CHEMISTRY, PHD

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (https://guide.wisc.edu/graduate/#requirementstext) and policies (https://guide.wisc.edu/graduate/#policiestext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirement	Detail
Minimum Credit Requirement	51 credits
Minimum Residence Credit Requirement	32 credits
Minimum Graduate Coursework Requirement	26 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/).
Other Grade Requirements	The Department of Chemistry will not allow courses in which a student received a grade below a C to satisfy degree requirements.
Assessments and Examinations	During the second year, students complete the Thesis Background Exam (TBE). Students write a paper describing the background of their research, research progress, and future research plans and orally defend their understanding and research to their mentoring committee. During the third year, students complete the Original Research Proposal (RP) Exam. Students propose an original research project outside their area of study and write a paper describing the project. They orally defend their proposed project to their mentoring committee. At the end of the fourth year, students complete the fourth-year Review which determines the progress on dissertation and outlines final steps toward PhD completion. Student answers questions about their research and discusses responses with PI. If student and advisor agree on timeline and tasks, a formal meeting may not be required. If disagreements arise, the committee meets to provide guidance. At the end of the fifth year, if not defending their dissertation, students complete the 5th-Year review which determines the progress on dissertation and outlines final steps toward PhD completion. Student answers questions about their research and discusses responses with PI. If student and advisor agree on timeline and tasks, a formal meeting may not be required. If disagreements arise, the committee meets to provide guidance. In the 5th or 6th year, students write, defend, and submit their dissertation.
Language Requirements	There are currently no language requirements to obtain the PhD in Chemistry.
Graduate School Breadth Requirement	Doctoral students in Chemistry are not required to complete a doctoral minor or graduate/professional certificate as breadth is built into the major requirements.

REQUIRED COURSES

The Department of Chemistry has designated specific graduate courses as "core" courses. These courses are aligned with the various research areas (or paths) within the department and cover the fundamental concepts essential for conducting research in these areas. However, due to the interdisciplinary nature of research, students can choose core courses from any path that best support their research objectives. Any deviations from a path's recommended courses should be approved by the student's advisor (or faculty advisor at the start of their first semester). **To meet the requirement of a core course, students must take the course for the maximum number of credits offered.**

General PhD Requirements

Code	Title	Credits
Core		
CHEM 901	Seminar-Teaching of Chemistry [1]	1

CHEM 607	Laboratory Safety [1]	1
CHEM 980	Seminar: Review of Current Research [2]	4
CHEM 990	Research [3]	1-12
Seminar Requirement		
Students must enroll in one of the seminar courses below every fall and spring term for 0 credits until they obtain candidacy (dissertator status).		0-2
CHEM 900	Seminar-Inorganic Chemistry	
CHEM 920	Seminar-Analytical Chemistry	
CHEM 940	Seminar-Organic Chemistry	
CHEM 960	Seminar-Physical Chemistry [4]	
Breadth Requirement		
Students in the Chemistry PhD complete breadth by completing a minimum of 3 courses and a minimum of 8 credits with the following requirements:		8
1. Only STEM courses may count toward the breadth requirements. STEM courses must be approved by your advisor and may include courses in chemistry, physics, or other physical sciences; courses from the many biological disciplines including pharmacy- and medical-related courses; courses in engineering; or courses with a computer science, statistics, math, or computational focus.		
2. The Department of Chemistry encourages the graduate students to take graduate-level courses but will count undergraduate mid- or upper-level STEM courses (numbered 300-500) toward the breadth requirement if these courses are approved by the research advisor.		
3. The Department of Chemistry will only count repeatable STEM courses once (for example, courses for traineeships, RCR courses). However, special topics courses that have different topics can be counted more than once.		
4. CHEM 607, CHEM 901, CHEM 980, and CHEM 990 do not satisfy the breadth requirement.		
Path Courses		
Complete appropriate path coursework.		5-8
Electives		
To satisfy minimum credit requirement, students work with advisor to identify elective courses numbered 300 or above.		8-15
Total Credits		**51**

1. Students must complete CHEM 901 Seminar-Teaching of Chemistry in the fall of their first year and CHEM 607 Laboratory Safety in the spring of their first year.
2. After joining a research lab, usually in the fall semester of the first year, students enroll in CHEM 980 Seminar: Review of Current Research in subsequent semesters. Students do not enroll in this course after reaching dissertator status.
3. Students enroll in CHEM 990 Research credits to bring their semester load to 15 credits after enrolling in lecture courses and seminars; if the latter courses already total 15, no Research credits are required for that semester. After reaching dissertator status, students enroll in 3 credits.
4. Students taking CHEM 960 Seminar-Physical Chemistry for their seminar enroll in a 0-credit section every semester. They also enroll in a 2-credit literature course section of CHEM 960 Seminar-Physical Chemistry one time during their graduate career, usually in the spring of their first year.

Analytical Chemistry Path [1]

Code	Title	Credits
CHEM 721	Instrumental Analysis	3-4
Select any one of the following for the maximum credits offered:		2-3
CHEM 622	Organic Analysis	
CHEM 623	Experimental Spectroscopy	
CHEM 624	Electrochemistry	
CHEM/ GENETICS 626	Genomic Science	
CHEM 629	Atmospheric Chemical Mechanisms	
CHEM 630	Selected Topics in Analytical Chemistry	
CHEM 675	Introductory Quantum Chemistry	
CHEM 725	Separations in Chemical Analysis	
CHEM 728	Electronics for Chemical Instrumentation	

1. These pathways are internal to the program and represent different curricular paths a student can follow to earn this degree. Pathway names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

Chemical Biology Path [1]

Code	Title	Credits
CHEM/ BIOCHEM 704	Chemical Biology	3
Select any one of the following for the maximum credits offered:		2-4
CHEM 606	Physical Methods for Structure Determination	
CHEM 622	Organic Analysis	
CHEM 630	Selected Topics in Analytical Chemistry	
CHEM 665	Biophysical Chemistry	
CHEM 668	Biophysical Spectroscopy	
CHEM 721	Instrumental Analysis	

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Chemistry Education Research Path [1]

Code	Title	Credits
CHEM 758	Chemistry Education Research	2
CHEM 858	Special Topics in Chemistry Education	1-3
CURRIC/ COUN PSY/ED POL/ ED PSYCH/ELPA/ RP & SE 719	Introduction to Qualitative Research	3

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Inorganic Chemistry Path [1]

Code	Title	Credits
Complete the following for the maximum credits offered:		
CHEM 608	Symmetry, Bonding, and Molecular Shapes	3
CHEM 713	Inorganic and Organometallic Chemistry of the Main Group Elements	3

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Materials Chemistry Path [1]

Code	Title	Credits
Select any one of the following for the maximum credits offered:		3
CHEM 624	Electrochemistry	
CHEM 652	Chemistry of Inorganic Materials	
CHEM 653	Chemistry of Nanoscale Materials	
Select any one of the following for the maximum credits offered:		3
CHEM 654	Materials Chemistry of Polymers	
CHEM 664	Physical Chemistry of Macromolecules	

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Organic Chemistry Path [1]

Code	Title	Credits
CHEM 641	Advanced Organic Chemistry	3
CHEM 841	Advanced Organic Chemistry	3

[1] These pathways are internal to the program and represent different curricular paths a student can follow to earn this degree. Pathway names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

Physical Chemistry Path [1]

Code	Title	Credits
Complete two of the following courses for the maximum number of credits offered.		
CHEM 661	Chemical and Statistical Thermodynamics	3
CHEM 675	Introductory Quantum Chemistry	3
CHEM 721	Instrumental Analysis	3-4

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