

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Courses

SEE 250. Introduction to Sustainability, Energy & the Environment. 3 Hours

Multidisciplinary introduction to sustainability, energy, and environment intersecting the arts, natural sciences, public policy, ethics, environmental justice, spirituality, and economic systems. Students will learn about complex issues from different disciplinary points of view, be introduced to current literature on sustainability, and learn how ethical, scientific and sociopolitical perspectives work together in the investigation of sustainability issues.

SEE 280. Sustainable Communities. 3 Hours

Introduction to fundamental concepts in Sustainability with a focus on the built environment, locality, and community. Includes investigation of how the relationship of social and environmental justice is intrinsic to the study of sustainable communities. Key concepts include social constructions of privilege and social inequality, as well as the characteristics of resilient and adaptive communities.

SEE 301. Earth Systems & Global Climate Change. 3 Hours

This course examines global climate change through the interactions of different components of the Earth system. It explores how changes in the atmosphere, hydrosphere, cryosphere, biosphere and lithosphere interact to impact the Earth's climate, and how human activities contribute to such changes, resulting in the present global warming.

SEE 303. Constructions of Place. 3 Hours

Multidisciplinary, art and design-based course that explores the complex connections between our sense of place, space, and the environmental conditions that influence landscapes and communities on local and global levels. We use the history and practice of Eco-Art and comparisons of built and natural environments as a starting point to explore topics including art history, studio arts, photography, design and socially-engaged art through both scholarly and experiential, project-based learning.

SEE 310. Sustainability Scenarios. 3 Hours

Introduction to the structure, development, communication, and limitations of scenarios used for visioning trajectories and outcomes for human and environmental systems. The course more deeply examines the structure of scenarios as frameworks and stories for engaging critically with a multiplicity of possible outcomes. In analyzing and developing scenarios that address environmental risks and sustainable practices, students learn what a scenario is, how a scenario is created, and in what ways a scenario can be applied, compared and evaluated. Prerequisite(s): SEE 250 or SEE 280.

SEE 322. Cities and Suburbs: Urban Sustainability. 3 Hours

Exploration of urban sustainability that equips students with knowledge of the vital role cities can play in stewardship of the planet, while creating vibrant and inclusive opportunities for their inhabitants. Economic, social, and environmental forces that shape urban environments and the strategies needed to make cities and suburbs sustainable (economically vibrant, socially just, and environmentally sustainable) will be the focus. Prerequisite(s): SEE 250 or SSC 200 or by the approval of program director.

SEE 323. Cities and Energy. 3 Hours

Historical examination of the influence of energy on the urban environment especially since the Industrial Revolution, and how this relationship has affected every aspect of city life. Emphasis on the relationship between the development and design of cities and their impact on various forms of difference (e.g., race, class, and gender, among others). Prerequisites: HST 103 or HST 1HC or ASI 110.

SEE 325. Sustainable Development Goals. 3 Hours

Analysis of the Sustainable Development Goals as a framework for approaching complex, international challenges of sustainable development, environmental sustainability, climate change mitigation and adaptation, and human rights. Background to the goals, metrics for evaluating progress toward the goals, and interactions between various goals will be evaluated through readings and discussion. Prerequisite(s): SEE 250 or SEE 280 or HRS 200 or Permission of instructor.

SEE 340. Food, Energy and Water Nexus. 3 Hours

Analysis of the complex interactions between three fundamentally important systems in discussions of sustainability. Examination of past history, present status and future scenarios for the food, energy and water (FEW) nexus. Prerequisites: SEE 250.

SEE 390. Special Topics in Sustainability, Energy and the Environment. 1-3 Hours

Examination of a specific problem or topic relating to sustainability, energy and the environment at the regional, national, or global scale including particular topics relating to global sustainability policy and sustainable development goals, human rights and climate change and access to modern energy systems. Students will analyze the topic from multiple perspectives possibly including artistic, technical, scientific, social, economic, ethical, and faith-based. Students will apply interdisciplinary knowledge to characterize systems, resources, and stakeholders relevant to the particular problem or topic and discuss solutions to establish more resilient and sustainable systems. Prerequisite(s): SEE 250.

SEE 398L. Experiential Learning Laboratory. 1-3 Hours

Students participate and contribute in experiential learning projects connected to the SEE 'verticals' (e.g., projects linked to UD external communities with long-term SEE commitment). In the experiences, students team with faculty mentors to address real needs in the targeted communities; analyzing and developing solutions from integrative perspectives; communicating results; identifying future projects for achieving desired impact or growing impact. Students are required to develop and maintain a portfolio to archive collective learning and results; document individual learning; and to document reflection about the impact of the experience on their vocation. Prerequisites: SEE 250.

SEE 401. Sustainability Research I. 3 Hours

Interdisciplinary exploration of the issues of sustainability. The scientific, moral, spiritual, social, political, historical, ethical and economic dimensions of sustainability will be explored. Exploration of the foundations of ethical theory and their application to environmental issues. Students will pursue a research project with the primary focus on sustainability on campus. Prerequisites: SEE 250 and PHL 103 or ASI 112 or ASI 120; completion of General Education Natural Science or CAP Natural Science Requirements: junior or senior standing.

SEE 402. Sustainability Research II. 3 Hours

Interdisciplinary exploration of the issues of sustainability as they affect the Dayton community. Course will also explore political philosophy and the ethical foundations of public policy. Students will choose an in-depth community-based research project. CAPSTONE COURSE for the BS in Sustainability, Energy and Environment, or BA in Sustainability Studies. Prerequisites: (PHL 103 or PHL 1HC or ASI 120) and SEE 250 and Junior or Senior standing.

SEE 435. System Modeling for Sustainability. 3 Hours

Interdisciplinary approach to modeling as a tool for analyzing complex systems. Students learn to translate qualitative descriptions for environmental, socioeconomic and energy systems into quantitative output. The course focuses on defining problems and system boundaries and variables, documenting requirements, then proceeding with systems design synthesis and system validation while considering environmental, socioeconomic, and resource impacts. Students learn to examine model outputs to judge validity and to document their procedures. The course will use both standard spreadsheets for simple models as well as open-source system dynamics modeling software. Prerequisites: SEE 250 and MTH 148 or MTH 168 and MTH 207 or MTH 367 or DSC 210 or PSY 216.

SEE 477. Sustainability, Energy & Environment Honors Thesis Project. 3 Hours

First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and department chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with department chairpersons. Prerequisite(s): Approval of University Honors Program.

SEE 478. Sustainability, Energy & Environment Honors Thesis Project. 3 Hours

Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and department chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with department chairpersons. Prerequisite(s): Approved 477; approval of University Honors Program.

SEE 490. Experiential Study in Sustainability, Energy and the Environment. 1-3 Hours

Experiential study of a topic in Sustainability, Energy and the Environment. Students will study a topic of their choosing in consultation with instructor or faculty advisor. Topics will be problem-driven and focused on developing sustainable solutions at the local, national, or global scale. Prerequisite(s): SEE 250.