About the Program

The Chemistry graduate program is designed to provide a solid background in the chosen area of specialization. It emphasizes the acquisition of skills that enable students to gain further knowledge in their research and professional careers. For this reason, the Chemistry graduate degree program is research oriented, and seminar attendance and familiarization with the chemical literature are considered integral. The course requirements are comparatively light, although a wide variety of intermediate and advanced courses in related areas are offered. Students are encouraged to take courses in related areas, such as Biology, Computer Science, and Physics, according to their research interests.

Time Limit for Degree Completion: 3 years

Campus Location: Main

Full-Time/Part-Time Status: The degree program can be completed on a full- or part-time basis.

Interdisciplinary Study: A Chemical Physics program is offered jointly with the Department of Physics.

Areas of Specialization: The Department of Chemistry offers programs leading to the M.A. and Ph.D. degrees in Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, and Physical Chemistry. Areas of specialization include environmental chemistry, materials and polymers, medicinal, nanoscience, photonics, and surface science. For the master's program, two options are offered:

• Thesis Track, which is designed for students who are not full-time. Students cannot receive financial support from the Chemistry Department when completing this option. Any student wanting to pursue this option must receive prior approval from the Graduate Committee.
• Coursework Track, which is designed for students who already have extensive experience in the laboratory and are currently employed in the local chemical industry. Students must get permission from the Graduate Committee to pursue this option.

Job Prospects: The majority of students find employment in the chemical industry. Some go on to academic positions or positions in government laboratories.

Non-Matriculated Student Policy: Non-matriculated students are allowed to take up to 9 credits before admission into a degree program must be sought.

Financing Opportunities: The duties of a Teaching Assistant typically involve leading recitation sections and/or overseeing laboratories, as well as grading lab assignments, tests, and quizzes, when applicable. After their first year, most students are supported by a research assistantship.

Admission Requirements and Deadlines

Application Deadline:

Fall: January 15; January 1 international
Spring: September 15; August 1 international

Initial selection for Fall admission is January 15, with a final review of applications on March 30. Initial selection for Spring admission is September 15, with a final review of applications on October 30.

APPLY ONLINE to this graduate program.

Letters of Reference:

Number Required: 3

From Whom: Letters of recommendation should be obtained from faculty or people in industry who are familiar with the academic and/or research aptitude of the candidate.

Bachelor's Degree in Discipline/Related Discipline: A baccalaureate degree is required. Typically, the undergraduate degree has been earned in Chemistry, Biochemistry, or a related field.

Statement of Goals: Include your specific interest in Temple's program; your research goals; your future career goals; and your academic and research achievements.

Standardized Test Scores:

GRE: Required. If the applicant's GPA is below 3.25, s/he can be considered for appointment as a Teaching Assistant if her/his percentile scores on the verbal and quantitative portions of the GRE sum to at least 100%.
TOEFL: 88 iBT or 575 PBT minimum. Regardless of score, all international students are required to take a SPEAK test upon arrival at Temple.

**Resume:** Current resume required.

**Transfer Credit:** All graduate credits earned by a student prior to matriculation in the Chemistry graduate program are subject to evaluation and approval by the Chemistry Graduate Committee. A "Request for Transfer of Graduate Credit" form, found at http://www.temple.edu/grad/forms/, must be completed. It must be supplemented with an official transcript, sent directly by the Registrar of the institution where the credits were earned. All transfer credits must be "B" or higher and must be from an accredited institution. The maximum number of credits a student may transfer is 6.

### Program Requirements

**General Program Requirements:**

*Number of Credits Required Beyond the Baccalaureate:* 30

**Required Courses:**

**Thesis Track**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six formal lecture courses</td>
<td>18</td>
</tr>
<tr>
<td>Literature seminar</td>
<td>2</td>
</tr>
<tr>
<td>An approved graduate course and/or research course</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 9996 Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

**Coursework Track**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten formal lecture courses</td>
<td>30</td>
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</table>

**Culminating Events:**

**Thesis:**
The M.A. thesis is the culminating event for the Thesis Track. The thesis should be an original piece of research. Often, but not always, the research described in the M.A. thesis can be published in a peer-reviewed journal. The student coordinates the time for the defense with her/his Graduate Advisory Committee, which is responsible for evaluating the thesis and its defense. No thesis should go to defense unless it is ready for public scrutiny.

**Master's Examination:**
The master's examination is usually the last requirement to be fulfilled by students in the Coursework Track. Its purpose is to demonstrate a breadth and depth of knowledge in the core concepts of Chemistry. The exam is based on the student's major track in Chemistry. Faculty members in the student's track write the questions for the master's exam. The faculty members who write the questions grade the exam. Students schedule the exam though the Graduate Secretary.

