

CHEMISTRY (MS)

The Graduate Chemistry program at Loyola University Chicago encompasses the traditional fields of specialization, including: *Analytical Chemistry, Biochemistry, Chemical Education, Inorganic Chemistry, Organic Chemistry and Physical Chemistry*

For students who enroll in our course-based Master of Science program, you will enjoy the small class sizes found in our upper level courses and access it provides to your instructors. Students with a strong interest in research can choose to obtain a thesis-based master's in a diverse range of subjects. Our MS students receive the academic rigor and laboratory instrumentation access associated with our PhD program in a flexible and condensed schedule expected of a master's program.

Related Programs

Doctoral

- Chemistry (PhD) (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/chemistry-biochemistry/chemistry-phd/>)

Combined

- Biochemistry (BS/MS) (<https://catalog.luc.edu/undergraduate/accelerated-bachelors-masters-program/biochemistry-bsms/>)

Curriculum

The Master of Science in Chemistry requires 30 credit hours. Students may choose a course-based or thesis-based program, depending on their future goals.

Master of Science in Chemistry (Course-Based)

Required Coursework

Code	Title	Hours
CHEM 401	Chemistry Methodology and Communication	3
<i>Select four from the following</i>		12
CHEM 424	Molecular Characterization Part A	
CHEM 435	Special Topics in Physical Chemistry	
CHEM 445	Special Topics in Inorganic Chemistry	
CHEM 455	Special Topics in Analytical Chemistry	
CHEM 465	Special Topics in Biochemistry	
CHEM 480	Chemistry for Teachers I	
Chemistry Research (no more than 3cr hours)		
400 Level Chemistry Electives ¹		15
Total Hours		30

¹ Elective courses can be distributed or in a specialized area as determined by student. A list of all 400 level Chemistry courses can be found here (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/chemistry-biochemistry/#coursestext>).

Master of Science in Chemistry (Thesis-Based)

Required Coursework

Code	Title	Hours
CHEM 401	Chemistry Methodology and Communication	3
<i>Select one of the following:</i>		3
CHEM 424	Molecular Characterization Part A	

CHEM 435	Special Topics in Physical Chemistry	
CHEM 445	Special Topics in Inorganic Chemistry	
CHEM 455	Special Topics in Analytical Chemistry	
CHEM 465	Special Topics in Biochemistry	
<i>Select one of the following:</i>		12
CHEM 429	Research in Organic Chemistry	
CHEM 439	Research in Physical Chemistry	
CHEM 449	Research in Inorganic Chemistry	
CHEM 459	Research in Analytical Chemistry	
CHEM 469	Research in Biochemistry	
Select any four courses from any area of specialization (Organic, Inorganic, Physical, Analytical, Education)		12
<i>Analytical</i>		
CHEM 455	Special Topics in Analytical Chemistry (Archeometry)	
CHEM 455	Special Topics in Analytical Chemistry (Adv Analytical Chemistry)	
<i>Biochemistry</i>		
CHEM 465	Special Topics in Biochemistry (Plant Biochemistry)	
CHEM 465	Special Topics in Biochemistry (The Chemistry of Enzymes)	
CHEM 465	Special Topics in Biochemistry (Biochemistry of Lipids)	
CHEM 465	Special Topics in Biochemistry (Adv Approaches in Biochemistry)	
CHEM 465	Special Topics in Biochemistry (Adv Enzyme Kinetics and Mechanisms)	
CHEM 465	Special Topics in Biochemistry (Molecular Immunology)	
CHEM 465	Special Topics in Biochemistry (Biochemistry of Renewable Energy)	
CHEM 465	Special Topics in Biochemistry (Proteomics)	
CHEM 470	Biochemistry I	
<i>Education</i>		
CHEM 480	Chemistry for Teachers I	
<i>Inorganic</i>		
CHEM 441	Advanced Inorganic Chemistry	
CHEM 445	Special Topics in Inorganic Chemistry (Medicinal Inorganic Chemistry)	
CHEM 445	Special Topics in Inorganic Chemistry (Electron & X-Ray Methods)	
CHEM 445	Special Topics in Inorganic Chemistry (Molecular Characterization Part B)	
<i>Organic</i>		
CHEM 423	Medicinal Chemistry	
CHEM 424	Molecular Characterization Part A	
CHEM 425	Special Topics in Organic Chemistry (Orgo Structure Determination)	
CHEM 425	Special Topics in Organic Chemistry (Strategy & Tactics of Org Chem)	
CHEM 425	Special Topics in Organic Chemistry (Func Dyes Biomed Imaging)	
CHEM 425	Special Topics in Organic Chemistry (Avd Orgo-Synthesis and Mech)	

CHEM 425	Special Topics in Organic Chemistry (Comp Organomet Chem)	
CHEM 425	Special Topics in Organic Chemistry (Advanced Organic Synthesis)	
<i>Physical</i>		
CHEM 435	Special Topics in Physical Chemistry (Exp Tech of Surface Science)	
CHEM 435	Special Topics in Physical Chemistry (Survey of Modern Physical Chem)	
CHEM 435	Special Topics in Physical Chemistry (Surface Chem and Analysis)	
CHEM 435	Special Topics in Physical Chemistry (Thermodynam/ Protein Structures)	
CHEM 435	Special Topics in Physical Chemistry (Computational Chemistry)	
CHEM 605	Master's Study	0
CHEM 595	Thesis Supervision	0
Total Hours		30

Thesis Requirement

In addition to coursework, students in Thesis-based MS in Chemistry will write and defend a research thesis. Once students have completed coursework and are solely working on the thesis they will be enrolled in the appropriate study or supervision course to maintain good standing in the university.

Responsible Conduct of Research

All PhD students and students in thesis-based Master's degree programs must successfully complete UNIV 370 Responsible Conduct in Research and Scholarship or other approved coursework in responsible conduct of research as part of the degree requirements. It is strongly recommended that students complete this two-day training before beginning the dissertation/thesis stage of the program.

Graduate & Professional Standards and Regulations

Students in graduate and professional programs can find their Academic Policies in Graduate and Professional Academic Standards and Regulations (<https://catalog.luc.edu/academic-standards-regulations/graduate-professional/>) under their school. Any additional University Policies supersede school policies.

Learning Outcomes

- Trained in necessary lab protocol (notebooks, design of experiment, safety, etc.), effective communication of science, and job function (intellectual property, regulatory, ethics, etc.) necessary for careers with an advanced degree.
- Develop capabilities to solve fundamental problems on advanced topics in chemistry sub-disciplines relevant to their field of study.
- Demonstrate the ability to select and utilize appropriate methodologies and practices to solve chemical problems.