

DOCTOR OF PHILOSOPHY IN THE FIELD OF CHEMISTRY (STEM)

Housed in the Columbian College of Arts and Sciences, GW's chemistry program fosters active learning through a research-based curriculum.

Beginning with advanced coursework and training in the discipline as a whole and one or more selected subdisciplines, our award-winning graduate students engage in cutting-edge research alongside expert faculty. Research areas include proteomics and bioanalytical methods development, synthetic medicinal chemistry and drug design, combustion, battery chemistry and renewable energy sources, laser and molecular spectroscopies, nano- and biomaterials, modeling, coordination chemistry, and novel inorganic framework structures.

The PhD program is designed to develop students who are able to plan and carry out original research in analytical, biochemical, inorganic, materials and organic or physical chemistry. Studies begin with core courses in focus areas, with students quickly moving on to join research groups that match their interests. Opportunities abound for research presentations, publications, and award achievement. Collaborations with colleagues in medicine and engineering and with nearby federal research laboratories—including the National Institutes of Health, U.S. Naval Research Laboratory, and National Institute of Standards and Technology—provide rich research experiences.

This is a STEM designated program.

Visit the program website (<https://chemistry.columbian.gwu.edu/phd-chemistry/>) for additional information.

ADMISSIONS

Admission Fall – December 15
deadlines:

Spring – October 1

Standardized GRE general test recommended but not required
test scores: (institutional code 5246).

The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction.

Minimum scores for the program are:

- Academic IELTS: an overall band score of 7.0 with no individual score below 6.0; or

- TOEFL: 600 on paper-based or 100 on Internet-based; or

- PTE Academic: 68;

Prerequisite A bachelors degree in chemistry or a related field.
requirements:

Recommend: Two (2) recommendations
required:

Prior academic records: Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.

If transcripts are in a language other than English, English language translations must be provided. The English translation alone should be uploaded into your application.

Statement of purpose: In an essay of 250 – 500 words, state your purpose in undertaking graduate study in your chosen field. Include your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned on the application. If you are applying for an assistantship or fellowship, you should also describe any teaching experience you have had.

International applicants only: Please follow this link - <https://columbian.gwu.edu/international-graduate-applicants> (<https://columbian.gwu.edu/international-graduate-applicants/>) - to review the International Applicant Information carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW, and English language requirements.

Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences, Office of Graduate Studies
The George Washington University
801 22nd Street NW, Phillips Hall 107
Washington DC 20052

For additional information about the admissions process visit the Columbian College of Arts and Sciences Frequently Asked Questions (<https://columbian.gwu.edu/graduate-admissions-faq/>) page.

Contact:

askccas@gwu.edu
202-994-6210 (phone)

Hours: 9:00 am to 5:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext>).

The requirements for the Doctor of Philosophy Program (<http://bulletin.gwu.edu/arts-sciences/#doctoralstext>)

Pre-matriculation requirements

All entering students in graduate chemistry programs are required to take the American Chemical Society Graduate Level Placement Examinations, given by the Department of Chemistry, prior to matriculation. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are designed to cover the subject matter in the disciplines generally taught in undergraduate programs preparatory for graduate work in chemistry, and the results are used by the department to advise the individual student in planning a program of courses appropriate to the student's background. All graduate students are required to participate in the seminar and colloquium programs. Upon consultation with course instructors, specific course prerequisites may be waived.

PhD program of study

Students develop a program of study in consultation with their doctoral committee, subject to the approval of the department's Graduate Affairs Committee. The program of study must include coursework in a minimum of five graduate-level courses; at least three of these courses must be core courses as defined in the department's Guide for Graduate Students and at least three must be offered by the Department of Chemistry. These course requirements cannot be fulfilled by achievement on placement exams. At least two graduate-level courses must be taken outside the student's subdiscipline and in at least two other subdisciplines/discipline. Equivalent courses offered by another university may be substituted at the discretion of the Graduate Affairs Committee.

| Code | Title | Credits |
|----------------------------|--|---------|
| Required coursework | | |
| CHEM 6221 | Spectrochemical Analysis | |
| CHEM 6222 | Biomedical Mass Spectrometry | |
| CHEM 6233 | Organometallic Chemistry and Catalysis | |
| CHEM 6235 | Advanced Inorganic Chemistry I | |
| CHEM 6238 | Chemistry of Inorganic Materials | |
| CHEM 6251 | Advanced Organic Chemistry I | |
| CHEM 6257 | Physical-Organic Chemistry | |

CHEM 6259 Polymer Chemistry

CHEM 6273 Chemical Thermodynamics

CHEM 6277 Chemical Bonding

CHEM 6278 Molecular Spectroscopy

Dissertation research

CHEM 8999 Dissertation Research

Students may substitute up to 12 credits in CHEM 8999 Dissertation Research with coursework jointly approved by the Departments of Chemistry and Forensic Sciences, the Environmental Resource Policy Program, or the International Science and Technology Policy program. These credits may be selected from specified courses offered by the information systems and technology management program, public policy and public administration program, Departments of Forensic Sciences and Political Science, and the Elliott School of International Affairs.

General examination

Students must successfully complete the program's general examination, which consists of three parts: a 30-minute seminar, cumulative examinations, and a candidacy examination. To pass the general examination, students must present a 30-minute seminar covering topics from the literature and preliminary research results, prior to the start of their fifth semester in the program. They must also successfully complete their cumulative examinations and candidacy examination no later than the end of their sixth semester in the program.

Students also must present a 60-minute seminar on their research prior to the dissertation defense.