

# SUSTAINABLE ENVIRONMENTAL SYSTEMS (SES)

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## **SES-631 Sustainable Communities - (3 Credits)**

Examines a range of strategies for planning communities that minimize the use of non-renewable energy sources, maximize recycling and promote healthy living and working environments. Its premise is that comprehensive approaches that consider both human welfare and resource limitations at the local and global levels are required in order to build and maintain sustainable communities. Strategies examined include sustainable production, transportation, infrastructure and distribution policies. Examples are drawn from current community development and preservation practice in urban, metropolitan and rural areas. The course analyzes public policies and private practices relating to the urban environment, and investigates methods for creating a more sustainable future.

## **SES-632 Environmental Economics - (3 Credits)**

This course will consider contemporary environmental economics, applying principles of equity, efficiency and effectiveness to environmental issues. The course will consider several analytical tools (e.g. marginal analysis, cost-benefit analysis, externalities, full-cost pricing, incentives, public goods, risk and alternatives assessment and equity analysis). We will study when markets work and when they don't. Then we will consider various policies that the public sector can use to make markets work, and when they have to be bypassed all together.

## **SES-633A Environmental Law - (3 Credits)**

Provides a basic framework in environmental law by surveying critical cases, policy decisions and legal history. Regional, national and international issues are addressed with the focus on how inter-jurisdictional problems are resolved. The relationship between legal, constitutional, and political systems in different localities is also considered.

## **SES-633B Environmental Assessment: Impact Statements - (3 Credits)**

Examines the critical, environmental, ecological, geological, economic, social and health-related components that must be considered as part of the environmental review process under national, state and municipal environmental quality review laws. The tools and techniques for conducting assessments, the different models for interpreting data and the use of mitigating measures are presented through case analyses.

## **SES-634A Climate Change & Cities - (1 Credit)**

Global Warming and climate change represent among the greatest challenges to global well-being and security and to the future of humans on Earth. This course will examine the science and history of this crisis with a focus on the various policy initiatives and actions being taken globally and locally to both mitigate and prepare for the impacts of climate change. The class will look at case studies from different cities around the world and pay particular attention to New York's PlaNYC, which sets the goal of 30% reduction from current greenhouse gas emissions by 2030.

## **SES-634B Sustainability Indicators Footprint - (1 Credit)**

Sustainability indicators measure progress toward a sustainable economy, society and environment. The Ecological Footprint Analysis is a type of sustainability indicator that measures how much biologically productive land and water area an individual, a city, a country, or a region requires to produce the resources it consumes and to absorb the waste it regenerates. This course introduces the principles underlying sustainability indicators, including Ecological Footprint Analysis, and will offer students hands-on experience with these tools.

## **SES-634C Life Cycle Analysis - (1 Credit)**

This course introduces students to the theory and methodology and underlying life cycle analysis, a systematic set of procedures for compiling and examining the inputs and outputs of the materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle. Students gain knowledge by applying the technique to a product or system of their choice.

## **SES-635A Solid Waste Management - (1 Credit)**

This course examines the environmental planning implications of various practices and technologies relating to solid waste management and prepares planners and architects to identify and promote more sustainable ways of managing solid waste. Particular emphasis is placed on new innovations in solid waste management including recycling, reuse and reduction.

## **SES-635B Environmental Management: Water Quality - (1 Credit)**

This course examines the environmental planning implications of practices and technologies relating to water management, and prepares planners and architects to identify and promote more sustainable practices for managing both drinking water and wastewater. Particular emphasis is placed on the science of water and on recent innovations in water quality management including bioremediation, watershed planning and a natural waste water systems.

## **SES-635C Urban Energy Management - (1 Credit)**

This course examines the unique nature of energy use and planning in urban areas. It introduces students to key issues associated with local energy planning: how cities use energy; the sources of this energy; what alternatives exist; the delivery systems that get energy to cities; the institutional, market and regulatory environment in which urban energy planners operate; and what steps cities are taking to better manage their energy use.

