

# University of Wisconsin–Madison

## Department of Chemistry

### Curriculum Guide for Chemistry Majors 2019 - 2020



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*Considering a major in Chemistry? Join our prospective chemistry majors email list!*

<http://chem.wisc.edu/content/majoring-chemistry>

*To schedule an advising appointment with the chemistry major advisor, go to:*

<http://chem.wisc.edu/content/undergraduate-advising>

*or visit the Starfish app in MyUW*

Undergraduate Chemistry Office  
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# REQUIRED CHEMISTRY COURSES FOR THE CHEMISTRY MAJOR

(37 credits)

## A. General Chemistry

Choose one from:

- CHEM 109 Advanced General Chemistry (5 cr; fall only)
- CHEM 109H Advanced General Chemistry Honors (5 cr; fall only)
- CHEM 115 Chemical Principles I (5 cr; fall only; enrollment by invitation)
- CHEM 104 (5 cr) (CHEM 103 is a prerequisite.)

CHEM 109, 109H, or 115 is recommended, but CHEM 103/104 also fulfills this requirement.

## B. Analytical Chemistry<sup>1</sup>

CHEM 329 Fundamentals of Analytical Science (4 cr; fall or spring)  
OR CHEM 116 Chemical Principles II (5 cr; spring only; only open to students who took CHEM 115)

## C. Inorganic Chemistry

CHEM 311 Chemistry Across the Periodic Table (4 cr; fall or spring)

## D. Organic Chemistry (All courses offered fall, spring, and summer.)

CHEM 343 Introductory Organic Chemistry (3 cr)  
CHEM 344 Introductory Organic Chemistry Laboratory (2 cr)  
CHEM 345 Intermediate Organic Chemistry (3 cr)

## E. Physical Chemistry (All courses offered fall and spring; labs also offered summer.)

CHEM 561 Physical Chemistry I (3 cr) or CHEM 565 Biophysical Chemistry (4 cr)<sup>2</sup>  
CHEM 562 Physical Chemistry II (3 cr)  
CHEM 563 Physical Chemistry Laboratory I (1 cr)  
CHEM 564 Physical Chemistry Laboratory II (1 cr)

## F. Advanced Non-Laboratory Coursework (5 cr) Choose from any 500-600 level courses in chemistry that are not research courses. Options include:

CHEM 421/MS&E 421 Polymeric Materials (3 cr; spring only)	BIOCHEM 501 Introduction to Biochemistry (3 cr) or
CHEM 505/CBE 505 Industrial Chemistry (3 cr)	BIOCHEM 507 General Biochem I (3 cr; fall only)
CHEM 511 Inorganic Chemistry (3 cr; spring only)	BIOCHEM 508 General Biochemistry II (3 cr; spring only)
CHEM 524 Chemical Instrumentation (3 cr; only 2 cr	BIOCHEM/NUTR SCI 510 Nutritional Biochemistry &
count for advanced non-lab work; spring only)	Metabolism (3 cr.; spring only)
CHEM 547 Advanced Organic Chemistry (3 cr; fall only)	BIOCHEM 625 Mechanisms of Action of Vitamins &
CHEM 629 Atmospheric Chemical Mechanisms (3 cr;	Minerals (2 cr.; spring only)
every other fall)	<i>The extra one credit associated with CHEM 116 and CHEM 565</i>
CBE 440 Chemical Engineering Materials (3 cr)	<i>also count towards the 5 credits.</i>
CBE 540 Polymer Science & Technology (3 cr)	<i>BIOCHEM 501 and BIOCHEM 507 cannot both count towards</i>
CBE 547 Introduction to Collide & Interface Science (3 cr)	<i>the 5 credits.</i>

