

CHEMISTRY, MSC

The Department of Chemistry and Biochemistry offers a thesis and non-thesis pathway to the Chemistry, MSC and all applicants should have an undergraduate major in Chemistry or Biochemistry. The plan I Masters in Chemistry requires the student to select a research advisor and write a thesis based on original research. The plan II Masters in Chemistry is a coursework degree.

Admissions

In addition to meeting the general requirements of the Graduate School, entering graduate students should have completed undergraduate coursework equivalent to a B.S. degree in chemistry or biochemistry.

See the Admission Criteria section of this catalog for more information.

Requirements for all M.Sc. Candidates

Whether enrolled in the Plan I (Thesis option) or Plan II (Non-Thesis option) program, all M.Sc. candidates must select a UA faculty advisor by the end of their first semester. In addition, a three-person Examining Committee composed of the research supervisor and at least two other UA Graduate Faculty members must be formed by the end of the student's 2nd semester. Plan I Thesis M.Sc. students are required to have one member from outside the Department of Chemistry & Biochemistry; Plan II Non-Thesis M.Sc. students will have committee members from within the Department only.

Curricular Requirements - Thesis Option

Code and Title	Hours
Required Lecture Course Options	12
CH 501 Intro Inorg Chem	
CH 505 Medicinal Chemistry	
CH 519 Physical/Analytical Core	
CH 520 Structure/Bonding Core	
CH 524 Adv Anl Ch I Spec Meth	
CH 526 Chemometrics	
CH 531 Adv Organ Chem I-Physicl	
CH 532 Adv Org Ch II React Synt	
CH 549 Adv Ph Ch II Atom/Mol	
CH 561 Biochemistry I	
CH 562 Biochemistry II	
CH 563 Biochemistry Lab	
CH 564 Adv Biophysical Chem	
CH 565 Adv Bio-Inorganic Chem	
CH 566 Bioorg Reac Mech	
CH 584 Chem Lit & Comm	
CH 601 Adv Inor Chi:Strct Mth	
CH 605 Spec Topics Inorg Chem	
CH 609 Organometallic Chem	
CH 615 Solid State Materials Chem	
CH 618 X-ray Diffraction	
CH 621 Trends In Analytical Chem	
CH 625 Electrochemistry	
CH 626 Surface Analytical Techniques	
CH 627 Mass Spectrometry	
CH 635 Sel Topics In Org Chem	

CH 637 Spectroscopic Techniqua	
Research Techniques Course	7
CH 570 Research Techniques Chemistry	
CH 660 Adv Research Techniques Chem	
Departmental Seminars	5
CH 585 Chemistry Seminars	
CH 586 Research Seminar	
Thesis Research	6
CH 599 Thesis Research	
Total Hours	30

The student will write and defend a thesis. Normally, the student must finish this program in 2.5 years.

Curricular Requirements - Non-Thesis Option

Code and Title	Hours
Required Lecture Course Options	18-24
CH 501 Intro Inorg Chem	
CH 505 Medicinal Chemistry	
CH 519 Physical/Analytical Core	
CH 520 Structure/Bonding Core	
CH 524 Adv Anl Ch I Spec Meth	
CH 526 Chemometrics	
CH 531 Adv Organ Chem I-Physicl	
CH 532 Adv Org Ch II React Synt	
CH 549 Adv Ph Ch II Atom/Mol	
CH 561 Biochemistry I	
CH 562 Biochemistry II	
CH 563 Biochemistry Lab	
CH 564 Adv Biophysical Chem	
CH 565 Adv Bio-Inorganic Chem	
CH 566 Bioorg Reac Mech	
CH 601 Adv Inor Chi:Strct Mth	
CH 605 Spec Topics Inorg Chem	
CH 609 Organometallic Chem	
CH 615 Solid State Materials Chem	
CH 618 X-ray Diffraction	
CH 621 Trends In Analytical Chem	
CH 625 Electrochemistry	
CH 626 Surface Analytical Techniques	
CH 627 Mass Spectrometry	
CH 635 Sel Topics In Org Chem	
CH 637 Spectroscopic Techniqua	
Literature Communication	3
CH 584 Chem Lit & Comm	
Research Techniques	0-6
CH 570 Research Techniques Chemistry	
CH 660 Adv Research Techniques Chem	
Departmental Seminar	3

CH 585	Chemistry Seminars	
Initial Research Review		0-1
CH 680	Initial Research Review	
Total Hours		30

Normally, the student is expected to finish this program in 2 years.

