

# ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY (EMS)

---

## EMS 501

### Environmental Policy

Environmental policies, the main tools that governments use to achieve environmental goals, cut across a wide swath of pollutants, industries, academic theory, scientific evidence, politics, and stakeholders. Environmental policies affect the daily activities of every citizen and every business. Governments use environmental policy to protect their citizens' health, develop industries, preserve resources, increase national security, and for hundreds of other goals. This course introduces students to the major rationales for government intervention in environmental affairs, the academic theories on which these interventions are based, the variety of policy approaches that various levels of governments often use to address environmental issues, the political processes involved in the environmental policymaking process, the tools that can be used to evaluate the effectiveness and tradeoffs of policy alternatives, and how these policies may affect government and business competitiveness.

**Lecture: 3 Lab: 0 Credits: 3**

## EMS 502

### Environmental Law

In this course, we will study major U. S. environmental laws which also became the models for environmental laws for many other nations. We will become acquainted with the most important requirements of these laws and explore how they are administered in practice. Using case studies, we will discuss the rights and responsibilities of regulators, regulated entities, and members of the public under these laws. Finally, we will examine how these laws have adapted to address new challenges like global climate change.

**Lecture: 3 Lab: 0 Credits: 3**

## EMS 503

### Environmental Pollution Control

This course examines interactions between economic growth and the environment (implications of environmental externalities) and the application of environmental-economic models and technological innovations for managing environmental pollution resulting from economic development activities. Tools and techniques specific for design of environmental management systems are discussed while emphasizing on the importance of analytic tools for proper process mapping, I/O analysis, data collection/analysis, data interpretation, and pollution mapping/reporting. The importance of technological innovations and entrepreneurial activities such as design of companies within companies (CWC) is presented for sustainable design of environmental pollution prevention/control strategies and policies in the areas of solid waste, water/wastewater, air pollution (both particulate and gases/GHGs) management, and climate change. This course emphasizes on the importance of technological innovations, process mapping, and numerical exercises for broadening the insights needed to permit implementation of pollution abatement and control strategies for organizational sustainability.

**Lecture: 3 Lab: 0 Credits: 3**

## EMS 504

### Industrial Ecology

This course introduces students to the emerging field of industrial ecology and examines how this systems-based approach can be used to move society toward a more sustainable future. Industrial ecology is an interdisciplinary field involving technology (science and engineering), public policy, business administration, and, increasingly, the social sciences. The course introduces strategies and tools such as material and energy flow analysis, life cycle assessment, design for the environment, extended producer responsibility, and industrial symbiosis. Both individual assignments and team projects are a significant part of the learning experience in this course.

**Lecture: 3 Lab: 0 Credits: 3**

## EMS 505

### Environmental Economics and Finance

The emerging field of environmental finance involves the art and science of using economic incentives, financial tools and market mechanisms to achieve desired environmental outcomes. This course illuminates the role economic theory and, more broadly, economic thinking can play in informing and improving environmental policy. Economics is central to understanding why environmental problems arise and how and why to address them. An understanding of markets – why they work, when they fail, and what lessons they offer for the design of environmental policies and the management of natural resources – is central to an understanding of environmental issues. But even before we start thinking about how markets work, it is useful to begin with a more basic question: What is environmental economics? The historical evolution and current developments of market-based mechanisms to address environmental issues will be analyzed. Lessons from environmental markets for acid rain and domestic and international greenhouse gas emissions will be discussed at length. Other environmental markets (smog, renewable energy, water, sustainability indices, and biodiversity) will also be covered.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 509**

**Corporate Sustainability Management**

The course addresses “Environmental Protection and Sustainability” in its broadest sense. It examines interactions between economic growth, and the environment (implications of environmental externalities) and application of environmental-economic models and technological innovations for managing environmental pollution resulting from economic development activities. Tools and techniques specific for design of Environmental Management Systems are discussed while emphasizing on the importance of analytic tools for proper process mapping, I/O analysis, data collection/analysis, data interpretation, and pollution mapping/reporting. The importance of technological innovations and entrepreneurial activities such as design of companies within companies (CWC) is presented for sustainable design of environmental pollution prevention/control strategies and policies in the areas of solid waste, water/wastewater, air pollution (both particulate and gases/GHGs) management and climate change.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 511**

**Solid and Hazardous Waste Management**

The aim of the course is to teach the modern multi-faceted approach of the management of solid and hazardous waste. At the conclusion of class, students should be able to suggest options for waste reduction at source so as to reduce quantities of waste generated, have an array of options to turn waste into economic goods, be able to suggest prevention, treatment, and disposal methods for waste from which the value has been taken out, and have a general feeling for financial aspects in solid and hazardous waste management as well as be able to distinguish the key players in the solid waste field.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 512**

