

DOCTOR OF PHILOSOPHY IN THE FIELD OF CHEMISTRY

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, engineering and nearby federal research laboratories—including the National Institutes of Health, Naval Research Laboratory and the 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:

RecommendTwo (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.

For more information on the admission process, please visit the Columbian College of Arts and Sciences Frequently Asked Questions (<http://columbian.gwu.edu/graduate/admissions/faqs/>) page.

Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences - Graduate Admissions Office
The George Washington University
801 22nd Street NW, Phillips Hall 215
Washington DC 20052

Contact for questions:

askccas@gwu.edu ~ 202-994-6210 (phone) ~ 202-994-6213 (fax)
8:30 am - 5:30 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>).

72 credits in a program of study developed in consultation with the doctoral committee.

Students develop their program of studies in consultation with their doctoral committee, subject to the approval of the department's Graduate Affairs Committee. The program of studies must include coursework in a minimum of five graduate-level courses; at least three of the courses must be core courses as defined in the department's Guide for Graduate Students; at least three must be offered by the Chemistry Department. 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/disciplines. Equivalent courses offered by another university may be substituted at the discretion of the Graduate Affairs Committee. Students must pass a cumulative examination system and an oral defense of the doctoral research plan.

Research fields

- Analytical chemistry—analytical neuroscience, analytical spectroscopy, biomedical analysis, chemical imaging, chemical instrumentation, chemical separations, electrochemical analysis, electrospray ionization, lab-on-a-chip devices, high-performance liquid chromatography (LC), laser-material interactions, mass spectrometry, nanophotonic structures, nmr spectroscopy, post-translational modifications, proteomics and metabolomics, single cell analysis;
- Biochemistry—biological sensing via nanoparticles, biomaterials, biomolecular analysis, biophysical topics, enzymology, lipids chemistry, proteomics and metabolomics, enzyme expression and inhibition, structural biology;
- Inorganic (materials) chemistry—battery chemistry, coordination chemistry, f-element chemistry, green chemistry, hydrothermal chemistry, mineral surface geochemistry, magnetochemistry, molecular spintronics, nanoscale and nanostructured materials, organometallic chemistry, small-molecule crystallography, solid-state materials;
- Organic chemistry—biomaterials and lipids, catalysis, computational docking and ligand design, green chemistry, heterocyclic chemistry, molecules of biological interest, synthesis;

- Physical chemistry—CO₂ removal, combustion chemistry, elemental and molecular spectroscopies, fuel cells, laser analytics, renewable energy conversion, solar chemical syntheses, surface chemistry, theoretical chemistry, thermochemical energy cycles.

PhD students in chemistry may substitute up to 12 hours of Dissertation Research in the form of coursework jointly approved by the Chemistry Department and the Forensic Sciences Department, the Environmental Resource Policy Program, or the International Science and Technology Policy program. The 12 hours may be selected from specified courses offered by Forensic Sciences, Information Systems and Technology Management, Political Science, Public Policy and Public Administration, and the Elliott School of International Affairs.

Note: 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.

With permission, a limited number of upper-level undergraduate courses in the department may be taken for graduate credit; additional coursework is required. See the Undergraduate programs for course listings.

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