Spring.