GRADUATE CERTIFICATE IN ENVIRONMENTAL POLICY

OFFERED BY:
Department of History and Political Science

PARENT DEPARTMENT AND DEGREE:
Department of History and Political Science

INTENDED AUDIENCE: _x_Main Campus Students __Distance Students _x_Hybrid

PROGRAM DESCRIPTION:

Addressing growing student demand for training in environmental affairs, the Graduate Certificate in Environmental Policy prepares learners to participate effectively in environmental policymaking through a program of advanced, structured, and interdisciplinary study. Building on the university's successful undergraduate major in Environmental Science, growing student interest in public policy, and the campus-wide Bio-X initiative, the certificate equips graduate students with both foundational knowledge of public policy processes and subject-matter expertise in their chosen domains of environmental governance.

Core coursework introduces the structures and functions of public institutions, including legislative, administrative, and regulatory systems, and examines how environmental policies are formulated, implemented, and evaluated. Specialized courses allow students to explore substantive areas of environmental policy, ranging from climate change mitigation and the energy transition to resource management and environmental justice. Through lectures, case studies, and applied projects delivered in a blended or fully in-person format, students develop practical skills, abilities, and knowledge spanning public policy analysis and deliberation, environmental planning, evidence-based decision-making, ethical reasoning, and beyond.

PURPOSE:

The purpose of the Graduate Certificate in Environmental Policy is to prepare students to participate effectively in environmental policymaking as professionals in government, industry, civil society, and academia. Navigating the complex intersection of environmental science and public policy requires students to develop analytical and leadership skills while acquiring domain-specific knowledge and expertise. This program equips students with both, preparing graduates to evaluate environmental challenges, develop and implement effective policy responses, and promote supporting and compliant practices across diverse organizations and settings. Upon completing the certificate, students are empowered to help drive positive environmental change and support sustainable outcomes at local, national, and global scales.

For students, including graduate students across multiple Master's and PhD programs, recent B.Sc. Environmental Science graduates, and working professionals, the certificate offers a focused pathway for advanced specialization. Adding interdisciplinary dimension and structure to existing offerings,

the program helps learners become more competitive candidates for diverse roles in government, corporate sustainability, nonprofit organizations, and consulting, and for further graduate study.

The certificate also aims to serve as a curricular offering aligned with major research initiatives on campus, including the Bio-X initiative, the Critical Minerals and Materials for Advanced Energy Tech Hub, and other interdisciplinary efforts. By training the next generation of environmental specialists in public policy, this certificate promises to help extend the impact of scientific and engineering research into the arenas where regulatory and governance decisions are made.

ADMISSION:

The Graduate Certificate in Environmental Policy is open to all persons who hold a B.S. degree or are currently accepted into a graduate degree program at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). To receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given six years to complete the program.

Students admitted to the Environmental Policy Graduate Certificate Program will have non-degree graduate status; however, they will earn graduate credit for the course they complete. Students who do not have all the prerequisite courses necessary to begin the courses in the Environmental Policy Graduate Certificate Program will be allowed to take ''bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

CONTRIBUTING FACULTY:

Dr. Joel Burken, Environmental Engineering
Dr. Shane Epting, Philosophy
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Dr. Jeff Schramm, History
Dr. Hunter Schroer, Environmental Engineering
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STUDENT ENROLLMENT:

Table 1. Student Headcount Projections, Years 1-5

Year	**1**	**2**	**3**	**4**	**5**
Full time	0	1	2	3	5
Part time	1	4	5	7	10
Total	1	5	7	10	15

Justification: We expect enrollment to build incrementally at first and to grow appreciably in subsequent years, when we hope to expand the share of courses available in an online format.

PROGRAM LEARNING OUTCOMES (PLOs):

Upon completing the graduate certificate, students are expected to achieve:

- demonstrated knowledge of fundamental processes involved in the making of public policy, as relevant to environmental policymaking;
- a demonstrated ability to apply and adapt theoretical frameworks and other analytical tools from the fields of public administration and public policy to the context of environmental policymaking;
- demonstrated knowledge of public policy issues that present in specific domains of environmental management and conservation, such as climate change mitigation, water management and conservation, and biodiversity protection;
- a demonstrated ability to synthesize environmental data and findings from across the natural-science, social-science, humanities, and engineering disciplines for application to policymaking; and
- the communication and reasoning skills needed to participate in the informed deliberation of environmental policy affairs in speech and writing.