### Contacts

**Program Web Address:**

https://chem.cst.temple.edu/graduate/

**Department Information:**

Dept. of Chemistry  
130 Beury Hall  
1901 N. 13th Street  
Philadelphia, PA 19122  
cstgrad@temple.edu  
215-204-7118

**Mailing Address for Application Materials:**

Dept. of Chemistry  
400 Carnell Hall (041-03)  
1803 N. Broad Street  
Philadelphia, PA 19122-6095

**Department Contacts:**

*Admissions:*
Courses

CHEM 5001. Advanced Inorganic Chemistry I. 3 Credit Hours.
Group theory and its applications to chemical systems. Molecular orbital theory and spectroscopy. Descriptive chemistry of transition metal and organometallic compounds.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5103. Advanced Instrumental Methods. 3 Credit Hours.
Recent developments in electrochemical and electroanalytical techniques, including voltammetric and potentiostatic procedures and the basics of instrumental design. Applications to organic chemistry, trace analysis, chromatographic detectors, and electrokinetics discussed.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5107. Drug Analysis. 4 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5108. Investigative Chemistry. 4 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5201. Physical Methods in Organic Chemistry. 3 Credit Hours.
Principles and applications of important physical and spectroscopic methods; IR, UV, NMR, MS, ESR, ORD, and CD in structure determination.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5202. Organic Reaction Mechanisms. 3 Credit Hours.
This course is an introductory overview of organic structure and most common organic reaction mechanisms.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5205. Organic Syntheses. 3 Credit Hours.
Scope and limitations of modern synthetic methods, including silicon reagents, organometallic and radical chemistry.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5301. Quantum Chemistry. 3 Credit Hours.
Introduction to quantum mechanics and its application to chemical systems.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5302. Statistical Thermodynamics. 3 Credit Hours.
The basic concept of statistical mechanical ensembles and their application.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5305. Chemical Kinetics. 3 Credit Hours.
A study of the dynamics of chemical reactions.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.
CHEM 5358. Cellular/Molecular Neuroscience. 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5401. Biochemistry I. 3 Credit Hours.
A survey of the biological macromolecules (proteins, nucleic acids, carbohydrates, and lipids) correlating their structures with their chemical properties and biological functions.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5505. Advanced Polymer Structure and Properties. 3 Credit Hours.
Polymers are ubiquitous in many new (scaffolds for tissue engineering, hip replacements) and old (textiles, engineering resins, flocculants) applications, and are often used in composites with inorganic materials. In order to better understand the use and novel developments of polymers, this course will provide the fundamentals of synthesis, polymer structure/property relationships, and characterization methods.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 5701. Teaching of Chemistry. 0 to 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8000. Special Topics in Inorganic Chemistry. 3 Credit Hours.
A survey of a topic chosen by the instructor. Topics could include bioinorganic chemistry, organometallic chemistry, solid state and materials chemistry, and catalysis.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 8200. Special Topics in Organic Chemistry. 3 Credit Hours.
Advanced lecture course; subject matter varies from semester to semester.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 8201. The Chemistry of Natural Products. 3 Credit Hours.
Biogenetic classification, classical and modern synthetic approaches to polyketides, steroids, terpenes, and alkaloids.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8202. Organometallic Chemistry. 3 Credit Hours.
A survey of the chemistry of organic compounds of the main and transition elements, with emphasis on their reactions and applications.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8205. Heterocyclic Chemistry. 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8210. Special Topics in Organic Chemistry. 3 Credit Hours.
Advanced lecture course; subject matter varies from semester to semester.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 8300. Special Topics in Physical Chemistry. 3 Credit Hours.
Advanced lecture course, subject matter varies from semester to semester.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8301. Molecular Spectroscopy. 3 Credit Hours.
Absorption, emission and scattering of light by molecular system. Discussion of basic principles and experimental techniques.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8302. Computational Chemistry. 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8303. Modern Meth in Exp Chem. 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.
CHEM 8310. Special Topics in Analytical Chemistry. 3 Credit Hours.
Advanced lecture course, subject matter varies from semester to semester.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 8400. Special Topics in Biochemistry. 3 Credit Hours.
Advanced lecture course; subject matter varies from semester to semester.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 8401. Bioinorganic Chemistry. 3 Credit Hours.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8501. High Polymer Chemistry. 3 Credit Hours.
Introduction to the important theoretical and practical aspects of high polymer chemistry.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8601. Analytical Separations. 3 Credit Hours.
Theory and practice of modern separation methods with emphasis on chromatographic and electrophoretic techniques.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may not be repeated for additional credits.

CHEM 8985. Teaching in Higher Ed: Phys Sci. 1 to 3 Credit Hour.
Teaching in Higher Education: Physical Sciences. This course focuses on learning theory and the best teaching practices, with the aim of preparing students for effective higher education teaching.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9300. Seminar in Physical Chemistry. 1 Credit Hour.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9900. Seminar. 2 Credit Hours.
Formal presentation of research topics by graduate students. Regular attendance required of all graduate students.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9991. Research. 1 to 6 Credit Hour.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9994. Preliminary Examination Preparation. 1 to 6 Credit Hour.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9996. Master’s Thesis. 1 to 6 Credit Hour.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9998. Pre-Dissertation Research. 1 to 3 Credit Hour.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Repeatability: This course may be repeated for additional credit.

CHEM 9999. Doctoral Dissertation. 1 to 6 Credit Hour.
Dissertation Research. Limited to Ph.D. students who have been elevated to candidacy.
Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate
Student Attribute restrictions: Must be enrolled in one of the following Student Attributes: Dissertation Writing Student
Repeatability: This course may be repeated for additional credit.