

# ENVIRONMENTAL POLICY & MGMT (EPM)

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## **EPM 4001 Environmental Foundations and Principles (4 Credits)**

This course investigates the field's history, current activities and issues, ethics, systems, and economics; and an overview of key necessary knowledge and skills to work and learn within the field. Students will: gain a strong historical understanding of how environmental and natural resource issues have influenced economic development and societal growth throughout the ages; learn about the complexity of environmental issues and the value of interdisciplinary and systems thinking when applied to making decisions about natural resource usage; understand the role that empirical science, policy analysis and advocacy play in how governments and private companies address complex environmental issues; become aware of the stressors that ecosystems around the globe are experiencing and the value of multidisciplinary approaches to addressing these challenges; and understand the diverse organizations and employment opportunities available in the environmental field.

## **EPM 4002 Integrated Environmental Systems (4 Credits)**

The earth as a whole is comprised of many systems that affect the environment. Some have large wide ranging reach, while others are restricted to a relatively small area. Included is everything in between. Actions in one area or system may have unintended secondary and tertiary consequences in that system or others. This course uses various tools and materials to study a few environmental systems and determine connections, consequences, impacts, barriers, decision making, life cycle costs, etc.

## **EPM 4003 Environmental Finance and Economics (4 Credits)**

The class provides an overview of economics, finance, and sustainability in an environmental and social context. The class examines traditional and alternative performance metrics, such as "Green GDP", and explores the relationship between risk and return, return on investments, including environmental, social, and governance (ESG) investing. The course emphasizes relationships between business management and environmental quality, and provides students with a financial and economic decision-making framework for understanding and analyzing environmental issues. The course utilizes a case-study approach to cover economic and finance concepts in real world scenarios involving natural resource and environmental decisions. Students will leave this course with the ability to confidently converse regarding sustainability in a finance and economics context.

## **EPM 4040 Wetland Ecology and Management (4 Credits)**

This course provides a detailed examination of wetlands and deepwater habitats of the United States, with an emphasis on wetlands. The definition, identification, classification, and management requirements of various wetland communities are stressed. Students identify and classify wetlands and analyze wetlands in the context of federal, state, and local regulatory processes. Students evaluate activities with adverse and beneficial effects to wetlands. Students explore concepts related to wetland management in the public, private and non-profit sectors.

## **EPM 4108 Impacts of Recreational Use (4 Credits)**

The practical and managerial theoretical basis of recreational use of public and private lands is examined in the context of ecosystem management. #The statutory and regulatory policies and current issues regarding the management and use of lands in wilderness systems, wild and scenic river corridors, parks, and open spaces are discussed in detail. #The impacts of recreational uses on the environment and conflicts with other uses of land and resources are discussed. Land use planning policies and decisions, decisions which respond to recreation, wilderness, wilderness and open space issues will be examined. At this end of this course, students will create a visitor impact use assessment using the Inter-agency Visitor Use Management Framework (IVUMF).

## **EPM 4115 Introduction to Ecology (4 Credits)**

This course examines the concepts of the ecosystem, populations, communities, the flows of energy, material cycles, and biotic diversity. Students will analyze ecological concepts including the unity of organisms and inseparable interactions with the physical environment. Class discussions include topics such as the formation, distribution, and organization of ecological communities, plant succession, and nutrient cycling. Students will also evaluate aspects of evolutionary trends within plant and animal communities as they relate to ecological principles. The goals of this class are to transmit the principles, methods, and vocabulary of ecology. Students will critically analyze and discuss issues concerning population ecology, community ecology, and ecosystem ecology. Students will relate concepts of ecology to their personal and professional interests in environmental issues. The ability and necessity of communicating ecological principles within a commercial and/or regulatory environment will be developed. An assignment will provide experience in the collection, interpretation, and analysis of data. The skills learned will be relevant in environmental reporting, discussions, and presentations within a professional environment.

## **EPM 4120 Introduction to Natural Resource Management (4 Credits)**

In this course, students gain an understanding of the roles and responsibilities of federal, state, and local agencies, environmental and wildlife interest groups, and other organizations involved in natural resources management. Students will learn the content and purpose of natural resources management plans, then apply this knowledge to assess and develop policies that will improve natural resources management.

## **EPM 4140 National Environmental Policy Act (NEPA) (4 Credits)**

This course examines the National Environmental Policy Act (NEPA) and its applications. Students will gain both academic and practical experience in studying the intent and application of NEPA by federal agencies. Students will gain practical application by critically reviewing various NEPA documents and examining the components of NEPA documents. Students will prepare an Environmental Assessment (EA) of their choosing for their final project in this course.