CURRICULUM:

Required Courses			
Course Number	**Course Title**	**Credit Hours**	**New or Existing**
POL SCI 4320	The Politics of Innovation	Lec 3.0	Existing
POL SCI 5300	Advanced Principles of Public Policy *	Lec 3.0	New section (undergraduate section already exists)
Choose two from the following:			
BIO SCI 6100	Biology Citizen Science	Lec 3.0	Existing
ECON 6440	Advanced Environmental and Natural Resources Economics	Lec 3.0	Existing
EDUC 5330	Community-Based Participatory Action Research	Lec 3.0	Existing
ENV ENG 5640	Environmental Law and Regulations	Lec 3.0	Existing
ENV ENG 5642	Sustainability, Population, Energy, Water & Materials	Lec 3.0	Existing
ENV SCI 6560	Environmental Ecology and Management	Lec 3.0	New (but in the process of being approved for other certificates by Fall 2026)
ENV SCI 6667	Disaster Management in Changing Climates	Lec 3.0	New (but in the process of being approved for other certificates by Fall 2026)
HIST 6470	Advanced American Environmental History	Lec 3.0	New section (undergraduate section already exists)
NUC ENG 5507	Nuclear Policy	Lec 3.0	Existing
NUC ENG 5509	Nuclear Nonproliferation	Lec 3.0	Existing
PHILOS 4350	Environmental Ethics and Justice	Lec 3.0	Existing
PHILOS 4665	Creating Future Cities	Lec 3.0	Existing
PHILOS 5277	Wilderness and its Critics	Lec 3.0	New section (undergraduate section already exists)

* Students who have completed POL SCI 3300 Principles of Public Policy may substitute another approved course in the certificate curriculum in place of POL SCI 5300, subject to approval by the certificate program director.

COURSE DESCRIPTIONS:

Required

***POL SCI 4320 The Politics of Innovation* (LEC 3.0)**
Do Google, Airbus, and Samsung owe their success to the wisdom and foresight of government actors? This course explores whether and how public policy can foster the advancement of science, technology, and innovation. The course analyzes and compares how national innovation systems have evolved and function in the United States, Europe, and Asia. Prerequisites: Pol Sci 1200 or History 1100 or History 1200 or History 1300 or History 1310 or instructor's permission. Delivery: In-person. Offered: Every fall.

***POL SCI 5300 Advanced Principles of Public Policy* (LEC 3.0) (Proposed)**
This course presents an advanced study of public policy in the United States. Students analyze the policy process, the resulting policy choices and the impact of the choices on the American people. As an advanced version of POL SCI 3300, it will include additional assignments and expectations. Credit cannot be earned for both POL SCI 3300 and POL SCI 5300. Prerequisite: Graduate standing or instructor's permission. Delivery: In-person. Offered: Every spring or every other spring.

Elective

***BIO SCI 6100 Biology Citizen Science* (LEC 3.0)**
This course is intended to teach students how to utilize citizen science within their classrooms in the context of their content areas, while integrating other disciplines of science. Students will learn the theoretical foundations of citizen science, learn how to create relevant citizen sciences experiences relevant to the region, learn how to integrate science communication within the classroom, and design a unit that utilizes citizen and can be used within a classroom that aligns with the appropriate science standards. Delivery: Online asynchronous.

***ECON 6440 Advanced Environmental and Natural Resource Economics* (LEC 3.0)**
Optimum use of renewable and non-renewable resources, public goods and common resources, externalities, and quality of the environment; emphasis on public policy related to environmental and natural resource economics. As an advanced version of Econ 4440, it will include additional research assignments. Credit cannot be earned for both Econ 4440 and 6440. Prerequisite: Econ 2100. Delivery: In-person.

***EDUC 5330 Community-Based Participatory Action Research* (LEC 3.0)**
This course will focus on methods for engaging school and community members in research. Students will collaboratively identify research questions, practice data collection techniques, analyze, and report the results. Delivery: Online asynchronous.

***ENV ENG 5640 Environmental Law And Regulations* (LEC 3.0)**
This course provides comprehensive coverage of environmental laws and regulations dealing with air, water, wastewater, and other media. The primary focus is permitting, reporting, and compliance protocols. The course topics include U.S. and international legal systems and judicial processes, liability, enforcement, Clean Air Act, Clean Water Act (NPDES) permitting), Safe Drinking Water Act, OSGA, TSCA, RCRA, and CERCLA. Case studies will be emphasized. (Co-listed with Civ Eng 5640). Delivery: Online synchronous.

ENV ENG 5642 Sustainability, Population, Energy, Water, and Materials **(LEC 3.0)**
This course will examine the concepts regarding the continued advancement of humankind while maintaining our ecological niche on earth. Key topics include: population growth, poverty, and impacts of development; energy consumption, sources, storage, conservation and policy; water quality and quantity; materials and building; and policy implications. Prerequisite: Senior or graduate standing. (Co-listed with Civ Eng 5642 and Arch Eng 5642). Delivery: In-person.

