CHEMISTRY, PH.D.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), 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. Details can be found in the Graduate School's Minimum Graduate Coursework (50%) policy (https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/)).
Overall Graduate GPA Requirement	3.00 GPA required. This program follows the Graduate School's GPA Requirement policy (https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/)).
Other Grade Requirements	n/a
Assessments and Examinations	During their second year, the students complete the Thesis Background Exam (TBE). They 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, the students complete the Original Research Proposal (RP) Exam. The 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 their fourth year, the students complete the 4th-Year Meeting with their mentoring committee. This meeting includes an oral presentation of their research and discussion of what research needs to be completed to obtain the PhD. The students and committee discuss the students' future plans. At the end of their fifth year, if not defending their dissertation, the students complete the 5th-Year Meeting with the mentoring committee. This meeting includes an oral presentation of their research and discussion of what research needs to be completed to obtain the PhD. The students and committee discuss the students' future plans. In the 5th or 6th year, the students write, defend, and submit their dissertation.
Language Requirements	There are currently no language requirements to obtain the Ph.D. 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 recognizes 7 paths to the Ph.D. in Chemistry. In addition to completing general Chemistry PhD requirements below, students in each path have specific required courses, called core courses, and other path-specific requirements.

General PhD Requirements

Code	Title	Credits
CHEM 901	Seminar-Teaching of Chemistry [1]	1
CHEM 607	Laboratory Safety [1]	1
CHEM 980	Seminar: Review of Current Research [2]	1
CHEM 990	Research [3]	1-12+
Seminar Requirement		*0-2+*
Students must enroll in one of the seminar courses below every fall and spring term for 0 credits until they obtain candidacy (dissertator status).		
CHEM 900	Seminar-Inorganic Chemistry	
CHEM 920	Seminar-Analytical Chemistry	
CHEM 940	Seminar-Organic Chemistry	
CHEM 960	Seminar-Physical Chemistry [4]	
Breadth Requirement		*8*
Students in the Chemistry PhD complete breadth by completing a minimum of 3 courses and a minimum of 8 credits with the following requirements:		

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 (300-500 level) 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. The Department of Chemistry will not count courses in which the student received a grade below a C.	
5. CHEM 607, CHEM 901, CHEM 980, and CHEM 990 do not count toward the breadth requirement.	
Electives - Credits to meet the minimum of 51.	
Students work with advisor to identify elective courses 300+.	
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 627		
CHEM 629	Atmospheric Chemical Mechanisms	
CHEM 630	Selected Topics in Analytical 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 627		
CHEM 630	Selected Topics in Analytical Chemistry	
CHEM/ BIOCHEM 665	Biophysical Chemistry	
CHEM 668	Biophysical Spectroscopy	
CHEM 721	Instrumental Analysis	

[1]

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Chemistry Education Research Path [1]

Code	Title	Credits
CHEM 758	Chemistry Education Research	2
CURRIC/ COUN PSY/ED POL/ ED PSYCH/ELPA/ RP & SE 719	Introduction to Qualitative Research	3
ED PSYCH/ ELPA 822	Introduction to Quantitative Inquiry in Education	3

[1]

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Inorganic Chemistry Path [1]

Code	Title	Credits
Take the following for the maximum credits offered:		6
CHEM 608	Symmetry, Bonding, and Molecular Shapes	

CHEM 713	Inorganic and Organometallic Chemistry of the Main Group Elements	

1

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Materials Chemistry Path [1]

Code	Title	Credits
Hard Materials		*3*
Select any one of the following for the maximum credits offered:		
CHEM 613	Chemical Crystallography	
CHEM 624	Electrochemistry	
CHEM 630	Selected Topics in Analytical Chemistry	
CHEM 652	Chemistry of Inorganic Materials	
CHEM 653	Chemistry of Nanoscale Materials	
Soft Materials		*3*
Select any one of the following for the maximum credits offered:		
CHEM 654	Materials Chemistry of Polymers	
CHEM 664	Physical Chemistry of Macromolecules	
CHEM 842	Advanced Organic Chemistry	
CBE 562	Special Topics in Chemical Engineering (work with advisor to identify appropriate topic)	
M S & E 521	Advanced Polymeric Materials	

1

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Organic Chemistry Path [1]

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

1

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Physical Chemistry Path [1]

Code	Title	Credits
CHEM 661	Chemical and Statistical Thermodynamics	3
CHEM 675	Introductory Quantum Chemistry	3

1

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