## **SES-660A Demonstration of Professional Competence - (2 Credits)**

A demonstration fulfilling an approved scope of work showing the analytical capacities and creative skills expected of a professional in this field serves as a capstone of the program. The demonstration can involve original research, a work-related project or an extension of course-related work.

## **SES-700 Dem. Prof. Competence in Progress - (0 Credits)**

If the Demonstration of Professional Competence is not completed in the initial semesters, students can continue working in EMS-700 for no more than five semesters.

## **SES-739 Green Infrastructure Design/Build Principles/Best Practices - (5 Credits)**

The primary focus of this design/build course is to provide students with the opportunity to not only design but to understand the techniques of construction and implementation, gaining valuable experience and knowledge of the practical aspects of green infrastructure design. The course will contain, in equal parts, learning and design modules with weekend site visits as a requirement for the build focus.

**SES-740 Financing Green Infrastructure - (1 Credit)**

This course will build on the experience of SES 808A Green Infrastructure Research in analysis of natural systems and their ability to manage stormwater. It is designed to help students formulate meaningful research questions, and demonstrate the knowledge to apply green infrastructure innovations to the urban environment. The main purpose is to advance knowledge of basic stormwater management to develop innovative concepts for performance communication, monitoring and maintenance.

**SES-755 Greening Existing Building - (2 Credits)**

Taught by a practicing architect, this course is based upon the growing need to understand the details and reasoning behind rehabbing the existing building stock, and how to address "green" design within the content of renovation at several scales and scopes. The course of study will be paired with a cutting edge computer design tool, Seifara, developed to help designers incorporate sustainable approaches and explore deep synergistic outcomes at the early conceptual stage of design.

**SES-761A Watershed Planning - (3 Credits)**

Focusing on the NYC Watershed, we will look at land uses, sustainable stormwater management practices, and geology within the watershed and examines how they are directly related to the quantity and quality of water "produced" in these areas.

**SES-761B Waterfront & Wetland Planning Principles/Best Practices - (1 Credit)**

This course focuses on the various uses of urban waterfronts and wetlands, including both the upland and the waterways. The course will examine shoreline and water quality conditions, and will consider waterfront developments, working waterfronts and natural waterfronts. The class will concentrate on NYC and New Jersey, examining the environmental, economic and social equity issues involved in waterfront planning, development and preservation.

**SES-762 Sustainable Urban Agriculture - (1 Credit)**

This course will explore the place and potential of urban agriculture in environmental planning, management, and development. Topics to be covered included fundamentals of a sustainable food system, horticultural principals and techniques, the place of food systems in urban planning, how urban agriculture can be accommodated within the urban built fabric, and contemporary examples of community gardening and urban agriculture locally and in other parts of the country. The principles of stormwater and solid waste management, nutrient and water cycles, and sustainable material sourcing will be explored as well.

**SES-763 Policy Writing - (1 Credit)**

This skill building course will focus on the varying formats and voices common to political and advocacy writing. Students will gain exposure to effective writing techniques, appropriate voice and formats for editorials, policy briefs, letters of support, grants and formal testimony.

**SES-764 Policy Advocacy & Negotiation - (1 Credit)**

This is a skills building course that will discuss strategies and tactics for advancing a policy agenda, including negotiation both in the context of building coalitions and in the context of engaging key decision-makers and stakeholders. Effective negotiation is dependent upon developing the leverage necessary to get other stakeholders to the table in a meaningful way. As such, the course will spend a significant amount of time on issue analysis, organizing/coalition-building, and strategy development.

**SES-840 Sustainable Business Studio - (5 Credits)**

The Sustainable Business Studio course will introduce students to the concepts of Environmental Management Systems (EMS) and provide an opportunity for practical experience by working directly with a local New York City manufacturing company to design an EMS based on the ISO 14001 Standard. In the initial weeks of the course, students will learn about the various approaches to EMS through lectures, guest presentations, and readings. During this time, students will gain a more thorough understanding of ISO 14001 in preparation for consultation with the studio client. The remaining two-thirds of the course will be dedicated to the design of an EMS (including a company environmental policy statement, assessed environmental impacts, permitting and compliance, set objectives and targets) and will culminate with an action plan to be delivered to the client for implementation.