ENV SCI 6560 Environmental Ecology and Management **(LEC 3.0)**
This course explores the ecological principles and management strategies essential for sustaining healthy natural systems in the face of environmental change. Students examine ecosystem structure and function, species interactions, biogeochemical cycles, and the drivers of ecological disturbance across diverse environments. Emphasis is placed on applying ecological science to real-world management challenges, including habitat conservation, invasive species control, biodiversity protection, and ecosystem restoration. Through case studies, field-based observations, and analytical projects, students learn to evaluate ecological data, assess environmental impacts, and develop evidence-based management plans. The course prepares students to integrate ecological knowledge into decision-making processes that support sustainable resource use and long-term ecosystem resilience. Delivery: Online asynchronous.

ENV SCI 6667 Disaster Management in Changing Climates **(LEC 3.0)**
This course examines how evolving climate patterns are reshaping the frequency, intensity, and geographic distribution of disasters, and explores strategies for managing these emerging risks. Students analyze the scientific drivers of climate-related hazards—such as extreme weather events, sea-level rise, drought, and wildfires—and assess their impacts on communities, infrastructure, and public health. Emphasis is placed on integrating climate adaptation principles into emergency planning, mitigation, response, and recovery. Through case studies, scenario-based exercises, and applied research, students learn to design resilient systems, evaluate policy approaches, and develop evidence-informed strategies for managing disasters in a rapidly changing climate. Delivery: Online synchronous.

HISTORY 6470 Advanced American Environmental History **(LEC 3.0) (Proposed)**
This advanced course discusses the impact of human interactions with the physical environment and the natural world's influence on human civilizations with emphasis on the 19th and 20th centuries. As an advanced version of HIST4470, it will include additional assignments and expectations. Credit cannot be earned for both HIST 4470 and HIST 6470. Prerequisite: History 1200 or History 1300 or History 1310 or instructor's permission. Delivery: In-person.

NUC ENG 5507 Nuclear Policy **(LEC 3.0)**
This course introduces nuclear security and safeguards policy. It explores the following topics: history of domestic and international nuclear policy, evolution of U.S. nuclear weapons policy, factors influencing policy, the IAEA, nuclear deterrence policy, nuclear safeguards policy, policy in non-proliferation issues, and various international agreements. Prerequisites: Graduate Standing or enrolled in the Nuclear Nonproliferation certificate program. Delivery: In-person.

NUC ENG 5509 Nuclear Nonproliferation **(LEC 3.0)**
This course will introduce IAEA mission specific to nonproliferation. The class will provide discussion of essential elements of a nuclear weapon, followed by a brief historical over of nonproliferation treaties in place to deter proliferation. Methods of fissile material production will be discussed

followed by a survey of tool and techniques available an Prerequisites: Graduate Standing or enrolled in the Nuclear Nonproliferation certificate program. Delivery: In-person.

PHILOS 4350 Environmental Ethics and Justice **(LEC 3.0)**
This Communication Emphasized course studies complex moral issues concerning our relationship to the environment and the ethical foundations of our environmental responsibilities. Discussion topics may include: conservation, resource development, pollution, toxic substances, future generations, the built environment, endangered species, and the unequal distribution of environmental harms and protections. Prerequisite: Any philosophy course. Delivery: In-person.

PHILOS 4665 Creating Future Cities **(LEC 3.0)**
Through texts in the history of philosophy, along with contemporary readings, this class examines how humankind's thinking about urban environments has progressed. It uses philosophical analysis to understand topics such as the ethical, political, aesthetic, and metaphysical dimensions of the city as such, zoning, housing, transportation, & infrastructure. Prerequisites: Sophomore standing or above. Delivery: In-person.

PHILOS 5277 Wilderness and Its Critics **(LEC 3.0) (Proposed)**
Wilderness is one of the most contested areas of environmental work today. This advanced course examines wilderness as both idea and policy, from ethical, aesthetic, social scientific, and comparative perspectives. Students will learn the history of national parks and federally designated wilderness in the U.S. and consider contemporary debates concerning its future, with special focus on critical responses by ecofeminist and decolonial thinkers. As an advanced version of PHILOS 3277, it will include additional assignments and expectations. Credit cannot be earned for both PHILOS 3277 and PHILOS 5277. Prerequisite: graduate standing or instructor's permission. Delivery: In-person.

A cover letter signed by the respective college dean *must* be included with the proposal.
If you have any questions about this form, please contact Graduate Education, 573-341-4141.