**Environmental Risk Assessment**

This course recognizes the necessity for design of strategic management strategies that can create balance between societal welfare and successes of the organizations. Focusing on the design of CSR strategies, this course evaluates tools and techniques applicable to addressing both the positive and negative impacts of business activities on organizations’ internal and external stakeholders including, but not limited to, those associated with environmental, occupational, and ecological risks. While analyzing management tools specific to inducing social responsibility throughout the organization, course emphasizes on the alignment between strategic management of employees and community welfare and organizations’ business objectives and performance. The need for developing a business case for CSR is highlighted in order to evaluate potential impacts of CSR before investing capitals or making any business decisions. Utilizing specific reporting requirements, course emphasizes the importance of proper reporting and communication of CSR activities and impacts on organizations performance to capital markets, shareholders, and other stakeholders.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 513**

**Sustainability and ESG Analytics**

An overview of the modeling market process is provided focusing on externalities, environmental problems, and environmental quality. Economic solutions to environmental problems are discussed using a market approach which includes modeling emission charges, modeling a product charge, modeling per unit subsidy on pollution reduction, and modeling pollution permit trading systems and practice. The course examines institutional economic solutions to address environmental problems such as climate change, global warming, and water scarcity.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 529**

**Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship. The course will begin by introducing students to major social and environmental challenges around the world by highlighting both local and international social ventures. It will then turn to key concepts regarding social ventures including entrepreneurship, organizational structures (for profit, non profit, and hybrid), financing, marketing, and performance assessment (economic, social, and environmental impact). We will also examine the challenges that are faced in creating and operating social enterprises in different parts of the world. The course includes guest lectures by social entrepreneurs working in different areas (such as health, education, and environment). Students will gain hands-on experience by either developing a business plan for a social enterprise to address a specific real world problem or assisting an existing social venture to improve their impact.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 532**

**Environmental and Energy Law Clinic**

The Environmental and Energy Law Clinic offers a clinical opportunity for students in Stuart’s EMS Program. It is also a part of the legal practice of the Chicago Legal Clinic, Inc. Because it is a clinical experience, students will have obligations different from those in most classes. Most important from a professional perspective, clinic cases are professional obligations of the Chicago Legal Clinic, which represents the community organizations for which students are working. Therefore, you have an ethical responsibility to third parties to produce high-quality, timely work product beyond the normal expectations that go along with completing work for a class.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 541****Sustainable Energy Systems**

This course attempts to identify and evaluate issues and benefits of industrial sustainable transitions and their relations to the flow of energy and money through the economy. The importance of the energy and resources supplied to the economy by energy transformation systems are presented while considering management of the environmental externalities of energy use bound by technological and resource constraints. Development of sustainable energy systems, considerations of the alternative energy production to substitute for fossil fuels, and evaluations of the end use and the upstream effects of the energy demands are considered while supporting the notion of transitional engineering for sustainability.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 542****Economics of Energy Systems**

This course addresses the finance and economics of energy and covers the principles and tools necessary to conduct sound decision-making and analysis. It will guide students to achieve a strong foundation in leading best practices that apply to the field of energy finance and economics. New energy markets are developing, and environmental regulation is targeting the energy sectors. As a result, it is critical to understand the fundamentals of how these markets operate so that optimal energy policy can be designed. The course is designed into the following sections: an overview of energy finance and economics; financial and economic analysis in the energy industry; and energy risk management and related topics.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 543****Environmental Compliance and Regulation**

This course is designed to give students a detailed understanding of the requirements and practices involved in carrying out a successful, long term environmental compliance program for industrial and commercial facilities. It builds on students' basic understanding of the underpinning environmental statutes and regulations.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 550****Business Analytics**

This course covers statistics tools that are critical for managers in enabling their firms to have a competitive advantage. The course includes descriptive statistics, probability, sampling, estimation, hypothesis testing, linear regression, ANOVA, time-series, and goodness-of-fit tests. The models address problems in a variety of business functional areas and business processes. The focus of the course is on using business analytics to build models and using software to aid in decision-making.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 590****Business Innovation in the Next Economy**

This is the capstone course for the EMS Program. The goal of the course is to help future senior executives understand how firms compete in a global marketplace and society and how they make money by creating sustainable competitive advantage. Essentially, this involves creating an alignment or fit between the organization and trends in the next economy/marketplace, the definition and strategy of the firm, and the firm's organizational structure. We will refer to this as the business model which both tells the story of the business and analyze the numbers to show that the story can make a profit. The course will emphasize an integrated view of the firm and the connections between and among the various functions and levels of activity in the firm as well as its relationships and interactions with other players including rivals, suppliers, customers, regulators, and the public. Most cases will take the point of view from the top management/CEO of the firm, but it is the behavior of the firm that we are interested in.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 595****Special Topics in Environmental Management and Sustainability**

This course is a client-focused, project-based course in which students apply the knowledge and skills they have acquired throughout the program by working on projects related to the sustainability issues facing the client organization.

**Lecture: 3 Lab: 0 Credits: 3**

**EMS 599****Independent Study in Environmental Management & Sustainability**

Student will conduct independent research on an environmental management and sustainability topic.

**Credit: Variable**