## G. Additional Laboratory Work (3 cr) Choose from the following lab courses:

CHEM 346 Intermediate Organic Laboratory	BIOCHEM 691/692 Senior Thesis
(1-2 cr; fall only)	BIOCHEM 699 Special Problems
CHEM 524 Chemical Instrumentation	BMOLCHEM 504 Human Biochemistry Lab <sup>3</sup>
(3 cr; only 1 cr counts for lab work; spring only)	(3 cr; only 2 cr count for lab work)
CHEM 681/682 Senior Honors Thesis	CBE 599 Special Problems
CHEM 691/692 Senior Thesis	<i>Note that students need to first find a research advisor</i>
CHEM 699 Directed Study	<i>before enrolling in one of the directed study or thesis</i>
BIOCHEM 681/682 Senior Honors Thesis	<i>courses.</i>

<sup>1</sup> Students are strongly encouraged to take either CHEM 329 or CHEM 116 (if invited) to fulfill the Analytical Chemistry requirement. However, CHEM 327 may be substituted for this requirement.

<sup>2</sup> CBE 310 Chemical Process Thermodynamics or MS&E 330 Thermodynamics of Materials may be substituted for this requirement. These options are only recommended for students who are also majoring CBE or MS&E.

<sup>3</sup> BMOLCHEM 504 is not recommended for students who are also majoring in Biochemistry, because it overlaps significantly with required biochemistry course work.

## MATH AND PHYSICS REQUIREMENTS

Calculus and calculus-based physics classes are also required for the chemistry major.

### Mathematics

MATH 221 Calculus and Analytic Geometry 1 (5 cr)

MATH 222 Calculus and Analytic Geometry 2 (4 cr)

MATH 234 Calculus-Functions of Several Variables (4 cr) and MATH 320 Linear Algebra and Differential Equations (3 cr) are also highly recommended, although they are not required. Students with MATH 221 and 222 credit from AP Calculus are especially encouraged to take further math.

### Physics

PHYS 207 General Physics or PHYS 201 General Physics or PHYS 247 A Modern Introduction to Physics

PHYS 208 General Physics or PHYS 202 General Physics or PHYS 248 A Modern Introduction to Physics

PHYS 207/208 is the preferred sequence for chemistry majors, while PHYS 201/202 is recommended for engineering students. PHYS 247/248 is an honors sequence that may be taken by chemistry majors as well.

## COURSE SELECTION AND SEQUENCING

### Introductory Chemistry Courses

Students intending to major in chemistry should take general chemistry in their first year. There are three different options for introductory chemistry, and the best choice depends on the student's background. Students with one year of high school chemistry often take the CHEM 103 General Chemistry I/CHEM 104 General Chemistry II sequence. Students with a strong high school chemistry background (usually two years) and placement into at least first semester calculus are eligible for CHEM 109 Advanced General Chemistry, an advanced, fast-paced option that covers the breadth of general chemistry in one semester. CHEM 109 is offered only in the fall semesters and an honors level section is available. Students with exceptionally strong math and science backgrounds may be invited to apply for the CHEM 115 Chemical Principles I/CHEM 116 Chemical Principles II sequence. This honors sequence is more math and physics based than the other options, features a small class size, and provides an opportunity for research during the second semester. The 115/116 sequence satisfies both the general and analytical chemistry requirements for the major.

### Mathematics and Physics

Most chemistry majors complete calculus during their first year. Physics is most often taken in the second year. Students interested in chemistry with a biological emphasis will usually take biology in their second year and then take physics and biochemistry in their third year.

### Intermediate Level Chemistry Courses

Chemistry majors take intermediate level courses in three different areas of chemistry: analytical (CHEM 329), inorganic (CHEM 311), and organic (CHEM 343, CHEM 345, and CHEM 344). These areas are independent from one another and do not need to be taken in a particular order. Below are some points for students to consider when making their selections.

- It is recommended that students complete the required 300-level courses by the end of their third year.
- Opportunities for taking advanced electives or for doing research in one area may be enhanced somewhat by an earlier start in that area.

