

Environmental Metrology & Policy/Chemistry (Joint Program)

Modality

On Campus

Program URL

<https://emap.georgetown.edu/>

The Master of Science program in Environmental Metrology and Policy, along with the Doctor of Philosophy program in Chemistry, offers a joint program that emphasizes expertise in identifying health and ecological risks through precise, standardized measurements of pollutants. With a scientific and evidence-based curriculum, students learn to formulate regulatory frameworks and effective strategies for policymaking. Students are also equipped with skills to use metrology to address pressing environmental issues.

Upon graduation, students are proficient in identifying and quantifying accurate and reliable legacy and emerging environmental pollutants so that impactful environmental policies can be crafted based on the soundest scientific evidence.

Academic Policies

To be in good academic standing over the period of studies, EMAP students are required to maintain an average GPA no less than 3.0. Any probation and dismissal will follow the Graduate School's policy and guidance.

Requirements

Program Requirements

The joint Master of Science in Environmental Metrology & Policy and Doctor of Philosophy in Chemistry program is for students who have a strong mastery of college-level chemistry. Students are initially admitted to the M.S. program and must maintain at least a 3.000 GPA to be considered for admission to the doctoral program in Chemistry.

Students must complete the degree requirements for the M.S. degree:

Course	Title	Credits
Fall I		
EMAP 5501	Chem of Environ Exposures	3
EMAP 5502	Statistical Methods Metrology	3
EMAP 5504	US & Int'l Enviro Laws & Pol	2
EMAP 5505	EnviroToxicology&Epidemiology	2
EMAP 5500	Weekly Seminars	0
Credits		10
Spring I		
EMAP 5503	Environmental Economics	2
EMAP 5511	Environmental Metrology	2
EMAP 5512	Princ of Instrumental Analysis	3
EMAP 5514	Environ Risk Assessment & Mgt	2

EMAP 5515	Adv Env Pol Making Science I	2
EMAP 5500	Weekly Seminars	0
Credits		11
Summer		
EMAP 7952	Program Internship ¹	0
Credits		0
Fall II		
EMAP 5513	MetrologyLab IIA-Guided IndRes	2
EMAP 5516	Adv Env Policy Making Sci. II	2
Elective selected by the student		3
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EMAP 5500	Weekly Seminars	0
Credits		10
Spring II		
EMAP 7998	Capstone Project A	1
EMAP 5517	Data Sci & Mach Learn Env Met	2
EMAP 5520	Toxicity Testing for 21st Cent	2
Credits		5
Total Credits		36

¹ All students participate in a fully funded 10-week summer internship at either the National Institute of Standards and Technologies or the U.S. Environmental Protection Agency.

Students shall be exempted from all other coursework required by the Ph.D. in Chemistry program, with the exception of CHEM 9915 (Intro to Chemistry Research). However, students may take additional Chemistry coursework if deemed important for the student's development and/or doctoral research.

Required Examinations

Once students have completed the Master of Science degree, they will need to take the following examinations.

Placement Examinations

Students will take the Phase I exams in areas of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry by the end of their fourth semester of student. These exams are similar to ACS tests and gauge the standing of students on topics typically covered in B.S. programs. The results also inform course selection.

Students are required to reach excusing level in 4 out of 5 chemistry areas in order to advance to the second year of study. Students are allowed up to three attempts in each exam area.

Comprehensive Examination

The Comprehensive Examination is comprised of two oral exams. The Phase IIA exam occurs no later than the sixth semester where students are guided by their research mentors to prepare and submit a document summarizing research accomplishments and directions. The thesis advisory committee forms at this juncture and an oral examination is conducted to evaluate the research progress and students' fundamental chemical knowledge pertinent to the research area.

The Phase IIB exam occurs in the semester following the Phase IIA exam. Students must prepare an original research proposal without mentor input and defense the proposal in an oral examination. These

exams prepare students for the design, execution, and reporting of scientific studies.

Thesis Requirements

For the master's portion of the joint program, students must complete a summative capstone project with a thesis in the fourth semester of the program. The research topic is based upon the students' internship experience and should address a contemporary environmental issue.

In the doctoral program, students are required to convene a dissertation to committee to support them through original research that will result in a dissertation. Once the committee approves the dissertation for submission, students will give a 20-minute presentation on the dissertation followed by an oral defense. The presentation and questioning parts of this examination are open to the public and should be advertised ahead of the defense date.