Curricular Requirements - Non-Thesis Option w/ ACS Chemistry BCh Track

Code and Title	Hours	
Required Courses		
CH 501	Intro Inorg Chem	4
CH 549	Adv Ph Ch II Atom/Mol	3
CH 584	Chem Lit & Comm	3
CH 585	Chemistry Seminars	1
Dual Credit Course Options		6
Select up to 6 credit hours of cross-listed courses		
CH 505	Medicinal Chemistry	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 563	Biochemistry Lab	
CH 566	Bioorg Reac Mech	
CH 601	Adv Inor Chi:Strct Mth	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 637	Spectroscopic Techniqa	
Graduate Elective Course Options ¹		13
Select at least 13 credit hours of Graduate Elective Options		
CH 505	Medicinal Chemistry	
CH 524	Adv Anl Ch I Spec Meth	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 561	Biochemistry I	
CH 562	Biochemistry II	
CH 563	Biochemistry Lab	
CH 564	Adv Biophysical Chem	
CH 565	Adv Bio-Inorganic Chem	
CH 566	Bioorg Reac Mech	
CH 585	Chemistry Seminars	
CH 601	Adv Inor Chi:Strct Mth	
CH 605	Spec Topics Inorg Chem	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 618	X-ray Diffraction	
CH 621	Trends In Analytical Chem	
CH 625	Electrochemistry	
CH 626	Surface Analytical Techniques	
CH 627	Mass Spectrometry	
CH 635	Sel Topics In Org Chem	
CH 637	Spectroscopic Techniqa	

CH 660	Adv Research Techniques Chem ²	
Total Hours		30

Footnotes

- ¹ Select only listed courses not previously or concurrently taken as dual credit courses.
- ² Department pre-approved research advisor required.

Curricular Requirements - Non-Thesis Option w/ ACS Biochemistry BCh Track

Code and Title	Hours	
Required Courses		
CH 501	Intro Inorg Chem	4
CH 549	Adv Ph Ch II Atom/Mol	3
CH 561	Biochemistry I	3
CH 563	Biochemistry Lab	3
CH 584	Chem Lit & Comm	3
CH 585	Chemistry Seminars	1
Dual Credit Course Options		3
Select up to 3 credit hours of cross-listed courses		
CH 505	Medicinal Chemistry	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 563	Biochemistry Lab	
CH 566	Bioorg Reac Mech	
CH 601	Adv Inor Chi:Strct Mth	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 637	Spectroscopic Techniqa	
Graduate Elective Courses Option ¹		10
Select at least 10 credit hours of Graduate Elective Options		
CH 505	Medicinal Chemistry	
CH 524	Adv Anl Ch I Spec Meth	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 562	Biochemistry II	
CH 564	Adv Biophysical Chem	
CH 565	Adv Bio-Inorganic Chem	
CH 566	Bioorg Reac Mech	
CH 585	Chemistry Seminars	
CH 601	Adv Inor Chi:Strct Mth	
CH 605	Spec Topics Inorg Chem	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 618	X-ray Diffraction	
CH 621	Trends In Analytical Chem	
CH 625	Electrochemistry	
CH 626	Surface Analytical Techniques	
CH 627	Mass Spectrometry	
CH 635	Sel Topics In Org Chem	
CH 637	Spectroscopic Techniqa	

CH 660	Adv Research Techniques Chem	
Total Hours		30

Footnotes

¹ Select only listed courses not previously or concurrently taken as dual credit courses.

² Department pre-approved research advisor required.

Curricular Requirements - Non-Thesis Option w/ Non-ACS Chemistry BS Track

Code and Title	Hours
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Required Courses

CH 563	Biochemistry Lab	3
CH 584	Chem Lit & Comm	3
CH 585	Chemistry Seminars	1

Dual Credit Course Options 9

Select up to 9 credit hours of cross-listed courses

CH 501	Intro Inorg Chem	
CH 505	Medicinal Chemistry	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 549	Adv Ph Ch II Atom/Mol	
CH 566	Bioorg Reac Mech	
CH 601	Adv Inor Chi:Strct Mth	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 637	Spectroscopic Techniqa	