- Students are strongly encouraged to take the laboratory courses CHEM 311, CHEM 329, and CHEM 344 in three different semesters. In particular, CHEM 329 and CHEM 344 are especially challenging to take in the same semester, because they both include eight hours of laboratory time per week.
- CHEM 344 Introductory Organic Chemistry Laboratory may be taken concurrently with or after CHEM 345 Intermediate Organic Chemistry. Some students prefer to take the two concurrently because the content of these courses complement each other well. Others prefer to take 344 after 345 so that they have more time to process and assimilate the material.
- An honors sequence for students especially interested in the chemical sciences is offered in organic chemistry, CHEM 343 (fall only) and CHEM 345 (spring only). Enrollment is by invitation and based on grades in prior chemistry coursework.
- Students desiring a more compressed schedule may opt to take either CHEM 311 or CHEM 329 (which include labs) concurrently with the non-laboratory courses CHEM 343 or CHEM 345 (if not also taking the organic lab).

### **Physical Chemistry**

It is recommended that students begin physical chemistry by the second semester of their third year. Calculus, physics, and analytical chemistry are all prerequisites. Most chemistry majors take CHEM 561 Physical Chemistry for their first physical chemistry course. Students who are also interested in biochemistry usually take CHEM 565 Biophysical Chemistry instead. Chemistry majors who are also majoring in Chemical & Biological Engineering take CBE 310 Chemical Process Thermodynamics. It is recommended that CHEM 563 Physical Chemistry Laboratory be taken after CHEM 561 (usually concurrently with CHEM 562 Physical Chemistry), and that CHEM 564 Physical Chemistry Laboratory be taken after completion of CHEM 562. Especially strong students needing to complete physical chemistry in two semesters may take CHEM 563 concurrently with CHEM 561 (or 565) and CHEM 564 concurrently with CHEM 562.

### **Additional Laboratory Work Requirement and Research Involvement**

The additional laboratory work requirement for the major can be satisfied through either research and/or additional course work. Either way, it is exceptionally difficult to complete this requirement in one semester, and students need to plan ahead. It is strongly encouraged that students who are interested in research begin looking for a research group by the end of their sophomore year and no later than the first semester of their junior year. Although it is possible to find a research group after this point, it is much more difficult. Should you not find a research group, this timeframe would also allow you time to plan accordingly for the required courses you would need in place of research. The non-research course options are CHEM 346, CHEM 524, and BMOLCHEM 504, and students without research credits will need two of these courses. At any point should you have questions regarding finding research or the courses you would need to take, please reach out to the Chemistry Advisor, Katie McCullough: [klmccullough@wisc.edu](mailto:klmccullough@wisc.edu) or the Undergraduate Research Office: [chem\\_ugr\\_research@chem.wisc.edu](mailto:chem_ugr_research@chem.wisc.edu).

## **FOUR-YEAR PLANS FOR THE CHEMISTRY MAJOR**

The next pages show a few possible course sequences for the chemistry courses required for the major. These pathways are all based on a four-year undergraduate degree. Those students who plan to take longer and/or take courses in the summer can decompress these schedules. Variations to these plans are possible, as long as the student pays attention to required requisites. In presenting these pathways we hope that students will have enough information to tailor course sequences to best achieve their educational objectives.

### Pathway 1 – Starting with CHEM 109

Pathway 1 has students completing general chemistry (CHEM 109) their first semester and beginning the intermediate level courses the second semester of their first year. In an alternative version of this plan, students could start the organic sequence (CHEM 343) the second semester of their first year and postpone analytical (CHEM 329) to the second semester of their second year.

