

SUSTAINABILITY ANALYTICS AND MANAGEMENT (SAM)

SAM 501

Environmental Policy

Environmental policies, the main tools that governments use to achieve environmental goals, cut across a wide swath of pollutants, industries, 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 more. 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 government often use to address environmental issues, the benefits and drawbacks of various approaches, the political processes involved in the environmental policy-making 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. In addition, the course examines new directions in environmental policy, both policies gaining popularity and those not yet adopted.

Lecture: 3 Lab: 0 Credits: 3

SAM 502

Environmental Law

This course will examine the development and implementation of nine U.S. environmental policy initiatives: 1. Conserve ecologically valuable places. 2. Incorporate environmental considerations into government decisions to fund, approve and conduct projects. 3. Save plant and animal species threatened with extinction. 4. Achieve healthy air quality. 5. Ensure a stable atmosphere and climate. 6. Establish unobstructed, fishable and swimmable waters. 7. Prevent the contamination of land and groundwater by regulating waste disposal practices. 8. Remediate historically contaminated sites. 9. Provide opportunities for public participation in the development, implementation and enforcement of environmental laws. The course will explore the genesis of these policy initiatives, the legislation that was enacted to effectuate these policies, and the practical implementation of this legislation.

Lecture: 3 Lab: 0 Credits: 3

SAM 503

Corporate Sustainability Management

The SAM 503 course addresses "Environmental Protection and Sustainability" in its broadest sense. SAM 503 course 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.

Lecture: 3 Lab: 0 Credits: 3

SAM 504

Industrial Ecology and the Circular Economy

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 concepts and tools such as Material and Energy Flow Analysis, Life Cycle Assessment, Design for Sustainability, Extended Producer Responsibility and Industrial Symbiosis.

Lecture: 3 Lab: 0 Credits: 3

SAM 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. Environmental markets have proven not only to be drivers of economic growth, jobs and innovation but also powerful agents of social and environmental transformation. Knowledge of environmental risks, compliance obligations and business opportunities from environmental asset class are essential for corporates to stay competitive. The purpose of the course is to introduce environmental finance from a public policy viewpoint and examine its implications to corporations from financial and risk management angle. In doing so, the course will introduce students to fundamental economic concepts underlying environmental markets. Economic concepts involving market failures, externalities and public policy tools will be discussed. 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

SAM 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

SAM 512**Environmental Risk Assessment**

The SAM 512 course will offer discussion of the basic concepts of Environmental Risk Analysis, Control of Environmental, Work Place Hazards; Industrial Hygiene; and Ecological Risk Analysis. Also discussed are recognition and evaluation of chemical, physical and biological hazards; the human environment; control hierarchies, strategies and technologies; personal protection; criteria and standards; and associated Management and Ethical issues.

Lecture: 3 Lab: 0 Credits: 3

SAM 513**Sustainability and ESG Analytics**

This course provides 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. It also explores the growing importance of using Environmental Social and Governance (ESG) analytics in calculating the impact of climate change.

Lecture: 3 Lab: 0 Credits: 3

SAM 529**Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship - the application of business approaches to solving social, economic, and environmental challenges. The course will begin by introducing students to major social, economic and environmental challenges around the world by highlighting both local and international social ventures that are working on these problems. 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 (social, economic, and environmental impact). We will also examine the challenges faced when creating and operating social enterprises in different parts of the world. The course includes guest lectures and visits with social innovators working in different areas (such as health, education and environment). Students will gain hands-on experience by a) developing a business model concept for a for-profit or non-profit social enterprise to address a specific real-world problem, in Chicago or elsewhere, or b) assisting an existing Chicago-based for-profit or non-profit social venture to improve their impact.

Lecture: 3 Lab: 0 Credits: 3

SAM 532**Environmental and Energy Law Clinic**

The Environmental and Energy Law Clinic offers a clinical opportunity for students in Stuart's SAM 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

SAM 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

SAM 542**Economics of Energy Systems**

This course addresses the finance and economics of energy and covers the principals 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

SAM 543**Environmental Compliance and Regulation**

This course will examine the process for understanding and developing environmental compliance management programs by evaluating the following topics: 1. The source and development of environmental laws and regulations 2. The process of administrative agency decision making 3. The identification of rules applicable to individual facilities through permits. 4. Permit development and procedures in different media areas 5. Regulatory enforcement mechanisms and procedures 6. Monitoring and reporting 7. Developing internal compliance programs.

Lecture: 3 Lab: 0 Credits: 3

SAM 595**Special Topics in Sustainability Analytics and Management**

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

SAM 599**Independent Study in Sustainability Analytics and Management**

Student will conduct independent research on a sustainability analytics and management topic.

Lecture: 3 Lab: 0 Credits: 3