Graduate Elective Course Options ¹ 14

Select at least 14 credit hours of Graduate Elective Options

CH 501	Intro Inorg Chem	
CH 505	Medicinal Chemistry	
CH 524	Adv Anl Ch I Spec Meth	
CH 526	Chemometrics	
CH 531	Adv Organ Chem I-Physicl	
CH 532	Adv Org Ch II React Synt	
CH 549	Adv Ph Ch II Atom/Mol	
CH 561	Biochemistry I	
CH 562	Biochemistry II	
CH 564	Adv Biophysical Chem	
CH 565	Adv Bio-Inorganic Chem	
CH 566	Bioorg Reac Mech	
CH 585	Chemistry Seminars	
CH 601	Adv Inor Chi:Strct Mth	
CH 605	Spec Topics Inorg Chem	
CH 609	Organometallic Chem	
CH 615	Solid State Materials Chem	
CH 618	X-ray Diffraction	
CH 621	Trends In Analytical Chem	
CH 625	Electrochemistry	
CH 626	Surface Analytical Techniques	
CH 627	Mass Spectrometry	
CH 635	Sel Topics In Org Chem	

CH 637	Spectroscopic Techniqa	
CH 660	Adv Research Techniques Chem ²	
Total Hours		30

Footnotes

¹ Select only listed courses not previously or concurrently taken as dual credit courses.

² Department pre-approved research advisor required.

Curricular Requirements - Thesis Option w/ ACS Chemistry BCh Track

Code and Title	Hours
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Required Courses

CH 501	Intro Inorg Chem ¹	4
CH 549	Adv Ph Ch II Atom/Mol ¹	3
CH 570	Research Techniques Chemistry	1
CH 585	Chemistry Seminars	3
CH 586	Research Seminar	1
CH 599	Thesis Research	6
CH 660	Adv Research Techniques Chem	6

Graduate Elective Course Options 6

Select two graduate elective courses (6 credits).

CH 505	Medicinal Chemistry ¹	
CH 524	Adv Anl Ch I Spec Meth	
CH 526	Chemometrics ¹	
CH 531	Adv Organ Chem I-Physicl ¹	
CH 532	Adv Org Ch II React Synt ¹	
CH 561	Biochemistry I	
CH 562	Biochemistry II	
CH 563	Biochemistry Lab ¹	
CH 564	Adv Biophysical Chem	
CH 565	Adv Bio-Inorganic Chem	
CH 566	Bioorg Reac Mech ¹	
CH 584	Chem Lit & Comm	
CH 601	Adv Inor Chi:Strct Mth ¹	
CH 605	Spec Topics Inorg Chem	
CH 609	Organometallic Chem ¹	
CH 615	Solid State Materials Chem ¹	
CH 618	X-ray Diffraction	
CH 621	Trends In Analytical Chem	
CH 625	Electrochemistry	
CH 626	Surface Analytical Techniques	
CH 627	Mass Spectrometry	
CH 635	Sel Topics In Org Chem	
CH 637	Spectroscopic Techniqa ¹	

Total Hours		30
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Footnotes

¹ Course meets dual credit requirements.

Curricular Requirements - Thesis Option w/ ACS Biochemistry BCh Track

Code and Title	Hours
Required Courses	
CH 501 Intro Inorg Chem ¹	4
CH 549 Adv Ph Ch II Atom/Mol ¹	3
CH 563 Biochemistry Lab ¹	3
CH 570 Research Techniques Chemistry	1
CH 585 Chemistry Seminars	3
CH 586 Research Seminar	1
CH 599 Thesis Research	6
CH 660 Adv Research Techniques Chem	6
Graduate Elective Options	3
Select one graduate elective course (3 credits).	
CH 505 Medicinal Chemistry ¹	
CH 524 Adv Anl Ch I Spec Meth	
CH 526 Chemometrics ¹	
CH 531 Adv Organ Chem I-Physicl ¹	
CH 532 Adv Org Ch II React Synt ¹	
CH 561 Biochemistry I	
CH 562 Biochemistry II	
CH 564 Adv Biophysical Chem	
CH 565 Adv Bio-Inorganic Chem	
CH 566 Bioorg Reac Mech ¹	
CH 584 Chem Lit & Comm	
CH 601 Adv Inor Chi:Strct Mth ¹	
CH 605 Spec Topics Inorg Chem	
CH 609 Organometallic Chem ¹	
CH 615 Solid State Materials Chem ¹	
CH 618 X-ray Diffraction	
CH 621 Trends In Analytical Chem	
CH 625 Electrochemistry	
CH 626 Surface Analytical Techniques	
CH 627 Mass Spectrometry	
CH 635 Sel Topics In Org Chem	
CH 637 Spectroscopic Techniqua ¹	

Total Hours 30

Footnotes

¹ Course meets dual credit requirements.