	Fall Semester	Cr	Spring Semester	Cr
<b>Year 1</b>	CHEM 109 MATH 221	5 5	CHEM 329 MATH 222	4 4
<b>Year 2</b>	CHEM 343 PHYSICS 207 Research (optional)	3 5 1-3	CHEM 345 CHEM 344 (or summer) PHYSICS 208 Research (optional)	3 2 5 1-3
<b>Year 3</b>	CHEM 311 CHEM 561 Research (optional)	4 3 1-3	CHEM 562 CHEM 563 Research or Additional lab credits	3 1 1-3
<b>Year 4</b>	CHEM 564 CHEM Elective (non-lab) Research or Additional lab credits	1 3 1-3	CHEM Elective (non-lab) Research (optional)	3 1-3

### Pathway 2 – Starting with CHEM 103/104

Pathway 2 includes completing general chemistry (CHEM 103 and 104) and the required math courses the first year and beginning the intermediate courses the second year. A variation of this plan could be to take CHEM 329 in the fall of the second year and start organic chemistry in the spring of the second year.

	Fall Semester	Cr	Spring Semester	Cr
<b>Year 1</b>	CHEM 103 MATH 221	4 5	CHEM 104 MATH 222	5 4
<b>Year 2</b>	CHEM 343 PHYSICS 207 Research (optional)	3 5 1-3	CHEM 345 CHEM 344 (or summer) PHYSICS 208 Research (optional)	3 2 5 1-3
<b>Year 3</b>	CHEM 329 CHEM Elective (non-lab) Research (optional)	4 3 1-3	CHEM 311 CHEM 561 Research or Additional lab credits	4 3 1-3
<b>Year 4</b>	CHEM 562 CHEM 563 Research or Additional lab credits	3 1 1-3	CHEM 564 CHEM Elective (non-lab)	1 3

### Pathway 3 – Students Pursuing Careers in Chemistry with Biological Emphasis

Pathway 3 provides options for students interested in fields with a biological emphasis, such as chemical biology, biochemistry, or pharmacy. Some students might find the second-year of the plan below to be especially challenging. One variation would be to postpone CHEM 329 until the fall of the third year and move CHEM 311 to spring of the third year. Additionally, one or two of the organic courses could be taken during a summer term.

	Fall Semester	Cr	Spring Semester	Cr
<b>Year 1</b>	CHEM 103 MATH 221	4 5	CHEM 104 MATH 222	5 4
<b>Year 2</b>	CHEM 329 CHEM 343 BIO 151	4 3 5	CHEM 345 CHEM 344 (or summer) BIO 152	3 2 5
<b>Year 3</b>	CHEM 311 BIOCHEM 507 PHYSICS 207	4 3 5	PHYSICS 208 BIOCHEM 508 Research or Additional lab credits	5 3 1-3
<b>Year 4</b>	CHEM 565 CHEM 563 Research or Additional lab credits	4 1 1-3	CHEM 562 CHEM 564 Research (optional)	3 1 1-3

### Pathway 4 – Students Planning to Study Abroad

It is definitely possible for chemistry majors to study abroad and still graduate in four years! Pathway 4 provides one possible route. It is sometime difficult to satisfy specific chemistry major requirements while abroad, because chemistry curriculum and sequencing at foreign institutions can differ significantly from ours. Chemistry majors who study abroad often focus on satisfying breadth and foreign language requirements while abroad. Advance planning is essential. Summer study abroad programs are also an option. Students interested in studying abroad should consult early with the International Programs Office (<https://www.studyabroad.wisc.edu/>) and the chemistry advisor.

	Fall Semester	Cr	Spring Semester	Cr
<b>Year 1</b>	CHEM 103 MATH 221	4 5	CHEM 104 MATH 222	5 4
<b>Year 2</b>	CHEM 329 PHYSICS 207 Research (optional)	4 5 1-3	CHEM 311 CHEM 343 PHYSICS 208 Research (optional)	4 3 5 1-3
<b>Year 3</b>	CHEM 345 (or summer) CHEM 344 Research (optional)	3 2 1-3	Study Abroad	
<b>Year 4</b>	CHEM 561 CHEM 563 (or spring) CHEM Elective (non-lab) Research or Additional lab credits	3 1 3 1-3	CHEM 562 CHEM 564 (or summer) CHEM Elective (non-lab) Research or Additional lab credits	3 1 3 1-3

