

CHEMISTRY, B.S.

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudytext>) section of the *Guide*.

General Education	<ul style="list-style-type: none"> • Breadth—Humanities/Literature/Arts: 6 credits • Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits • Breadth—Social Studies: 3 credits • Communication Part A & Part B * • Ethnic Studies * • Quantitative Reasoning Part A & Part B *
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* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF SCIENCE (B.S.)

Students pursuing a Bachelor of Science degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either the Bachelor of Arts or the Bachelor of Science degree requirements.

BACHELOR OF SCIENCE DEGREE REQUIREMENTS

Mathematics Complete two courses of 3+ credits at the Intermediate or Advanced level in MATH, COMP SCI, or STAT subjects. A maximum of one course in each of COMP SCI and STAT subjects counts toward this requirement.

Foreign Language Complete the third unit of a foreign language.

L&S Breadth Complete:

- 12 credits of Humanities, which must include at least 6 credits of Literature; and
- 12 credits of Social Science; and
- 12 credits of Natural Science, which must include 6 credits of Biological Science and 6 credits of Physical Science.

Liberal Arts and Science Coursework Complete at least 108 credits.

Depth of Intermediate/Advanced Coursework Complete at least 60 credits at the Intermediate or Advanced level.

Major Declare and complete at least one major.

Total Credits Complete at least 120 credits.

UW-Madison Experience Complete both:

- 30 credits in residence, overall, and
- 30 credits in residence after the 86th credit.

Quality of Work

- 2.000 in all coursework at UW–Madison
- 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR MATH & PHYSICS

Code	Title	Credits
Mathematics (1 course)		4-5
MATH 222	Calculus and Analytic Geometry 2	
MATH 276	Topics in Calculus II	
Physics		10
<i>First Introductory Course (1 course)</i>		
PHYSICS 207	General Physics	
PHYSICS 201	General Physics	
PHYSICS 247	A Modern Introduction to Physics	
<i>Second Introductory Course (1 course)</i>		
PHYSICS 208	General Physics	
PHYSICS 202	General Physics	
PHYSICS 248	A Modern Introduction to Physics	
Total Credits		14-15

CHEMISTRY CORE COURSES

Code	Title	Credits
General Chemistry (1 course)		5
CHEM 104	General Chemistry II	
CHEM 109	Advanced General Chemistry	
CHEM 115	Chemical Principles I ¹	
Analytical Chemistry (1 course)		4-5
CHEM 329	Fundamentals of Analytical Science	
CHEM 116	Chemical Principles II	
CHEM 327	Fundamentals of Analytical Science	
Inorganic Chemistry (1 course)		4
CHEM 311	Chemistry Across the Periodic Table	
Organic Chemistry (3 courses) ²		8
CHEM 343	Organic Chemistry I	
CHEM 345	Organic Chemistry II	

CHEM 344	Introductory Organic Chemistry Laboratory	
Physical Chemistry		8-9
Part 1 (1 course)		
CHEM 561	Physical Chemistry	
CHEM 565	Biophysical Chemistry	
CBE 310	Chemical Process Thermodynamics	
M S & E 330	Thermodynamics of Materials	
Part 2 (1 course)		
CHEM 562	Physical Chemistry	
Part 3 (2 courses)		
CHEM 563	Physical Chemistry Laboratory I	
CHEM 564	Physical Chemistry Laboratory II	
Total Credits		29-31