**EPM 4150 Global Environmental Law and Policy (4 Credits)**

International environmental agreements provide a mechanism to address domestic environmental issues caused by foreign countries. However, some agreements have been more successful than others based on various aspects within the agreement and a country's domestic actions taken to enforce the agreement. This course teaches students how international environmental agreements are created, managed, and improved in order to improve environmental issues in different countries and international waters. Students will analyze and comment on existing agreements and create strategies for improving the agreements to strengthen agreements to be more effective in addressing environmental issues. Students learn about the stakeholders involved in creating and improving these agreements. Students will develop marketable analytical skills that help guide organizations toward more robust advocacy strategies designed to make the agreements more enforceable and effective in addressing environmental issues. Prerequisite: Recommended - EPM 4200.

**EPM 4200 Environmental Protection Law (4 Credits)**

This course provides an examination of the fundamental laws which protect our environment and health. Students will analyze the purpose, context, implementation, and implications of the most important laws, regulations, policies, and court cases that affect the environment, human health, and our economy. Coverage includes: National Environmental Policy Act (NEPA), Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), related toxics laws, and species and habitat protection statutes. It provides an examination of the legal system and the roles of Congress, the President, executive agencies, states, and courts in shaping and implementing environmental laws. The course also asks students to apply this knowledge to current events in environmental policy and litigation.

**EPM 4220 Endangered Species and Wildlife (4 Credits)**

This course provides an examination of the basic principles, trends, challenges, and controversies surrounding the administration of maintaining certain wildlife species, specifically through the administration of the Endangered Species Act. Students gain an understanding of the roles and responsibilities of various federal, state and local agencies, environmental and wildlife interest groups, and other organizations involved in endangered species and wildlife management issues. This course will also apply the principles of human dimensions to understand the complex social systems at work to conserve endangered species.

**EPM 4230 Renewable and Alternative Energies (4 Credits)**

This course provides a well-rounded primer on energy as a resource and its importance in the economy and the world today. Students will examine renewable and alternative energies and alternative transportation fuels. This course analyzes issues surrounding the development, enforcement and application of energy regulatory policies.

**EPM 4232 Sustainability: Policy and Practice (4 Credits)**

This course teaches students how organizations practice sustainability and how they plan for, shape, and react to the emerging environmental policies necessary to limit global warming. The investment community continues its quest to identify strong sustainability organizations, making public reporting more important than ever. NGOs and governments are pushing for higher ambition. Students will learn to make sustainability reports more meaningful to garner support from NGOs and attract investors. Students will develop marketable analytical skills that help guide organizations toward more robust sustainability actions and reporting, or help NGOs evaluate corporate reports for strengths and gaps.

**EPM 4233 Sustainable Transportation (4 Credits)**

21st Century transportation planning on the local and global scale involves consideration of environmental policies and sustainable practices. Development of an efficient system for moving goods and people along highways, airways and public transit networks must coordinate with legal requirements governing automobile source emissions, water pollution, mitigation of congestion, and crisis management. Conflicts occur along political fault lines between public interest groups, environmental justice advocates, the business community, government regulators, and the ordinary commuter. Consideration is given to different fuel sources, including carbon-based, hydrogen, electricity, and biofuels. The course also examines fuel efficiency (CAFE) and trends in emission science and regulation.

**EPM 4234 Climate Change and Science (4 Credits)**

"Global Warming" is a cause celebre, but how much do we really know about the science involved in studying the earth's climate? Moving beyond the social and political opinions espoused in the current debate on climate change, this course delves into the chemical and physical forces at play in the arena. This course covers scientific processes used in measuring climate dynamics, among them ozone chemistry, carbon and oxygen cycles, and heat and water budgets. It explores scales and methods for detecting climate change, including analyzing ice cores, instrumental records, and time series. Some attention will be dedicated to "climate forcing" caused by such things as orbital variations, volcanism, plate tectonics, and solar variability.

**EPM 4235 Green Building (4 Credits)**

Builders, developers and designers increasingly are promoting the use of green construction practices in the pursuit of healthier, smarter buildings. Students in this course examine sustainable building strategies and tools, including LEED (Leadership in Energy and Environmental Design), the nationally-accepted benchmark for the design, construction and operation of high-performance green buildings. LEED promotes a whole-building approach by recognizing performance in five areas: sustainable site development water savings, energy efficiency, materials selection and indoor air quality. What materials are best in the design and operation of green building? How can a designer or building owner make better use of power and water efficiency programs? What are the recent developments, trends and case studies of green buildings and materials?.