# COLLEGE OF LETTERS & SCIENCE

## B.A. and B.S. Degree Requirements, at a glance

*Requirements effective for students matriculating to any post-secondary institution May 21, 2007 and later*

### TOOLS for Learning and Communication

#### University General Education Requirements

- One Quantitative Reasoning A course (q)
- One Quantitative Reasoning B course (r)
- One 3+ credit Ethnic Studies course (e)
- One Communication A course (a)
- One Communication B course (b)

#### Mathematics

##### **Bachelor of Arts**

Met with GER Quantitative A & B (above)

##### **Bachelor of Science**

Two 3+credit courses at I/A level (MATH, COMP SCI, STAT)  
(Limit one each: COMP SCI, STAT)

*Minimum Math Competency demonstrated by placement score or course is required for all students*

#### Foreign Language

##### **Bachelor of Arts**

Fourth level of a language, **or**  
Third level of a language **and** Second level of another language

##### **Bachelor of Science**

Third level of a language

### BREADTH of Exploration in the Liberal Arts & Sciences

**Humanities:** 12 credits (L,H,X,Z)  
6 credits Literature (L)

**Social Science:** 12 credits (S,W,Y,Z)

**Natural Science:** 12 credits (B,P,N,W,X,Y)

##### **Bachelor of Arts**

One 3+ credit Biological science course (B)  
One 3+ credit Physical Science course (P)

##### **Bachelor of Science**

6 credits Physical Science (P)  
6 credits Biological Science (B)

**108 Liberal Arts & Sciences credits (C)**

### DEPTH of inquiry in the Liberal Arts & Sciences

**Mastery of Intermediate/ Advanced Work:** 60 credits (I,A,D)

**Major:** Declare at least one major (and complete all declared majors)

### QUANTITY & QUALITY of Work

*There are limits on credits for certain courses. Consult this Catalog and your DARS for more information*

**120 Total Credits**

#### UW-Madison Experience

30 credits **in residence** overall  
30 credits **in residence** after the 90th credit

15 upper-level credits **in residence** in each major  
15 credits **on campus** in each major/Department

#### Minimum GPAs

2.0 in all courses at UW-Madison  
2.0 in I/A/D Level work at UW-Madison

2.0 in all major &major department courses  
2.0 in upper-level major &major courses

*In all categories, requirements listed are minimums. Further study, especially in Breadth and Depth, is encouraged.*



# CHEMISTRY UNDERGRADUATE RESEARCH



The chemistry department highly encourages students pursuing a chemistry degree to get involved in research. Research projects give students the opportunity to experience the most up-to-date research equipment and techniques, and the opportunity to apply what they have learned in class to 'real-life' situations. Many undergraduates become co-authors on research publications in the scientific literature and have the opportunity to present their work at professional conferences around the world. Participation in undergraduate research also gives you invaluable marketable skills that become crucial when applying to graduate programs, industrial jobs, and/or professional schools.

## Types of Research Opportunities:

There are many ways to get involved in research; **you may do research for course credit, pay or as a volunteer.** Regardless, several blocks of time (*at least 3-4 hours*) are usually required each week to carry out your project.

**CHEM 260:** 1-credit seminar course designed to help undergraduates find a research mentor, learn how to effectively define an independent research project, learn about the roles and responsibilities of a researcher, and learn how to effectively communicate your research to the greater scientific community. This course is designed to be taken concurrently with 1-3 independent research credits and is offered both in the Fall and Spring semesters.