ADVANCED CHEMISTRY AND LABORATORY

Code	Title	Credits
Advanced Non-laboratory Coursework		5
CHEM 116	Chemical Principles II (1 credit counts towards requirements) ³	
CHEM/ M S & E 421	Polymeric Materials	
CHEM/CBE 505	Aspects of Industrial Chemistry and Business Fundamentals	
CHEM 509	Senior Seminar	
CHEM 511	Advanced Inorganic Chemistry	
CHEM 524	Chemical Instrumentation (2 credits count towards requirement) ⁴	
CHEM 547	Advanced Organic Chemistry	
CHEM 555	Study Abroad in Advanced Chemistry	
CHEM 565	Biophysical Chemistry (1 credit counts towards requirement) ³	
CHEM 575	Advanced Topics in Chemistry	
CHEM 605	Spectrochemical Measurements	
CHEM 629	Atmospheric Chemical Mechanisms	
CHEM 654	Materials Chemistry of Polymers	
BIOCHEM 501	Introduction to Biochemistry or BIOCHEM 507 General Biochemistry I	
BIOCHEM 508	General Biochemistry II	
BIOCHEM/ NUTR SCI 510	Nutritional Biochemistry and Metabolism	
BIOCHEM 625	Mechanisms of Action of Vitamins and Minerals	
CBE 440	Chemical Engineering Materials	
CBE 540	Polymer Science and Technology	
CBE 547	Introduction to Colloid and Interface Science	
Additional Laboratory Work		3
CHEM 346	Intermediate Organic Chemistry Laboratory	
CHEM 524	Chemical Instrumentation (1 credit counts towards requirement) ⁴	

CHEM 681 & CHEM 682	Senior Honors Thesis and Senior Honors Thesis	
CHEM 691 & CHEM 692	Senior Thesis and Senior Thesis	
CHEM 699	Directed Study	
BIOCHEM 681 & BIOCHEM 682	Senior Honors Thesis and Senior Honors Thesis	
BIOCHEM 691 & BIOCHEM 692	Senior Thesis and Senior Thesis	
BIOCHEM 699	Special Problems	
CBE 599	Special Problems	
Total Credits		8

RESIDENCE AND QUALITY OF WORK

- 2.000 GPA in all CHEM and major courses
- 2.000 GPA in at least 15 upper-level credits in the major in residence. Upper-level work includes CHEM 346, CHEM/M S & E 421, CHEM/CBE 505, CHEM 509, CHEM 511, CHEM 524, CHEM 547, CHEM 555, CHEM 561, CHEM 562, CHEM 563, CHEM 564, CHEM 565, CHEM 575, CHEM 605, CHEM 629, CHEM 654, CHEM 681, CHEM 682, CHEM 691, CHEM 692, CHEM 699, BIOCHEM 501, BIOCHEM 507, BIOCHEM 508, BIOCHEM/NUTR SCI 510, BIOCHEM 625, BIOCHEM 681, BIOCHEM 682, BIOCHEM 691, CHEM 692, BIOCHEM 699, CBE 310, CBE 440, CBE 540, CBE 547, CBE 599, and M S & E 330.
- 15 credits in CHEM, taken on the UW–Madison campus

HONORS IN THE MAJOR

Students may declare Honors in the Chemistry Major in consultation with the chemistry major advisor (<https://www.chem.wisc.edu/content/undergraduate-advising/>). To be admitted to the Honors Program in Chemistry, students must have declared a major in chemistry and achieved a 3.200 overall GPA. They must also have achieved a 3.200 GPA in all CHEM courses taken and courses accepted for the major.

HONORS IN THE CHEMISTRY MAJOR REQUIREMENTS

To earn Honors in the Major in Chemistry, students must satisfy both the requirements for the major (above) and the following additional requirements:

- Earn a 3.300 overall university GPA
- Earn a 3.300 GPA for all CHEM courses and all major courses
- Complete an additional 3 credits, for a total of 8 credits, of advanced non-laboratory work. This requirement is met by the same credits and courses that are accepted for "Advanced Non-laboratory Work" in the regular major.
- Complete a two-semester Senior Honors Thesis in CHEM 681 Senior Honors Thesis and CHEM 682 Senior Honors Thesis, for a total of 6 credits.

FOOTNOTES

1

Enrollment in CHEM 115 and CHEM 116 is by invitation only. Entering first-year students are screened on the basis of high school record and placement scores, and additional information is sent to those who might be eligible.

2

CHEM 343 must be taken first, followed by CHEM 345. CHEM 344 may be taken concurrently with or after CHEM 345.

3

One credit from each of CHEM 116 and CHEM 565 count toward the required 5 credits of Advanced Non-laboratory Coursework.

4

Only 2 of the 3 credits from CHEM 524 count towards Advanced Non-laboratory Coursework. The remaining 1 credit counts towards the Additional Laboratory Work requirement.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.