Department of Chemistry

Chemistry Open House
Information for Prospective Concentrators
Spring 2022
**People:**

**Dr. Robert L’Esperance**
- Director of Undergraduate Studies
- Senior Class Advisor
- Junior Class Advisor

**Dr. Susan VanderKam**
- Associate Director of Undergraduate Studies
- Senior Class Advisor

**Ms. Shafon McNeil**
- Undergraduate Administrator
Courses

Prerequisites:

✦ One year General Chemistry or equivalent.

✦ One year Organic Chemistry. CHM 301 (F) and CHM 304 (S). These courses must be taken for a grade at Princeton.

✦ One year college calculus such as MAT 103/104, equivalent.

✦ One year college physics such as PHY 101/102 or 103/104 or equivalent
# Courses

Eight Departmental:

4 Core Courses and 4 Cognate Courses

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<tr>
<th>Core Courses</th>
<th>Cognate Courses**</th>
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| ✦ Organic Chemistry - 1 semester  
  CHM 301 (F), 302 (S), 304 (S) | ✦ Non-introductory course |
| ✦ Core Lab - 1 semester  
  CHM 371, MSE 302 | ✦ Courses must have prerequisites |
| ✦ Physical Chemistry - 1 semester  
  CHM 305 (F), 306 (S), 406 (S) | Courses may include: |
| ✦ Inorganic Chemistry - 1 semester  
  CHM 411 (F), CHM 412 (S) | ✦ 200 level and higher:  
  MAT and PHY |
|                           | ✦ 300 level and higher:  
  CHM, MSE, QCB, and some MOL,  
  GEO, EEB, and Engineering  
  courses. |

**Courses are evaluated on an individual basis, and the course must have strong chemistry component. Policy courses do not meet the requirement.
Inorganic Chemistry

The Department of Chemistry recently revamped our Inorganic chemistry undergraduate course offerings. The Inorganic chemistry offerings are CHM 411 (F) and CHM 412 (S). The first six weeks of both CHM 411 and 412 will cover the same foundational topics in coordination chemistry structure and bonding. The two courses will diverge during the second six-week period. Thus, students will select whether to take 411 or 412 based on scheduling (i.e. they are offered in different terms) and topical interest.

CHM 411: Inorganic Chemistry: Structure and Reactivity (Fall), will consider topics of molecular reactivity and reaction mechanism after developing key concepts in bonding and coordination chemistry structure.

CHM 412: Inorganic Chemistry: Structure and Materials (Spring), will consider topics in the areas of solid-state chemistry, inorganic materials chemistry, and nanoscience after completing the initial 6-week development of coordination chemistry bonding and structure.

Either CHM 411 or 412 will prepare the student for advanced Inorganic Chemistry coursework at the 500-level.
The Department of Chemistry recently revamped our Experimental chemistry undergraduate course offerings. Experimental chemistry now consist of two courses, CHM 371 and CHM 373. Concurrent enrollment or prior completion of CHM 373 is required for CHM 371. The overarching goal of these courses is to learn the art of designing experiments for independent inquiry.

**CHM 371:** This course consists of four compulsory laboratory exercises that explore a breadth of topics in chemistry. The compulsories include inorganic synthesis, physical characterization, spectroscopy, and computational chemistry. Incorporated into these experiments are analytical methods, quantitative methods, and instrumental methods. Proper lab technique and data management are also part of the learning experience.

**CHM 373:** This course introduces fundamental principles of modern analytical methods such as spectroscopy, chromatography, and electrochemistry. Students learn about instrumental methods that employ these concepts and how to interpret data collected using these techniques. Discussion includes statistical treatment of data using standard methods for proper reporting of information with precision, accuracy, and uncertainty.

*N.B.* CHM 371 is a core course and CHM 373 counts as a cognate course.
## Independent Work

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<th>Fall</th>
<th>Spring</th>
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<tr>
<td>Senior</td>
<td>CHM 981 Fall:</td>
<td>CHM 981 Spring:</td>
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<td>✦ Colloquia - Monday evenings</td>
<td>✦ Laboratory Work</td>
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<td></td>
<td>Two Professors present their research. Attendance is mandatory.</td>
<td>Original research project. At the end of the semester you will submit a</td>
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<td>Reading Groups - Write critical analysis of a research article.</td>
<td>research proposal summarizing your results, and outlining future work.</td>
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<td>✦ All thesis projects are experimental. No “library theses” are</td>
<td>✦ Due date is usually the third week of April.</td>
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<td>accepted.</td>
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- **CHM 981 Fall** and **CHM 981 Spring** each carry the weight of one course. These courses do not count as one of the eight departmental courses. Grades for both courses are factored into your GPA.
- **CHM 984, Thesis**, carries the weight of two courses. This course does not count as one of the eight departmental courses. CHM 984 is a double credit course, and the grade is factored into your GPA.
Departmental Exams and Honors

Comprehensive Exam: CHM 983
✦ In May of your senior year, the department administers a comprehensive exam. This exam is a Thesis Presentation.
✦ Counts 10% towards departmental honors.

Departmental Honors:
✦ 55% Course average + 10% Comprehensive exams + 35% Thesis grade.
✦ Course average: 8 departmental courses + Fall and Spring JIW.

Prize Exams:
✦ Wallis Prize – Performance on Organic Chemistry Prize Exam, organic courses, organic comprehensive exam, and thesis.
✦ McCay Prize – Performance on Physical Chemistry Prize Exam.
✦ Chilson Prize – Best Inorganic Chemistry Thesis.
Certificates

Certificates:

✦ Some of the more common certificates that chemistry majors have earned through Princeton University are:
  Environmental Studies, Material Science and Engineering, Neuroscience, Quantitative and Computational Biology, and Sustainable Energy.

✦ Students also have the opportunity to attain a chemistry degree that is certified by the American Chemical Society. The ACS guidelines list courses that are strongly recommended to be completed as thorough preparation for entering Graduate School.
**Advising**

**Dates:**

- March 24 – April 11. Sophomores indicate concentration on Registrar’s web site.


- Complete the Departmental Academic Planning Form (DAPF in TigerHub).

- Sophomore course enrollments on Tuesday, April 12.