**Laboratory credit:** Every chemistry major is required to complete 3 credits of additional laboratory work. One way to satisfy this requirement is to get involved in independent research and enroll in CHEM 699, CHEM 681/682, or CHEM 691/692. To enroll for research credits, you must first find a research advisor who will sponsor you in his/her lab for the semester. Both the professor and student should agree on a study plan and determine the number of credits to be earned. Finally, you must complete a [chemistry research authorization form](https://undergradresearch.chem.wisc.edu/research-authorization-form/) and return it to Dr. Cheri Barta in Chemistry, Room 2110. The form can be found on the UW chemistry website (<https://undergradresearch.chem.wisc.edu/research-authorization-form/>).

**CHEM 299:** Directed Study (1-4 credits). Open to freshmen and sophomores at the consent of the instructor. *This course does not count towards the 3 credits of additional laboratory work.*

**CHEM 699:** Directed Study (1-6 credits). Open to students who have completed at least one semester of research or students that have junior or senior standing (54 credits or more). Must also have consent of the instructor.

**CHEM 681/682:** Senior Honors Thesis (2-4 credits/semester). Must be a senior honors candidate, have consent of the instructor, enroll in both CHEM 681 and CHEM 682 for consecutive semesters for a total of 6 credits, and complete a research thesis at the end of CHEM 682.

**CHEM 691/692:** Senior Thesis (2-6 credits/semester). Recommended for seniors; must have consent of the instructor, enroll in both CHEM 691 and CHEM 692 for consecutive semesters for a minimum of 4 credits total, and complete a research thesis at the end of the CHEM 692.

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<sup>7</sup> One credit hour in research corresponds to 3 to 4 hours of research per week for 15 weeks (45–60 hours per semester).

## Finding a mentor:

The hardest part of getting involved in research is finding a research mentor. You may be lucky and find a research mentor immediately. Most often, however, you will need to contact several people multiple times before finding a research lab that is taking undergraduate students. Don't get discouraged though—if you are having a hard time finding an advisor, come talk to the chemistry undergraduate research coordinator (Dr. Barta, email: [chem\\_ugr\\_research@chem.wisc.edu](mailto:chem_ugr_research@chem.wisc.edu), Office: Chemistry RM #2110, Phone: 608-262-6533) or check out other helpful hints on the UW chemistry undergraduate research website (<https://undergradresearch.chem.wisc.edu/>). Just remember...although getting involved in research can be the most valuable experience in your scientific career, it also takes a lot of patience, perseverance and commitment.

## How to get involved:

### 1) Decide what research interests you

Chemical Biology, Inorganic, Chemical Education, Analytical, Organic, Materials, Physical/theoretical, Environmental and Energy (<https://undergradresearch.chem.wisc.edu/chemistry-research-at-uw-madison/>)

2) **Identify Potential Faculty.** Talk to your Professors, your TA's and/or your fellow students; stop by the Undergraduate Research office (2110 Chemistry); look at the UW [chemistry undergrad research website](#). Pick four or five projects that interest you.

3) **Contact potential faculty.** Either write a compelling, well-thought-out email or stop by their office hours. HINT: if you write an email, DO NOT write a generic email saying, "Hi! My name is \_\_\_\_ and I'm interested in doing research with you. When can I start?" You'll almost always get NO response. You must put some time into this if you are serious about doing research **Students that have the most success in joining their research group of choice are very proactive.** [Hints for writing a good email](#) can be found on our website (<https://undergradresearch.chem.wisc.edu/hints-for-writing-a-good-email/>).

4) **Follow-up.** Professors are VERY busy. If you don't hear anything back in a week, try emailing again. If you still don't hear back, stop by their office—don't assume they will have time to meet right then and there—but ask if you can set-up a meeting to discuss their research at another time. If you are having trouble finding research, contact the undergraduate research director to [set up a meeting](#) (<https://undergradresearch.chem.wisc.edu/get-started-meeting/>).

