ENVIRONMENTAL SCIENCES AND POLICY, MASTER OF SCIENCE

MS in Environmental Sciences and Policy (https://advanced.jhu.edu/academics/graduate/ms-environmental-sciences-policy/)

Climate change, population growth, energy consumption, habitat loss, water depletion and degradation, air pollution, and species extinction are increasingly top-of-mind for citizens around the world. To manage the Earth's environment effectively, there is a need to understand the processes that shape the planet's surface, control the chemistry of its air and water, and generate the natural resources on which humans depend. The Master of Science in Environmental Sciences and Policy program is distinct in its focus on the interplay between science and policy. This program is founded on the premise that rational solutions to complex 21st-century environmental challenges require an in-depth understanding of applicable scientific principles and an appreciation for relevant political, ethical, economic, legal, and historical contexts. Graduates of the program develop combined expertise in science and policy that empowers them to become change agents and leaders in public and private organizations responsible for safeguarding our environment. Many of the program's students are currently employed in environmental fields but wish to enhance their knowledge or move in new directions. Others seek to transition into the arena of environmental science and policy.

The program offers a flexible curriculum that allows students to customize their academic experience to suit their personal needs and interests. Courses are focused on wide-ranging issues such as imperiled global ecosystems, natural resources economics, and multinational environmental trusts and laws. The program is open to students with limited scientific background as well as those who already have a background in the environmental sciences. Core course work includes geology, hydrology, oceanography, meteorology, ecology, geographic information systems, and policymaking. Electives range across a spectrum, from courses strongly oriented toward policy to ones focused more heavily on science. Electives are selected by students under the guidance of advisers.

The program was originally designed by members of the Department of Earth and Planetary Sciences at Johns Hopkins, in conjunction with experts in applied science at regional and federal institutes and agencies. Students and faculty continue to collaborate in the department's accelerated BS/MS degree. Courses are taught by distinguished instructors with invaluable experience in the academic, public, and corporate sectors. Many of the program's alumni are highly successful professionals. Taking a holistic approach, the Environmental Sciences and Policy program curriculum positions students to join and contribute to the global science community.

Admissions Criteria for All Advanced Academic Programs (https://e-catalogue.jhu.edu/arts-sciences/advanced-academic-programs/Admission/#admissionrequirementstext)

PROGRAM-SPECIFIC REQUIREMENTS

The Master of Science in Environmental Sciences and Policy program requires (prior to admission):

- **Resume**
- **Statement of Purpose:** Please provide a statement, up to one page in length, describing your personal background and/or a part of your life experience that has shaped you or your goals. Feel free to elaborate on personal challenges and opportunities that have influenced your decision to pursue a graduate degree at Johns Hopkins.
- **Two Letters of Recommendation**
- **Required Coursework:**
  - One semester of undergraduate calculus
  - One semester of undergraduate statistics
  - One semester of undergraduate chemistry

BA/MS Option for Johns Hopkins E&PS and ENVS Majors

Undergraduates in Earth and Planetary Sciences majoring in Environmental Science or Environmental Studies may apply for accelerated status toward an MS in Environmental Sciences and Policy or MS in Geographic Information Systems through the JHU Krieger School of Arts and Sciences' Advanced Academic Programs division. Interested students should speak with their adviser and the director of the ESP and GIS Program in their senior year. ENVS students may apply up to two courses (a third upon director approval) toward the Master of Science degree, thereby leaving only eight more courses to complete the graduate degree following receipt of their bachelor's degree. ENVS students will receive two separate degrees, so the requirements of both degrees must be fulfilled. Students cannot earn the Master of Science degree without completion of the Bachelor of Arts or Bachelor of Science. However, students who do not complete the Master of Science degree retain their bachelor's degree.

Admission Requirements

ENVS students may apply for the BA/MS anytime during the senior year or after conferral of their undergraduate degree. The application procedure is the same as that for other AAP applicants. Students admitted to the BA/MS program will be assigned a graduate adviser but will also continue to be advised by their ENVS adviser for all matters concerning the bachelor's degree.

Program Requirements

Students in the MS in Environmental Sciences and Policy program must complete ten courses:

- Four customizable core courses
- Six electives, one being onsite or in the field with one of our field study courses

Code	Title	Credits
Core Courses - Customizable:		**12**
Select four of the following:		
AS.420.601	Geological Foundations of Environmental Science	
AS.420.603	Environmental Applications of GIS	
AS.420.604	Hydrology & Water Resources	
AS.420.608	Oceanic & Atmospheric Processes	
AS.420.611	Principles & Methods of Ecology	
AS.420.614	Environmental Policymaking and Policy Analysis	
Electives		**18**
Total Credits		**30**

