



Chemistry

MAJOR AND MINOR

Ripon College's chemistry program is approved by the American Chemical Society and is distinctive in that organic chemistry is the initial course. This unique approach provides an accessible introduction to chemistry through an emphasis on carbon chemistry, while also providing new experiences in chemical synthesis for students with advanced high school preparation. The curriculum is rich in laboratory experience, and state-of-the-art instrumentation can be used by students at all levels. Faculty work closely with students to deepen laboratory and theoretical skills as well as recommend career-enhancing experiences. Collaborative research with faculty is available through independent study and paid summer internships.

Chemistry graduates of Ripon College often enter chemistry-related Ph.D. programs with tuition fees waived and a substantial stipend provided. Others go directly into medical school and other health-related professional programs. Many graduates go directly into employment in positions ranging from bench chemists to pharmaceutical sales.

Ripon also offers majors in chemistry-biology and physical science. These interdisciplinary tracks serve broader interests while still containing substantial chemistry course requirements. Students are prepared for several Ph.D. programs and also serve students interested in medical professions, advanced engineering programs and law school.

PROGRAM HIGHLIGHTS

- Students develop sophisticated laboratory skills through individual attention, through assignments that help students to learn to work independently and in team environments; through using and understanding state-of-the-art instrumentation that is onsite and only for our undergraduates; and through rigorous requirements for communicating scientific concepts and results through both oral and written formats.

- In the last three years, two recent chemistry graduates and two recent chemistry-biology graduates have been awarded the prestigious National Science Foundation Graduate Research Fellowship.
- The Oak Ridge Science Semester enables students to join ongoing investigations at the Oak Ridge National Laboratory in Tennessee in research areas as diverse as astrophysics, cell biology, DNA sequencing, genetic mutagenesis, parallel computing, robotics, toxicology and more.

FACULTY

- **COLLEEN BYRON**, professor of chemistry and the L. Leone Oyster 1919 Chair in Chemistry, Chair of the Department of Chemistry
- **DEAN KATAHIRA**, professor of chemistry
- **JOSEPH SCANLON**, associate professor of chemistry
- **PATRICK WILLOUGHBY**, assistant professor of chemistry

STUDENT HIGHLIGHT



Jordan Buhle Nutting '15, a chemistry major, is studying in the Ph.D. program in chemistry at the University of Wisconsin-Madison. She received a 2016 Graduate Fellowship from the National Science Foundation in the field of chemistry-chemical catalysis.

CHEMISTRY

AREAS OF STUDY

COURSE REQUIREMENTS

- REQUIREMENTS FOR A MAJOR IN CHEMISTRY:** CHM 111, 112, 211, 214, 321, 333, 334, 342, three semesters of 501 and one semester of 502, two semesters of physics (171 and 172), plus two semesters of calculus (MTH 201 and 202) or a higher calculus course. CHM 111, 112, 211 and 214 constitute an introductory core and should be taken in sequence. Majors must complete a research project which culminates in a substantial written thesis. Except in unusual circumstances, an experimental project is required. This thesis project can be initiated after the student's exposure to the introductory core, but must be essentially complete at the end of the fall semester of the senior year. A directed summer research project, either at Ripon, on another campus, or in an industrial laboratory, also could provide the basis for an acceptable thesis. It is expected that the project will be the equivalent of a minimum of four semester hours of credit.

The major described above, with the addition of CHM 422 and two of the following: 310, 413, 414, 415 or a 3-4 credit 500-level Departmental Studies course, satisfies the minimum standard for a professional degree in chemistry certified by the American Chemical Society. Students planning on obtaining an American Chemical Society degree need to register 400 laboratory hours in courses at the 200 level and higher. Thesis research can be included in this requirement. Students planning to pursue graduate work should select advanced courses and independent study based on their post-graduation interests and also should

consider seriously the potential value of linear algebra, differential equations, and advanced calculus. Students should discuss the possibilities with members of the department before registration. Laboratory periods for CHM 100 are two hours per week. All other laboratories are three to four hours, unless otherwise noted.

- REQUIREMENTS FOR A MINOR IN CHEMISTRY:** CHM 111, 112, 211, 214 and one course from CHM 321, 333, 334, 414 or 422.
- REQUIREMENTS FOR A TEACHING MAJOR IN CHEMISTRY:** CHM 111, 112, 211, 214, 321, 333, 334, 342, 401, 501 (two credits); PHY 171 and 172; MTH 201 and 202; and ENV 120.
- REQUIREMENTS FOR A TEACHING MINOR IN CHEMISTRY:** CHM 111, 112, 211, 214, and 401; either CHM 321, 333, or 334; and MTH 201 and 202.

CAREER PATHWAYS

Our graduates are enrolled in a variety of graduate programs and medical schools at some of the nation's most prestigious research universities. Examples of positions occupied by our alumni include principal research investigator, wheat geneticist, physical chemistry professor, experience manager, pharmaceutical sales representative, environmental health specialist, radiation oncologist, project manager, senior scientist, vaccine researcher, chemical engineer, pharmacist, analytical chemist, clinical research specialist, pediatrician, patent litigation lawyer, and small business owner.

SAMPLE 8-SEMESTER CLASS SCHEDULE

	FALL SEMESTER				SPRING SEMESTER			
	COURSE 1	COURSE 2	COURSE 3	COURSE 4	COURSE 1	COURSE 2	COURSE 3	COURSE 4
FIRST YEAR	Catalyst 110	Chemistry 111	Calculus I or Calculus II	Foreign Language or other elective	Catalyst 120	Chemistry 112 (or 214 with 4 or 5 AP)	Calculus II or elective	Foreign Language or other elective
SECOND YEAR	Catalyst 210	Chemistry 211	Physics I	Your Choice	Catalyst 220	Chemistry 214	Physics II	Your Choice
THIRD YEAR	Chemistry 333 and Chemistry 501	Chemistry 321	Your Choice	Your Choice	Applied Innovation Seminar	Chemistry 334 and Chemistry 501	Chemistry 342	Your Choice
FOURTH YEAR	Elective Advanced Chemistry Course and Chemistry 501	Your Choice	Your Choice	Your Choice	Elective Advanced Chemistry course and Chemistry 502	Your Choice	Your Choice	Your Choice

This is only a sample for informational purposes. Each student is encouraged to work closely with their academic advisor to tailor a unique schedule that best fits their individualized needs.

* Students interested in entering Ph.D. programs in chemistry are encouraged to elect mathematics and physics courses beyond those required for the major

** Students can earn an American Chemical Society Certified Bachelor's Degree with the addition of advanced chemistry courses and biochemistry.