5) **Fill out a 'chemistry research authorization form' and return it to 2110 CHEM.** This form needs to be filled out every semester regardless if you are doing research for class credit, or just as a volunteer. (<https://undergradresearch.chem.wisc.edu/research-authorization-form/>)

## The earlier the better:

We highly encourage freshman to start thinking about research during their first year on campus in hopes that you will get involved in undergraduate research during your second year. If you start early in your academic career, you will have more chances to explore different research possibilities, more opportunities to develop your scientific knowledge, and more experiences to prepare you for your future career.

## CHEMISTRY HONORS IN THE MAJOR

Students may declare Honors in the Chemistry Major in consultation with the chemistry major advisor (<http://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.

Candidates for honors in the major should select a faculty research mentor by the fall semester of their junior year. Mentors may come either from chemistry or from a related department such as chemical engineering, pharmacology, or biochemistry. Students who choose a mentor from outside the chemistry department are responsible for providing the mentor with the requirements for the honors major in chemistry.

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

- Earn a 3.300 overall university GPA.
- Earn a 3.300 GPA for all CHEM courses and all courses accepted for the major.
- Complete an additional 3 credits, for a total 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. This requirement may also be met by:
  - Additional research credits, beyond any credits being used to satisfy the 3 additional laboratory credits required for the major; or
  - Additional breadth courses in other related disciplines
- Complete the two-semester sequence CHEM 681/682 Senior Honors Thesis for a total of 6 credits.
- Present their work to their peers in a symposium

Additional breadth courses for advanced work may come (for example) from engineering, physics, molecular biology, computer science, water chemistry, and business. Advanced level courses should be chosen in consultation with the student’s research mentor. Courses required for the chemistry major cannot be used to simultaneously satisfy the advanced course requirement for honors in the major.

Several opportunities for students to present their work at a symposium are available near the end of the spring semester every year. These opportunities include the Chemistry Undergraduate Poster Session held every May, the campus-wide Undergraduate Symposium in April, and the L&S Senior Honors Thesis Symposium also in April.

## CHEMISTRY DEPARTMENT SCHOLARSHIPS AND AWARDS

Through the generosity of alumni and other friends of the department, the Department of Chemistry is able to offer academic year scholarships and summer research support. In 2019, the Department awarded more than 40 undergraduate awards totaling over \$150,000. Any student who is a chemistry major or is conducting research with a chemistry faculty member is eligible to apply for the scholarships. An overall GPA of at least 3.0 is required, and awards are based on both merit and financial need. Students may apply for academic year scholarships and/or summer research support. The academic year scholarships range from \$500 to \$7,000, while summer research awards were \$5,000 in 2019. More information about chemistry scholarships can be found at: <http://chem.wisc.edu/content/chemistry-scholarships>.

To learn about other scholarships offered at UW-Madison, visit <https://wisc.academicworks.com/> and the Office of Student Financial Aid (<http://finaid.wisc.edu/>).

## CAREER AND INTERNSHIP RESOURCES

As a student, it is important to work on your personal and professional development while here at UW-Madison. This will help prepare you for your next steps after graduation, and it is never too early to get started! Listed below are a couple of campus resources available to you. In addition, we will notify you via email and on our resource bulletin boards (outside the Undergraduate Office, Room 1328) of additional opportunities. You can also visit our Career Opportunities page at: <https://www.chem.wisc.edu/content/career-opportunities>

### CAREER EXPLORATION CENTER (CEC)

The CEC is the leading campus resource for UW-Madison undergraduates who need help exploring majors and careers. They help students focus on their interests, values, strengths, and personality to give them the tools they need to make decisions about their careers and their futures.

#### Location and Contact Information

114 Ingraham Hall | Email: [cec@ccas.wisc.edu](mailto:cec@ccas.wisc.edu) | Phone: 608.265.4497 | Website: <https://cec.ccas.wisc.edu/>

### SUCCESSWORKS AT THE COLLEGE OF LETTERS & SCIENCE

SuccessWorks is a personal and professional development center just for L&S students, helping you connect with the advisors, alumni, and employers who can help you land the jobs and internships you're looking for! Whether you're a first-year student or a senior, you can receive help on resume writing, interview skills, internships, networking, and anything else you need to help you prepare for graduation. They also work with students on their graduate school application timelines.