Electives

Code	Title	Credits
Select six of the following:		18
AS.420.605	Maritime Law and the Environment	3
AS.420.606	Climate Justice	3
AS.420.610	Sustainable Business	3
AS.420.612	Sustainability Science: Concepts and Challenges	3
AS.420.613	Forest Ecosystems	3
AS.420.615	Environmental Restoration	3
AS.420.617	Managing Responsible Organizations for the Ecosystem	3
AS.420.619	Climate Dynamics	3
AS.420.621	Intersection of Science and Society-Watershed Ecosystems	3
AS.420.622	Ecotoxicology	3
AS.420.623	Freshwater Ecology & Restoration of Aquatic Ecosystems	3
AS.420.625	Ecology and Ecosystem Management in Coastal and Estuarine Systems	3
AS.420.628	Ecology and Management of Wetlands	3
AS.420.629	Drinking Water,Sanitation & Health	3
AS.420.632	Air Quality Management and Policy	3
AS.420.637	Conservation Biology	3
AS.420.638	Coastal Zone Processes and Policy	3
AS.420.639	Landscape Ecology	3
AS.420.641	Natural Resources Law and Policy	3
AS.420.642	Public Lands-Private Interests:The Struggle for Common Ground	3
AS.420.643	U.S. Environmental History	3
AS.420.644	Sustainable Cities	3
AS.420.646	Transportation Policy and Smart Growth	3
AS.420.650	International Environmental Policy	3
AS.420.651	Environmental Risk in Decision Making	3
AS.420.654	Environmental & Natural Resource Economics	3
AS.420.656	Environmental Impact Assessment & Decision Methods	3
AS.420.659	Management for Environmental Results with Performance-based Measurement	3
AS.420.660	Strategies in Watershed Management	3
AS.420.665	Climate Change on the Front Lines: The Study of Adaptation in Developing Countries	3
AS.420.667	Analysis of Environmental & Ecological Data	3
AS.420.668	Sustainable Food Systems	3
AS.420.669	Applied Sustainability	3
AS.420.670	Sustainability Leadership - Costa Rica	3
AS.420.671	Global Land Use Change	3
AS.420.672	Environmental Ethics	3
AS.420.673	Ecology and Evolution of the Galapagos	3
AS.420.674	Applied Energy Policy in the 21st Century	3
AS.420.675	Geology and Tropical Ecology of Hawai'i	3
AS.420.676	Global Scarcity in Freshwater Systems: Crisis and Solutions	3
AS.420.677	Spatial Statistics	3
AS.420.679	International Water: Issues and Policies	3
AS.420.687	Science Communication and Policy Engagement	3
AS.420.703	Open Source GIScience for Environmental Research	3
AS.420.704	Practical Engineering Approaches to Climate Adaptation	3

Culminating Experience

Code	Title	Credits
AS.420.805	Internship and Capstone Thesis	3
AS.425.800	Capstone Projects in Energy and Environmental Sciences	3

Field Study Electives

ESP courses are offered as intensive field study courses. Each intensive study course has an additional travel trip fee. Students are responsible for travel to the location of their residence course. If travel, cost, and other obligations prohibit students to enroll in a residency course the ESP program has alternative online residency courses. Contact Program Director for more information.

Code	Title	Credits
AS.425.617	Energy, Eutrophication, and Inundation in Coastal Louisiana	3
AS.420.623	Freshwater Ecology & Restoration of Aquatic Ecosystems (Maryland)	3
AS.430.629	Drones in Geospatial Decision Making	3
AS.420.637	Conservation Biology (Montana)	3
AS.420.669	Applied Sustainability (Maryland)	3
AS.420.670	Sustainability Leadership - Costa Rica (Costa Rica)	3
AS.420.673	Ecology and Evolution of the Galapagos	3
AS.420.675	Geology and Tropical Ecology of Hawai'i	3
AS.420.673	Ecology and Evolution of the Galapagos	3
AS.420.705	Natural Resources Sustainability: Field Study in Alaska	3

Residency Courses

Environmental Sciences and Policy field courses give students the unique opportunity to immerse themselves in domestic and international environmental topics while collecting data, collaborating with the experts, and engaging with faculty and classmates.

Learning Outcomes

The overall programmatic goals at ESP have several objectives. Among the program's learning goals: to identify root and structural causes and the systemic nature of environmental issues (such as invasive species); to engage in critical interpretation of environmental information (such as examining forest carbon sequestration trends); to synthesize scientific studies (such as those examining the impacts of land use change on forests); to integrate basic principles derived from core courses (such as geology and ecology); and to frame any science discussions around sound policy decisions (such as those regarding National Park mining exploration and fire policy).

Graduates of this program should be able to:

1. Interpret environmental policy-making processes, institutions, and organizations to be able to identify root and structural causes and the systemic nature of environmental problems.
2. Research and recommend methods for collection, analysis, presentation, and critical interpretation of environmental information using appropriate statistical and quantitative tools.
3. Utilize the practical and theoretical components of environmental science and policy to develop local and global environmental strategies, while developing competency in evaluating and synthesizing scientific studies to guide environmental decision-making, policy making, and advocacy.
4. Analyze environmental problems by applying or integrating basic principles derived from natural and social science, legal, and economic frameworks. Additionally, conceptualize, develop, and devise bridges between the realms of policy and science on critical environmental issues.
5. Evaluate effective strategies, technologies, and methods for sustainable management of environmental systems at and for the remediation or restoration of degraded environments in conjunction with evidence-based, science-informed environmental policy analysis.