**EPM 4236 Nuclear, Hydrogen, and Energy Storage Technologies (4 Credits)**

The necessity and urgency of moving away from fossil fuels-based energy production to reduce global warming has been well documented. Renewable energy technologies (solar, wind, and water-based) have been widely embraced as alternative energy solutions. However, like all energy production technologies, renewable energy technologies have shortcomings that prevent them from being standalone energy production solutions. Nuclear and fuel cell energy production technologies address the shortcomings of renewable energy technologies and can be considered symbiotic options in the move away from fossil fuels. Improving energy storage technologies will also be required to complete this symbiosis. This course will examine renewable energy technologies shortcomings and how nuclear, fuel cell, and energy storage technologies may be implemented to further facilitate the move away from fossil fuels-based energy production.

**EPM 4238 Water and Food Sustainability (4 Credits)**

Concurrent food, water, and climate crises amidst widespread hunger and undernutrition have re-focused public attention on the deficiencies and complexities of global food and water systems. This course examines the science and sustainability of our water resources as well as food production with an emphasis on the connections between the two. Increasing water and food system sustainability requires working along multiple disciplines, reconnecting agriculture with ecological systems and ensuring that policies and institutions that impact food and water systems protect social equity and the environment. The course draws from interdisciplinary research and education bridging worldviews and values implicit in different disciplinary and theoretical perspectives. Linking theory and practice is also essential thus the course will incorporate multiple perspectives and case studies from local to global levels. Demand is growing for interdisciplinary scholars and other professionals who are equipped to analyze and address the complex challenges of sustainable water resources, sustainable food production, and water and food security. Students will synthesize information from water, food, and the environment from a systems perspective. They will examine the interactions between science, policy, and ethics and analyze the trade-offs and synergies between different objectives, solutions, and outcomes. Students will devise solutions to problems that incorporate the intricacies and interdependencies of water and food systems.

**EPM 4280 Resource Conservation and Recovery Act (RCRA) (4 Credits)**

The Resource Conservation and Recovery Act (RCRA) course is a detailed review of the Resource Conservation and Recovery Act that was passed in 1976 and has been continuously updated since that time. RCRA is also known as "the cradle to grave law" dealing with hazardous waste generation and disposal. This course not only covers the important parts of the regulation, but students will also learn how to navigate and practically apply the law and regulations.

**EPM 4355 Systems, Standards, and Certifications for Environmental Management (4 Credits)**

Students will analyze and apply common environmental management systems, which can be used to ensure and improve quality during the management of a wide range of environmental operations. They will synthesize this knowledge via a project which establishes portions of an environmental management system. Students will execute the plan-do-check-act cycle to improve quality. They will evaluate options to minimize environmental impacts using root cause analysis and generalize common system components that are necessary for an environmental organization to achieve its objectives (establishing environmental policy, establishing performance objectives, monitoring results, evaluating performance, understanding and managing risks, etc.) Course assignments will allow students to practice systemizing and standardizing environmental management processes to improve performance (common procedures, data management, analytical methods, performance monitoring, etc.) Throughout the course, students will discover that management systems beyond subject matter expertise are necessary to do well in environmental careers.

**EPM 4390 Environmental Policy Analysis (4 Credits)**

This course investigates key issues in environmental policy analysis, including the importance of environmental justice, federalism versus state policy, techniques of environmental assessment, the impacts of politics and case law on environmental policy, and policy decision-making. The class sets a foundation with an overview of the U.S. and international environmental movements. Students look at stakeholder engagement, policy formulation and implementation, and policy evaluation in different institutions. The course emphasizes the important role that the political and judicial process plays in the creation of policy solutions, and assesses the strengths and weaknesses of different techniques of environmental analysis including environmental impact assessments, modeling and simulation, sustainability analysis, and how best to weave environmental justice/equity throughout policy development and implementation.

**EPM 4400 Environmental Values and Ethics (4 Credits)**

Students examine ethical considerations in environmental management and decision making. Discussions cover personal versus organizational attitudes; cultural, economic, and historic values; science versus politics; and international and intergenerational policies. The course also explores various philosophies of humankind's relationship with the environment. Students are encouraged to develop and express a personal philosophy relative to their role in the regulatory, technical, scientific, and financial management of the environment.

