CHEMISTRY, M.S.

Saint Louis University's Department of Chemistry (https://www.slu.edu/arts-and-sciences/chemistry/) offers master's students close mentoring relationships, small research groups and opportunities to participate in interdisciplinary research.

Program Highlights

• SLU’s Master of Science in Chemistry offers specialization in analytical, inorganic, organic, physical or biological chemistry, with cross-disciplinary activity encouraged.

• Graduate students in chemistry at SLU have access to a number of research tools, including:
  - Bruker 400 and 700 MHz NMR spectrometers
  - Bruker-EMX EPR, UV-Vis and FTIR spectrometers
  - Research-grade spectrofluorometers
  - GC-MS and LC-MS
  - Electrochemical analyzers
  - Gas chromatographs
  - A scanning electron micrograph
  - Computational facilities with modern molecular software
  - A Bruker CCD X-ray diffractometer facility

• In addition to the M.S. in Chemistry, SLU’s Department of Chemistry (https://www.slu.edu/arts-and-sciences/chemistry/) also offers an M.A. in Chemistry (https://catalog.slu.edu/colleges-schools/arts-sciences/chemistry/chemistry-ma/).

Curriculum Overview

The requirements for the thesis-based M.S. degree include:

• A minimum of 24 credits of post-baccalaureate coursework (exclusive of thesis research)
• Six credits of thesis research (CHEM 5990 Thesis Research)
• A thesis
• A public oral presentation and a private oral examination

Students who hold a bachelor’s degree and are interested in completing the doctoral program in chemistry can transition into SLU’s chemistry Ph.D. program (https://catalog.slu.edu/colleges-schools/arts-sciences/chemistry/chemistry-phd/) after the master’s requirements are completed. A total of 39 credits are required, including 12 credits from dissertation research credits. Students will develop an appropriate coursework track with a mentor that will be approved by the graduate program director or the department chair.


Fieldwork and Research Opportunities

SLU’s chemistry graduate students are active in the research areas of analytical, physical, synthetic, materials, environmental and biological chemistry. Research groups regularly publish in top-ranked journals and present at national and international conferences.

Careers

Possible careers for chemistry graduates include pharmaceutical scientist, crime lab analyst, environmental chemist, fuels and materials scientist, and academic researcher.

Admission Requirements

Applicants should possess sufficient GPA and TOEFL (if applicable) scores and a bachelor’s degree from an accredited college or university. Bachelor’s degrees usually are in chemistry or biochemistry, although other science majors will be considered.

Admission normally requires a minimum of 18 semester credits (minimum 2.8 GPA) of upper-division undergraduate chemistry courses, including organic chemistry (two semesters), quantitative analysis (one semester) and physical chemistry (two semesters). Students who do not meet these criteria may complete these prerequisites as part of their graduate program, though not for graduate credit.

Students who have not completed equivalent coursework in upper-level undergraduate Inorganic Chemistry and Instrumental Analysis will also be required to complete these courses, but they can be taken for departmental graduate credit.

Application Requirements

• Application form and fee
• Three letters of recommendation
• Résumé
• Goal statement
• Interview (desired)

Requirements for International Students

All admission policies and requirements for domestic students apply to international students along with the following:

• Demonstrate English Language Proficiency
• Proof of financial support must include:
  - A letter of financial support from the person(s) or sponsoring agency funding the time at Saint Louis University
  - A letter from the sponsor’s bank verifying that the funds are available and will be so for the duration of study at the University
• Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include the courses taken and/or lectures attended, practical laboratory work, the maximum and minimum grades attainable, the grades earned or the results of all end-of-term examinations, and any honors or degrees received. WES and ECE transcripts are accepted.

Application Deadlines

Students who want to be considered for the summer and fall semesters must submit applications by Jan. 15. Students who want to be considered for the spring semester should apply by Oct. 1.

Review Process

A three-person committee votes on whether to accept applicants.

Scholarships, Assistantships and Financial Aid

For priority consideration for a graduate assistantship, apply by the program admission deadlines listed. Fellowships and assistantships
provide a stipend and may include health insurance and a tuition scholarship for the duration of the award.

For more information, visit http://www.slu.edu/financial-aid (http://www.slu.edu/financial-aid/).

Learning Outcomes
1. Graduates will be able to demonstrate advanced level knowledge in both
   a. synthesis and materials chemistry and
   b. analytical and physical chemistry methods, with a higher level of knowledge expected in the student’s area of research.
2. Graduates will be able to use standard search tools and retrieval methods to obtain information about a topic, substance, technique, or an issue relating to chemistry and assess relevant studies from the chemical literature.
3. Graduates will be able to communicate scientific findings from literature and original findings from the student’s own advanced research in written publications and oral presentations.
4. Graduates will acquire the basic tools, including chemical practices and theories, needed to conduct advanced chemical research. Students will become proficient in their specialized area of chemistry and complete an advanced research project.
5. Graduates will be able to adhere to accepted ethical and professional standards in chemistry.

Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td><strong>Synthesis and Materials Chemistry Courses</strong></td>
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</tr>
<tr>
<td></td>
<td>Select two Synthesis and Materials Chemistry Courses (p. 2)</td>
<td>6</td>
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<tr>
<td></td>
<td><strong>Analytical and Physical Methods Courses</strong></td>
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<td></td>
<td>Select two Analytical and Physical Methods Courses (p. 2)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Required Research Courses</strong></td>
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</tr>
<tr>
<td>CHEM 5970</td>
<td>Research Topics</td>
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<tr>
<td>CHEM 5990</td>
<td>Thesis Research</td>
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<tr>
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<td><strong>Research Elective Courses</strong></td>
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<td>Select one of the following:</td>
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<tr>
<td>CHEM 5299</td>
<td>Introduction to Analytical Research</td>
<td></td>
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<tr>
<td>CHEM 5399</td>
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<tr>
<td>CHEM 5599</td>
<td>Introduction to Inorganic Research</td>
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<tr>
<td></td>
<td><strong>Chemistry Elective Courses</strong></td>
<td></td>
</tr>
<tr>
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<td>Chemistry courses listed above for synthesis and materials or analytical and physical methods. Electives can also be fulfilled by taking 5000-level courses in other disciplines such as biology, math, computer science, engineering, and pharmacology with approval by Graduate Program Coordinator and student’s committee.</td>
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</table>

Total Credits 30

Synthesis and Materials Chemistry Courses
Must take two courses.

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<tr>
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<tr>
<td>CHEM 5160</td>
<td>Advanced Synthetic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5400</td>
<td>Organic Spectroscopy</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5440</td>
<td>Bioorganic Chemistry</td>
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Analytical and Physical Methods Courses
Must take two courses.

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<tr>
<td>CHEM 5200</td>
<td>Analytical Chemistry II</td>
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<tr>
<td>CHEM 5230</td>
<td>Mass Spectrometry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5260</td>
<td>Analytical Separations</td>
<td>3</td>
</tr>
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<td>CHEM 5270</td>
<td>Electroanalytical Chemistry</td>
<td>3</td>
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<td>CHEM 5300</td>
<td>Mathematical Techniques in Chemistry</td>
<td>3</td>
</tr>
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<td>CHEM 5370</td>
<td>Computational Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5390</td>
<td>Special Topics: Physical Chemistry</td>
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<td>CHEM 5450</td>
<td>Advanced Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5570</td>
<td>Group Theory &amp; Spectroscopy</td>
<td>3</td>
</tr>
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<td>CHEM 5620</td>
<td>Biophysical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5630</td>
<td>Introduction to Chemical Biology and Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 5800</td>
<td>Fundamentals and Design of Nanomaterials</td>
<td>3</td>
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Non-Course Requirements
A public oral presentation and a private oral examination.

Continuation Standards
Students must maintain a cumulative grade point average (GPA) of 3.00 in all graduate/professional courses.

Roadmap
Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>Fall</td>
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<td>Synthesis &amp; Materials Chemistry course (p. 3)</td>
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</tr>
<tr>
<td>CHEM 5X99</td>
<td>Introduction to Research</td>
<td>3</td>
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</table>

Credits 9
Spring
Synthesis & Materials Chemistry course (p. 3) 3
Analytical & Physical Methods course (p. 3) 3
Credits 6

Summer
CHEM 5970 Research Topics 3
Credits 3

Year Two
Fall
Chemistry electives (p. 3) 3
CHEM 5990 Thesis Research 3
Credits 6

Spring
Chemistry electives (p. 3) 3
CHEM 5990 Thesis Research (See information in Program Notes) * 3
Credits 6

Total Credits 30

* Students are required to complete a minimum of 6 credits of Thesis Research. This requirement is typically completed in the second year. The number of credits can vary each semester, but a student cannot register for zero credits of research until the 6 credits have been completed.

Synthesis and Materials Chemistry Courses
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<td>Synthetic Organic Chemistry</td>
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<tr>
<td>CHEM 5470</td>
<td>Principles of Medicinal Chemistry</td>
<td>3</td>
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<td>CHEM 5500</td>
<td>Inorganic Chemistry</td>
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<tr>
<td>CHEM 5550</td>
<td>Organometallic Chemistry</td>
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<td>Solid State Chemistry</td>
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<td>CHEM 5610</td>
<td>Biochemistry 1</td>
<td>3</td>
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<td>CHEM 5615</td>
<td>Biochemistry 2</td>
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Chemistry Electives
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Contact Us
Marvin Meyers, Ph.D.
Chemistry Graduate Program Coordinator
chemgrad@slu.edu