#### Location and Contact Information

711 State Street, Suite 300 (3rd floor of the bookstore) | Email: [SuccessWorks@ls.wisc.edu](mailto:SuccessWorks@ls.wisc.edu)  
Phone: 608.262.3921 | Website: <https://careers.ls.wisc.edu/>

### INTER-LS 210 – L&S CAREER DEVELOPMENT: TAKING INITIATIVE

The goal of this **one-credit course** is to give you the tools you need to be able to seek out knowledge and skills as you make future career and life decisions. Over the semester, you will produce an ePortfolio in which you will track your personal growth and progress, demonstrate your ability to apply these theories, and produce job tools that you can build upon in the future, such as an internship/job application, skills assessment, and interview of a professional.

### INTER-LS 215 – COMMUNICATING ABOUT CAREERS

This **three-credit course** explores the meaning and value of a liberal arts and sciences education for careers in the global, technological, and multicultural workplace of the 21<sup>st</sup> century. Through a series of individual and collaborative research and communication assignments, learn to critically analyze the career and education implications of a diverse and digital workplace, and to critically reflect on strengths and values to prepare to connect college work with lifelong career success. **This course also fulfills the COMM B requirement.**

### HANDSHAKE

Handshake (<https://careers.wisc.edu/handshake/>) is UW-Madison's primary recruitment and career event management tool. Students can use Handshake to explore career events, apply for jobs and internships, connect with potential employers, and manage campus interviews.

# CHEMISTRY MAJOR CHECKLIST

We encourage you to complete this checklist before you graduate! Your time as a student will go quickly, so we want to make sure that you are taking advantage of all the great opportunities UW-Madison has to offer!

Please note that what is listed below are suggestions, not requirements for the chemistry major.



## JOIN A STUDENT ORG

Whether it be one of our chemistry student organizations or one of the hundreds of others on campus, we encourage you to be part of something you're excited about!

Visit: <https://win.wisc.edu/>

## ENROLL IN INTER-LS 210

This one credit course gives you the tools you need to be able to seek out knowledge and skills as you make future career and life decisions.

## ATTEND THE CAREER & INTERNSHIP FAIR

Offered in fall and spring semesters, the fair connects UW-Madison students with over 320 employers from around the world!

<https://careerfair.wiscweb.wisc.edu>

## VISIT SUCCESSWORKS

Located on the 3rd floor of the bookstore, stop by this personal and professional development center for L&S students. Develop your interview skills, get help on your resume, learn about internships, and more!

## DEVELOP A RESUME AND COVER LETTER

Keep track of volunteering, research, jobs, internships, and other experiences you have that can be added to your resume and cover letter. Whether you go into industry or graduate school after graduation, a strong resume is essential! Visit SuccessWorks, the Writing Center, or workshop events for assistance!

## JOIN HANDSHAKE

Utilize UW-Madison's primary recruitment and career event management tool to have access to over 200,000 job and internship opportunities nationwide!

<https://careers.wisc.edu/handshake/>

## GET INVOLVED WITH RESEARCH

Find a research group, the sooner the better! Research also fulfills chemistry major requirements. Learn how to get involved at: [undergradresearch.chem.wisc.edu](http://undergradresearch.chem.wisc.edu)

## ATTEND A CHEMISTRY CAREER EVENT

Offered each semester, attend a career panel, visit with employers, or get help with your resume and cover letter.

## NETWORK

Visit office hours, meet with instructors, attend events, make new friends, and put yourself out there!

## HAVE FUN!

Eat ice cream at the terrace, go to a Badger football game, try a new restaurant on State Street. Enjoy your time as a student in this great city!