**EPM 4465 Environmental Restoration and Waste Management (4 Credits)**

Environmental Restoration is the identification and elimination of hazardous materials from a designated site such that the risks to human health and the environment are reduced to an acceptable level for an intended future land use. This course examines successful environmental restoration activities that were used to reduce and mitigate risk associated with past operations of nuclear and nuclear-related facilities and the significant potential to release harmful contaminants. Environmental restoration effects on the ecological and human health risk assessments and analyses related to the transport, treatment, storage, and disposal of waste from the contaminated site are presented. Remediation processes for radioactive materials and other hazardous wastes and the eventual storage, processing, and disposal and the potential effect on humans and the environment is studied. An overview is given on the development of a radiological protection program for an EIS report. External and internal hazards: control measures and monitoring, and other important limits and measurements are explored.

**EPM 4500 Leadership for Environmental Managers (4 Credits)**

This course provides students with fundamental leadership skills with an emphasis on topics and contexts relevant to environmental professionals. It addresses three main subject areas: leadership principles necessary to positively influence their work environment; how to effectively communicate; and developing a vision and mission for their personal leadership success. Students will assess their own leadership attributes, characteristics, and skills and construct a personal leadership development plan. The class will make use of reading assignments, written assignments, video assignments, situational role-play, and class participation.

**EPM 4510 Environmental, and Health & Safety Management (4 Credits)**

This course presents the intricacies of establishing environmental and health and safety programs in the workplace. The course is divided into specific environmental and health and safety topics that are relevant to environmental and safety management. There are multiple topics that address the benefits and barriers to designing, implementing, and maintaining environmental and health and safety programs.

**EPM 4520 Occupational Safety and Health Act (OSHA) (4 Credits)**

This course provides an in-depth review of the laws and regulations that govern the safety and health of workers. The course is of value to students seeking to expand knowledge of the Occupational Safety and Health Act. Emphasis is on the areas of overlap between safety and environmental laws, OSHA's inspection and enforcement authority, employee and employer rights, record keeping requirements and an outline of labor's interest in OSHA cases. Current topics such as OSHA reform legislation and regulatory agenda are discussed.

**EPM 4525 Workplace Safety Management (4 Credits)**

This course introduces students to core elements in a health and safety management systems approach to identifying and preventing workplace injuries and illnesses. Students examine the five elements of developing an effective occupational health and safety management program. The course also explores the common challenges and obstacles encountered during the development and implementation of these programs. This course includes a general overview of common OSHA regulations, rights, and responsibilities for developing a safety and health program. The format of this class is highly interactive, affording students an opportunity to engage with case studies and their peers, as well as to practice developing health, safety, and environmental programs at their respective establishments.

**EPM 4610 Analytics I (4 Credits)**

Data and analytics are key for any business domain; data tells us about our customers and markets and analytics make information and knowledge out of data. It's now possible to be inundated with data but gain no new knowledge from it. Analytics help companies demonstrate their ESG behavior and its impact. Companies that can prove and display the environmental impact gain a market advantage. Analytics also demonstrate real environmental impact versus greenwashing. This course has a managerial focus rather than a technical one, though students will perform some data analytics in this course. It is designed to provide managers with sufficient background on the potential value of data analytics, the business process change associated with data analytics, and the underlying technologies, to enable them to interface effectively with analysts and data scientists.

**EPM 4615 Analytics II (4 Credits)**

Business professionals including those in environmental health and safety (EHS) management, use statistics every day in making decisions. In this graduate-level course, you will gain an overview of the data analytic process and data mining techniques used for discovery knowledge from datasets. The course is designed to highlight the practical aspects of data mining methods and their applications, rather than theoretical aspects of statistical machine learning or optimization. The course also introduces emerging trends in Data Analytics and their applications in decision making process on environmental issues such as sustainability which includes waste management, water, and energy conservation. In summary, data is now an integral part of our lives and to be successful in today's business landscape, we need to be able to leverage data to make critical business decisions on environmental sustainability. This course will teach students how to use data to make those decisions confidently. Prerequisite: EPM 4610.

**EPM 4620 Environmental Reporting Standards and Models (4 Credits)**

Students learn the reporting requirements of existing and emerging environmental reporting standards, e.g., SEC requirements, EU standards, NGO standards, Global Reporting Initiative environmental performance indicators, and Sustainability Accounting Standards Board recommendations, and how to craft mandatory and optional reports that conform to these standards and requirements.