Curricular Requirements - Thesis Option w/ Non-ACS Chemistry BS Track

Code and Title	Hours
Required Courses	
CH 563 Biochemistry Lab ¹	3
CH 570 Research Techniques Chemistry	1
CH 585 Chemistry Seminars	3
CH 586 Research Seminar	1
CH 599 Thesis Research	6
CH 660 Adv Research Techniques Chem	6
Graduate Elective Options	10

Select at least 10 credit hours of Graduate Elective Options.

CH 501 Intro Inorg Chem ¹	
CH 505 Medicinal Chemistry ¹	
CH 524 Adv Anl Ch I Spec Meth	
CH 526 Chemometrics ¹	
CH 531 Adv Organ Chem I-Physicl ¹	
CH 549 Adv Ph Ch II Atom/Mol ¹	
CH 561 Biochemistry I	
CH 562 Biochemistry II	
CH 564 Adv Biophysical Chem	
CH 565 Adv Bio-Inorganic Chem	
CH 566 Bioorg Reac Mech ¹	
CH 584 Chem Lit & Comm	
CH 585 Chemistry Seminars	
CH 601 Adv Inor Chi:Strct Mth ¹	
CH 605 Spec Topics Inorg Chem	
CH 609 Organometallic Chem ¹	
CH 615 Solid State Materials Chem ¹	
CH 618 X-ray Diffraction	
CH 621 Trends In Analytical Chem	
CH 625 Electrochemistry	
CH 626 Surface Analytical Techniques	
CH 627 Mass Spectrometry	
CH 635 Sel Topics In Org Chem	
CH 637 Spectroscopic Techniqua ¹	

Total Hours 30

Footnotes

¹ Course meets dual credit requirements.

Transfer Credit

See Graduate School information on Transfer Credit.

Accelerated Master's Program

The Accelerated Master's Program (AMP) is intended for highly motivated Chemistry/Biochemistry majors whose objectives include a degree at the Master's level. Students will choose either the thesis or non-thesis (coursework) M.Sc. degree track. The curriculum requirements vary by undergraduate degree track and by the selected M.Sc. degree track, with details available in the corresponding Course List tables above. Students in the Accelerated Master's Program may not take CH 519 Physical/Analytical Core or CH 520 Structure/Bonding Core for graduate credit.

For additional information see Graduate School information on the AMP program.

Comprehensive Exam

The oral defense of the student's thesis will serve as the comprehensive exam for the Plan I Thesis option program. The candidate will present a departmental research seminar covering their thesis research before holding the oral defense of the thesis with their approved Examining Committee. The student's research supervisor and the other Examining Committee members will evaluate the student's thesis and render a pass/fail decision based upon the quality of the written thesis and the student's oral defense. This oral defense counts as the M.Sc. comprehensive exam for the student.

For the plan II Non-Thesis M.Sc. program, the comprehensive exam requirement is met by passing CH 584 Chem Lit & Comm with a grade of 'B' or better.

Plan I - Thesis Process Requirements

The lecture coursework requirement for the Plan I M.Sc. degree will consist of a minimum of four lecture courses (12 hours) plus CH 585 (4 total hours for graduate-only M.Sc. students and 3 total hours for Accelerated Master's Program students), CH 586 (1 hour), CH 570/CH 660 (7 hours), and CH 599 (6 hours). At the conclusion of their first semester, students will be assigned a research advisor. Students should work with the research advisor to select a thesis committee consisting of the research advisor and at least two other members of the Graduate Faculty (at least one from the Department of Chemistry & Biochemistry and one from outside the Department) by the end of the second semester. Normally, students will register for CH 586 in their fourth semester to complete their thesis defense.

Plan II - Non-Thesis Process Requirements

The lecture coursework requirement for the Plan II M.Sc. degree will consist of a minimum of six lecture courses (18 hours) plus CH 584 (3 hours) and CH 585 (3 total hours for graduate-only M.Sc. students and 1 total hour for Accelerated Master's Program students). The remaining 6 credit hours comprise a combination of lecture, research courses (CH 570/CH 660), and an optional initial research review (CH 680 Initial Research Review). Students planning to include research courses and/or CH 680 Initial Research Review must have an approved faculty research advisor.

Time Limits for Degree Completion Requirements

See Graduate School information on Time Limits.

Academic Misconduct Information

See Graduate School information on Academic Misconduct.

Withdrawals and Leave of Absence Information

See Graduate School information on Withdrawals and Leave of Absence.

Academic Grievances Information

See Graduate School information on Academic Grievances.

Grades and Academic Standing

See Graduate School information on Grades and Academic Standing.

Graduate School Deadlines Information

See Graduate School information on Deadlines.

Application for Graduation Information

See Graduate School information on Application for Graduation.