CHEMISTRY, PHD

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (https:// guide.wisc.edu/graduate/#reguirementstext) 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	26 credits must be graduate-level coursework. Refer to
Graduate	the Graduate School: Minimum Graduate Coursework
Coursework	(50%) Requirement policy: https://policy.wisc.edu/library/
Requirement	UW-1244 (https://policy.wisc.edu/library/UW-1244/).
Overall	3.00 GPA required.
Graduate	Refer to the Graduate School: Grade Point Average
GPA	(GPA) Requirement policy: https://policy.wisc.edu/library/
Requirement	UW-1203 (https://policy.wisc.edu/library/UW-1203/).

Other Grade The Department of Chemistry will not allow courses in Requirements which a student received a grade below a C to satisfy degree requirements.

and

Assessments During the second year, students complete the Thesis Background Exam (TBE). Students write a paper Examinations 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 There are currently no language requirements to obtain the Requirements PhD in Chemistry.

Graduate Doctoral students in Chemistry are not required to School complete a doctoral minor or graduate/professional Breadth certificate as breadth is built into the major requirements. Requirement

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 Requirer	nent		A
Students must enro	oll in one of the seminar courses below g term for 0 credits until they obtain	0-2	0
candidacy (disserta	itor status).		5
CHEM 900	Seminar-Inorganic Chemistry		0
CHEM 920	Seminar-Analytical Chemistry		
CHEM 940	Seminar-Organic Chemistry		
CHEM 960	Seminar-Physical Chemistry *		
Breadth Requirer	nent		
Students in the Che completing a minim credits with the foll	emistry PhD complete breadth by num of 3 courses and a minimum of 8 owing requirements:	8	
1. Only STEM con requirements. ST	urses may count toward the breadth FEM courses must be approved by your		
advisor and may	include courses in chemistry, physics,		
or other physical	sciences; courses from the many		
related courses:	courses in engineering: or courses with		
a computer scier	nce, statistics, math, or computational		1
focus.	· · · · · ·		
2. The Departme graduate studen will count underg courses (numbe requirement if th research advisor	ent of Chemistry encourages the ts to take graduate-level courses but graduate mid- or upper-level STEM red 300-500) toward the breadth lese courses are approved by the		C
3. The Departme repeatable STEN for traineeships, courses that hav than once.	ent of Chemistry will only count A courses once (for example, courses RCR courses). However, special topics e different topics can be counted more		C B S o
4. CHEM 607, C do not satisfy the	HEM 901, CHEM 980, and CHEM 990 e breadth requirement.		
Path Courses			
Complete appropri	ate path coursework.	5-8	
Electives			
To satisfy minimum	credit requirement, students work	8-15	
with advisor to iden above.	tify elective courses numbered 300 or		
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 offered:	following for the maximum credits	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 Path¹

Code	Title	Credits
CHEM/ BIOCHEM 704	Chemical Biology	3
Select any one of the offered:	following for the maximum credits	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 Path¹

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 Path¹

Code	Title	Credits
Complete the follow	ving 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 Path¹

Co	de	Title	Credits
Sel offe	ect any one of the ered:	following for the maximum credits	3
(CHEM 624	Electrochemistry	
(CHEM 652	Chemistry of Inorganic Materials	
(CHEM 653	Chemistry of Nanoscale Materials	
Sel offe	ect any one of the ered:	following for the maximum credits	3
(CHEM 654	Materials Chemistry of Polymers	
(CHEM 664	Physical Chemistry of Macromolecules	

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Organic Chemistry Path¹

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

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Physical Chemistry Path¹

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

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