

# MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL AND GREEN CHEMISTRY (STEM)

Growing public awareness about the state of the environment, chemical product safety, and new chemical regulatory policies is driving demand for leaders who are able to understand the science underlying environmental challenges and thus develop innovative solutions. The master of science in environmental and green chemistry, offered through GW's Department of Chemistry, develops the experts needed with an interdisciplinary curriculum that fosters proficiency in evaluating the state of the environment and designing greener technologies.

Unlike many other graduate programs in environmental chemistry, GW's unique program places emphasis on green chemistry—the design of new chemicals and chemical processes with minimal environmental impact. Students pursue five core focus areas: energy, environmental analytical chemistry, air/water chemistry, green chemical processing, and chemical toxicology. For a broader perspective, the curriculum can be tailored to students' interests, and courses in public health, science policy, and business are encouraged. A capstone project enables students to apply the knowledge gained from other coursework and develop the interpersonal and communication skills needed to collaborate with scientists and laypeople alike.

Being in Washington, DC, allows for unique opportunities, including proximity to a hotspot for green careers and potential capstone partners such as the Environmental Protection Agency, Department of Energy, and Food and Drug Administration. Graduates find employment as well-rounded chemists in government and the private sector, in roles such as environmental and sustainability consultants, health professionals, new product developers, engineers, or project managers across industries and business sectors.

This is a STEM designated program.

## ADMISSIONS

**Admission deadlines:** Fall - February 1: Priority consideration for admission and funding; April 1: Guaranteed review for admission and consideration for funding, if available. (Applications for admission will continue to be accepted after April 1, when space remains available in the program.)

Spring - October 1

**Prerequisite:** Two semesters of general chemistry, two semesters of organic chemistry, one semester of inorganic chemistry, and one semester of quantitative and/or instrumental analysis.

**Standardized GRE general test recommended, but not required. tests:** (ETS institution 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 6.0 with no individual score below 5.0; or

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

- PTE Academic: 53

**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.

**Additional requirement:** A writing sample is required. The writing sample should be a science-related original work, of which you are the sole or primary author. The sample should be one to five pages in length and may be an excerpt from a longer document.

**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.

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 (<https://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

30 credits, including 18 credits in required courses and 12 credits in elective courses.

Note: ACS placement examinations are administered at the start of the program of study to ensure competency in key areas of chemistry.

Code	Title	Credits
<b>Required</b>		
CHEM 6280	Energy and the Environment	
CHEM 6281	Environmental Chemistry: Air, Water, and Soil	
CHEM 6282	Green Industrial Chemistry	
CHEM 6283	Chemical Toxicology and Rational Design of Safer Chemicals	
CHEM 6284	Environmental Analytical Chemistry	
CHEM 6298	Capstone Seminar in Environmental and Green Chemistry	
or PPPA 6198	Environmental Resource Policy Capstone	
<b>Electives</b>		
12 credits in elective courses selected from the following*:		
CHEM 6238	Chemistry of Inorganic Materials	
CHEM 6251	Advanced Organic Chemistry I	

CHEM 6257	Physical-Organic Chemistry
CHEM 6278	Molecular Spectroscopy
CHEM 6320	Selected Topics in Analytical Chemistry
CHEM 6350	Selected Topics in Organic Chemistry
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6200	Policy Factors in Environmental and Energy Management
ENRP 6101	Environmental Sciences I: Physical Sciences
ENRP 6102	Environmental Sciences II: Life Sciences
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6142	Technology Creation/Diffusion
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy **
PPPA 6066	U.S. Environmental Policy
PUBH 6002	Biostatistical Applications for Public Health
PUBH 6126	Assessment and Control of Environmental Hazards
SMPP 6290	Special Topics **
STAT 6202	Mathematical Statistics II

\*Alternate elective courses may be selected subject to the program director's approval.

\*\*Approved topics only. Consult the Schedule of Classes for current semester offerings. Permission of the advisor must be received prior to enrollment.