**EPM 4625 Environmental Analysis and Reporting Project (4 Credits)**

This is the concluding class for the Environment Analytics and Reporting concentration and graduate certificate. The class centers on performing sophisticated investigations of sustainability-related data sets utilizing the tools and insights of the data analytics revolution. The focus of the course is on applying advanced data analytics techniques (e.g., data mining, predictive analytics, and prescriptive analytics) to support innovative approaches for organizational sustainability, business performance, stakeholder relations, and/or environmental policy. Students will engage in readings, develop an analysis project using Watson Analytics, and prepare a report covering conclusions and recommendations. Prerequisites: EPM 4610, 4615, and 4620.

**EPM 4701 Topics in EPM (2-5 Credits)**

The content of this course will vary each time it is offered. The topics may include time-sensitive issues in the field of environmental policy and management, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content will be announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

**EPM 4705 Land Use Planning (4 Credits)**

This course provides a comprehensive examination of land use planning efforts by federal, state, and local governments. The legal authorities, responsibilities, and conflicts held by these governmental entities are examined in detail. The course examines the interrelationship between home rule authority, local zoning and planning requirements, and federal/state natural resource plans, as well as public participation in land use plans. Students will learn how to set goals and objectives for specific components of ecosystems, design projects to achieve desired ecologic conditions, and use new technologies in planning.

**EPM 4710 Environmental Project Management (4 Credits)**

In this course, students will learn about project management concepts and gain practical experience applying basic project management skills. As a part of class assignments, students will work on selected projects while covering the entire project management process, from project initiation to close-out. These projects will cover a range of environmental and / or sustainability project management perspectives, including governmental, industry, and advocacy or non-profit organizations. By the end of the course, students should have a strong understanding of project management skills and terminology, and be able to successfully complete some requirements for project manager certification. They will also understand the similarities and differences in project management for environmental professionals. Please note that while this course will provide a foundation in project management, it will not cover all concepts and terminology in depth or provide the required work hours necessary for project manager certification.

**EPM 4901 Capstone Project (4 Credits)**

The Capstone Project provides students the opportunity to research a topic, problem, or issue within their field of study, and work individually with a Capstone advisor. Similar in weight to a thesis, but more flexible, this final project will synthesize and apply core concepts acquired from the program. The student will select an appropriate Capstone advisor who is knowledgeable in the field of study to work closely with and whom can guide the research project. Evaluation will be focused on the quality and professionalism of applied research and writing; critical and creative thinking; problem-solving skills; knowledge of research design, method, and implementation; and contribution to the field and topic of study. Please see the Capstone Guidelines for additional details. Prerequisites: A Capstone Proposal that has been approved by both the Capstone Advisor and the Academic Director, acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better.

**EPM 4902 Capstone Seminar (4 Credits)**

The purpose of the Capstone Seminar is to develop and apply transferable professional skills to persuade decision-makers. The course requires students to identify a Capstone subject matter, develop a premise, and argue for an applied solution. Students will conduct research to create a strong argument that supports their premise by considering purpose, need, and audience and will provide evidence that the premise can be implemented. Tasks include gathering and evaluating appropriate source information, writing a strong solution in support of the premise, and then defending the solution. Students will write a Capstone paper and prepare a presentation suitable for professional exposure through publication and/or presentation.

**EPM 4910 Research Practices and Applications (4 Credits)**

This course develops competencies including principles and practices of: academic inquiry, writing, and ethics. Students will complete Institutional Review Board (IRB) training, data collection, analysis, and evaluation; and synthesize application of peer-reviewed literature. Competencies will be applied and integrated throughout the course of study and demonstrated in the culminating work of the master's degree. Competencies are additionally developed for use in professional employment settings.

**EPM 4980 Internship (0-4 Credits)**

The EPM Internship is designed to offer students a purposeful experience in the field of environmental policy and management. The internship is an individualized learning experience and a training plan is created for each student in conjunction with the internship site to provide experiences related to the skills and knowledge covered in the certificate and master's programs.

**EPM 4991 Independent Study (1-8 Credits)**

This is an advanced course for students wishing to pursue an independent course of study. The student must be accepted in a degree program, have earned a grade point average of 3.0 or better, obtained the approval of the department director, and have completed the Independent Study form and filed it with all appropriate offices before registering for the independent study. Independent Study is offered only on a for-credit basis.