

CHEMISTRY (BACHELOR OF SCIENCE, B.S.)

Overview

Missouri Western's Bachelor of Science in Chemistry program prepares students to enter the dynamic chemical industry or to attend graduate programs in chemistry and related fields. Students get extensive lab experience and unique research opportunities in a challenging program that has been certified by the American Chemical Society since 1977.

Students may design the restricted electives portion of the major to pursue careers in allied fields such as health professions, chemical education, business and entrepreneurship, forensic science, scientific writing, data science, or geoscience. Students should consult with advisors in chemistry and related departments to choose the best electives for their career plans.

For students intending a career as chemist or admission into a chemistry graduate program, the ACS Certification concentration offers our best comprehensive preparation while fulfilling the restricted electives within program requirements.

Requirements

Student who choose this bachelor degree program will have no more than 6 years from admission or subsequent declaration to meet the requirements listed below. If certification, accreditation or statutory requirements change and additional requirements become effective during this time, the new requirements take precedence.

Code	Title	Credit Hours
General Studies		42
Students must complete General Studies courses (https://catalog.missouriwestern.edu/undergraduate/university-information/academic-standards-regulations/baccalaureate-degree/#bachelor-general-studies) ¹		
Core Requirements		54
CHE 111	General Chemistry I	5
CHE 120	General Chemistry II with Qualitative Analysis	5
CHE 310	Organic Chemistry I	3
CHE 311	Organic Chemistry Laboratory I	2
CHE 312	Organic Chemistry II	3
CHE 313	Organic Chemistry Laboratory II	2
CHE 321	Quantitative Analysis	4
CHE 326	Instrumental Analysis	4
CHE 340	Foundations of Physical Chemistry	4
CHE 370	Biochemistry I	4
CHE 380	Environmental Chemistry & Chemical Management	3
CHE 485	Chemistry Capstone Experience	2
MAT 167	Calculus with Analytic Geometry I	5
PHY 110	College Physics I	4
PHY 111	College Physics II	4

Select one of the following:

Major in Chemistry (No Concentration)	13
Major in Chemistry (ACS Certification Concentration)	13

¹ Courses in general studies may also be required within the major. While the course(s) may satisfy both requirements, the credit hours will count only one time in the overall hours earned.

Concentration:

ACS Certification (p.)

Major in Chemistry (No Concentration)

Code	Title	Credit Hours
Restricted Electives		13
Complete a minimum of thirteen credit hours from the following courses. At least five credit hours must be CHE 300 or higher		
BIO 106	Principles of Cell Biology	
BIO 205	Genetics	
CHE 308	History and Philosophy of the Natural Sciences	
CHE 420	Chemistry Laboratory Assistantship ¹	
CHE 441	Advanced Inorganic Chemistry	
CHE 442	Inorganic Synthesis	
CHE 450	Independent Research/Project ²	
CHE 465	Chemistry Teaching: Methods and Techniques	
CHE 470	Biochemistry II	
CHE 475	Internship in Chemistry ²	
CHE 480	Advanced Physical Chemistry	
CHE 490	Research in Chemistry ²	
CRJ 100	Introduction to Criminal Justice	
CSC 184	Introduction to Computer Programming	
ENT 201	Entrepreneurship I	
ENT 301	Entrepreneurship II	
ESC 111	Physical Geology	
ETC 200	Introduction to Technical Communication	
GEO 160	Physical Geography	
MAT 177	Calculus with Analytic Geometry II	
MAT 287	Multivariable Calculus	

¹ CHE 420 Chemistry Laboratory Assistantship may be repeatable for a total of 2 credit hours.

² CHE 450 Independent Research/Project, CHE 475 Internship in Chemistry, and CHE 490 Research in Chemistry may be repeated for a total of 3 credit hours each.

Major in Chemistry (ACS Certification Concentration)

Code	Title	Credit Hours
CHE 441	Advanced Inorganic Chemistry	3
CHE 480	Advanced Physical Chemistry	4
CHE 490	Research in Chemistry ¹	3
or CHE 470	Biochemistry II	
or CHE 475	Internship in Chemistry	
MAT 177	Calculus with Analytic Geometry II	3

or MAT 287	Multivariable Calculus
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Total Credit Hours**13**

¹ To satisfy requirements, CHE 490 Research in Chemistry must consist of three credit hours on a single project that culminates in a single written report. The three credit hours do not have to be completed in a single semester.

Chemistry majors may seek career specialization by adding one or more of the following other degree programs.

Forensic Science: Students seeking entrance to career in forensic science or a graduate program in forensic science are encouraged to add a Minor in Criminal Justice. Elective choices within the minor should be discussed with an advisor in Chemistry and/or Criminal Justice.

Health Professions: Students seeking entrance into professional programs in pharmacy, medicine, dentistry or similar programs may consider a Minor in Biology as they will complete several prerequisite biology courses. Elective choices within the minor should be catered toward specific entrance requirements, and should be discussed with an advisor in Chemistry and/or Biology.

Chemical Business: Students seeking a career in the chemical industry in sales, human resources, management, or business development are encouraged to complete a Minor in Business or Entrepreneurship. Elective choices within the minor should be discussed with an advisor in Chemistry and/or Business.

Scientific Writing: Students seeking a career in scientific writing or graduate programs are encouraged to complete a Minor in Technical Writing. Elective choices within the minor should be discussed with an advisor in Chemistry and/or English.

Secondary Teaching: Students seeking to become a secondary teacher (grades 9-12) should pair this major with the Master of Arts in Teaching, Secondary Education. This combination will ensure completion of both scientific and pedagogical content toward achievement of teaching certification through the Missouri Department of Elementary and Secondary Education. Note that other requirements beyond content must also be completed for certification, such as minimum GPA, a criminal background check, and standardized exams. Students seeking this career should consult with advisors in both Chemistry and Education.

Program Graduation Requirements

1. Earn an overall GPA of at least 2.0 and a major GPA of at least 2.0.

University Graduation Requirements

1. Earn a minimum of 120 credit hours (100 level and higher, maximum of 6 continuing education credit hours applicable).
2. Earn a minimum of 30 credit hours in upper-division courses. Lower-division transfer courses accepted as meeting upper-division departmental course requirements cannot be used to fulfill this requirement.
3. Earn 30 of the last 45 credit hours at MWSU in institutional coursework (exclusive of credit by examination).
4. Participate in required departmental and campus wide assessments.
5. Fulfill the Missouri Constitution requirement.
6. Successfully pass the Missouri Higher Education Civics Achievement exam.