Sustainable Science Management (SSM)

Sustainable Science Management (SSM) Classes

SSM 101 : Introduction to the Science of Sustainability

Credits: 3
Class Hours: 3 lecture
Prerequisites: Concurrent enrollment in MATH 75X or qualified for MATH 82X.
Description: This course identifies sustainability concepts which have become evident from early human movement toward Industrialization in the 1500s to the present. Examines diverse societal circumstances and approaches in resource use including water, energy, waste, land use, economics, oceans, and others. Introduces fundamental systems approaches to recognize interconnections and ramifications of practices. Identifies global sustainability issues and uses Hawai‘i and island case studies as a means of better understanding their applied relevance.
Semester Offered: Fall, Spring
Designation:
Foundations: Global and Multicultural Perspectives — FGB (1500 to modern times)
Course Student Learning Outcomes (CSLOs):

1. Identify prominent global sustainability principles based on human society and ecosystem analysis.
2. Explain the connections between geomorphologic processes, human development patterns, coastlines, and their connection to nearshore and marine environments.
3. Examine the role of policy in shaping human society, using climate change as a case study.
4. Describe basic systems dynamics as they apply to sustainability.

SSM 110 : Sustainable Water and Waste Management

Credits: 3
Class Hours: 3 lecture
Prerequisites: Qualified for MATH 100.
Recommended: Completed ENG 100.
Description: This course explores water, wastewater, and waste management challenges and solutions, with an emphasis on issues specific to Hawai‘i. Students will explore sustainable operational management of water, wastewater, and solid waste systems. This includes composting, recycling processes, energy from waste, and water quality testing. Students will take water samples and analyze water quality with state-of-the-art technologies.
Semester Offered: Fall, Spring
Designation:
Diversification: Physical Sciences — DP
Course Student Learning Outcomes (CSLOs):

1. Detail Hawai‘i's water, waste, and wastewater management concerns.
2. Use various devices to measure nutrients and contaminants in water samples to draw concoctions explaining concentrations.
3. Summarize various approaches to water reuse and water supply challenges that are specific to Hawai‘i.
4. Describe different ways to sustainably address waste management challenges such as recycling/upcycling.
5. Identify and describe the major processes used in water, wastewater treatment and water distribution including policy and standards in place.

SSM 275 : Basic Energy Production

Credits: 3
Class Hours: 3 lecture
Prerequisites: "C" or higher or concurrent enrollment in ENG 100. Qualified for MATH 82X or higher or approval of instructor.
Description: This course will explore electricity generation, distribution, storage, and usage. We will take an in-depth look at the science, technology, and environmental considerations associated with electricity generation from coal, oil,

natural gas, wind, solar, biomass, biogas, and hydroelectric (dam, tidal, wave). This class includes field trips to various electricity generation locations on island. We will also complete hands-on labs utilizing on campus renewable energy technologies.

Semester Offered: Fall, Spring

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Describe the technical, political, and economic aspects of creating and maintaining a sustainable, high-renewable energy resource power grid.
2. Describe various forms of renewable energy and their associated benefits and challenges including distribution and generation technologies.
3. Explain the physical and chemical properties that govern energy and the methods of converting from one form of energy to another.
4. Describe existing power production systems.
5. Use physical energy equations for basic energy applications.