

Bachelor of Arts – Chemistry

School of Arts and Sciences



A unique partnership with Cleveland State University allows Ursuline College to offer the best of both a small college and a large university. Ursuline College offers a major in chemistry, as well as a pre-medical track with a few courses in addition to those for the major. Chemistry provides students with an extensive knowledge base, critical problem-solving skills, commitment to learning and extensive utilization of computers. These allow our student to excel in many different careers.

Student will routinely use modern computer-controlled instrumentation, including a gas chromatograph (GC), and UV-Vis and Fourier-Transform infrared (FT-IR) spectrophotometers at both Ursuline College and Cleveland State University (CSU). Our joint collaboration with CSU allows students to access instruments such as Nuclear Magnetic Resonance (NMR) spectrometers, mass spectrometers (MS), gas chromatograph-mass spectrometers (GC-MS) and Raman spectrophotometers. Our Chemistry students will gain experience with analytical methods development, as well as with interpretation of spectroscopic results.

In addition, the chemistry curriculum at Ursuline College emphasizes and develops strong computer skills, especially the use of computer spreadsheet and graphing in data analysis, chemical structure drawing programs and three dimensional visualization of biological molecules. We encourage our students to integrate these programs into their computer presentation software to enhance communication.

Course Requirements

Successful completion of 20 credit hours including: CH 105 and 105L, CH 106 and 106L, CH 221 and 221L, CH 222 and 222L, and an upper-division elective. Half of the credits for the minor must be taken at Ursuline.

Departmental Policy: Prior to participation in any chemistry laboratory students must attend a safety training session, normally given during the first week of the lab schedules, and must agree to follow the departmental safety policy.

Career Opportunities

A degree in chemistry allows students access to entry level positions in science-based industries, such as the chemical, polymer, environmental, forensic and pharmaceutical industries and government labs. When the bachelor's degree is combined with a master's degree in education, students can teach high school chemistry. Students can also combine a bachelor's degree in chemistry with graduate degrees in chemistry or other sciences as preparation for leadership positions in science-based industries, government labs, and post-secondary education. A degree in Chemistry is also excellent preparation for professional schools including Medical, Dental, Optometry, Podiatry, Veterinary and Law Schools.

Currently the unemployment rate for chemists is just half the national average and the number of positions in chemistry and related fields is projected to increase between 2006 and 2016, with a notable increase of 8,000 chemist positions nationally. Local conditions are very favorable for chemistry-related employment. The Cleveland Section of the American Chemical Society has 1013 members, employed at over 50 firms and agencies, in positions such as research scientists, quality control managers, production assistants, marketing and sales representatives and technical information specialists.

If they desire to continue their education, students generally enter graduate school either directly after receiving their bachelor's degree or after a year or two of work in the field. Areas for graduate study are numerous, including such fields as organic chemistry, biochemistry, physical chemistry, inorganic chemistry, polymer and material science, and analytical chemistry to name a few. Depending on one's time and interest, graduate programs enable a student to obtain M.S. or Ph.D. degrees. Typically, the M.S. requires two years of study, whereas the Ph.D. requires four to six years, during which time candidates often receive a stipend.

Chemistry majors often choose to enter professional school shortly after graduation. Here, too, there are many choices: medical school to receive a M.D., osteopathic school for a D.O., podiatry school for a D.P.M., dental schools for a D.D.S. or veterinary school for a D.V.M. In general, professional schools have a four year course of study leading to licensure to practice in the field.

Required Coursework

Chemistry Core Courses

CH 105 Principles of Chemistry I	3
CH 105L Principles of Chemistry I Lab	1
CH 106 Principles of Chemistry II	3
CH 106L Principles of Chemistry II Lab	1
CH 221 Organic Chemistry I	3
CH 221L Organic Chemistry I Lab	1
CH 222 Organic Chemistry II	3
CH 222 Organic Chemistry II Lab	1
CHM 320 Survey of Physical Chemistry*+	4
CHM 310 Survey of Analytical Chemistry**+	2
CHM 315 Lab**+	2
CH 422 Biochemistry	3
CH 422L Biochemistry Lab	1
CH 487 Undergraduate Research or CH 475 Academic Internship	3 3

TOTAL CREDITS 31

Pre-Requisite Courses

MAT 221 Calculus I	4
MAT 222 Calculus II	4
MAT 223 Calculus III	4
PY 201 General Physics I	3
PY 201L General Physics I Lab	1
PY 202 General Physics II	3
PY 202L General Physics II Lab	1

TOTAL CREDITS 20

Pre-Medical Requirements

BI 200 Biodiversity	3
BI 200L Biodiversity Lab	1
BI 205 Principles of Cell Biology	3
BI 205L Principles of Cell Biology Lab	1

*Students planning to attend chemistry graduate school are encouraged to take CHM 321 Physical Chemistry I and CHM 322 Physical Chemistry II, instead of CHM 320.

**Students planning to attend chemistry graduate school are encouraged to take CHM 311 Analytical Chemistry and CHM 316 Analytical Chemistry Lab instead of CHM 310 and CHM 315.

+Courses to be taken at Cleveland State University.

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