

### Sustainability-Focused and Sustainability-Related Classes at UHMC

Department (Division)	Course Number & Title	Level	SF or SR	Description
Agriculture	AG 103: Sustainable Ag Systems	Undergraduate	SF	Explores sustainable agriculture systems in Hawai'i and the world. Compares various sustainable models. Examines various sectors of production agriculture and related agribusinesses in Hawai'i. Field trips to farms, processors, and wholesalers.
	AG 251: Sustainable Crop Production	Undergraduate	SF	Introduces production methods for selected crops including propagation planting, fertilization, irrigation, pest control, harvesting, and marketing. Evaluates conventional and alternative methods of production and analyzes effects of these practices. Examines economic and social impacts. Field trips to production areas.
	AG 252: Sustainable Crop Production II	Undergraduate	SF	Reinforces production practices for sustainable agriculture. Develops skills in designing, planning, and executing a sustainable production system for wholesale and retail sales. Determines cost of production and integrates multiple marketing practices. Evaluates products, cultural practices, and marketing methods. Practices farm record keeping.
	AG 266: Greenhouse and Nursery Management	Undergraduate	SF	Introduces management practices for production and operation of nurseries and greenhouses in Hawai'i. Includes environmental factors, structures, materials, sanitation, pests, and diseases.
Anthropology	ANTH 200: Cultural Anthropology	Undergraduate	SR	Studies the concept of culture and basic tools for analyzing cultural behavior. Topics include patterning and integration, dynamics of culture, culture and the individual, cultural change, and anthropology and the future.

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	ANTH 225: Medical Anthropology	Undergraduate	SR	Surveys human health and disease, and how they relate to cultural practices, belief systems, and environmental factors. Seeks to bridge the health sciences and anthropology by focusing on how social and environmental factors affect health. Explores alternative ways of understanding and treating disease. Includes ethno-medicine, the traditional healing and health practices of a selection of cultures, paleopathology, epidemiology, and human adaptation.
Biology	BIOL 105: Hawaiian Field Biology	Undergraduate	SF	Surveys, in the classroom and on location, ecosystems from near-shore ocean waters to mountain top. Considers geological history, physical geography, and natural history. Discuss pre-Polynesian establishment of organisms, origins of endemic species, and the influences of human populations on island ecosystems.
	BIOL 124/124L: Environment and Ecology and Lab	Undergraduate	SF	Examines the biological and physical principles affecting human interactions with the environment. Explores the impacts of science, technology, values, and perceptions on global ecology. Discusses problems of pollution, overpopulation, and resource depletion with an emphasis on island ecosystems. Evaluates alternatives to current actions and public policies stressing responsibility of the individual.
	BIOL 331/331L: Biology of Marine Mammals and Lab	Undergraduate	SF	Provides an overview of marine mammal science, significance and roles of marine mammals in their ecosystems, and marine conservation issues. Covers current research topics in marine mammal science.

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	BIOL 424/424L: Protected Species Management and Lab	Undergraduate	SF	Examines policy and management issues related to protected species. Explores methods for monitoring and estimating population sizes. Provides opportunities for students to assist agencies with monitoring and assessment activities.
Botany	BOT 105: Ethnobotany	Undergraduate	SR	Identifies endemic, indigenous, and Polynesian introduced flora of Hawai'i. Examines the many uses of Hawai'i's flora by the indigenous people. Reveals the relationship of gods/plants/man, and connects belief and practices with the intentional migration of specific plants. Meets Social Science requirement, not Natural Science requirement.
Energy	ENRG 101: Intro to Sustech	Undergraduate	SF	Introduces alternative methods for meeting long term energy needs, identifies and explores local resources including demand-side management of conventional gas and electric power and sustainable energy resources such as solar, wind, biomass, small hydroelectricity, geothermal, ocean thermal energy conversion, and alternative transportation fuel options.
	ENRG 103: Energy Production Systems	Undergraduate	SR	Introduces theoretical concepts and practical applications of sustainable energy systems. Develops knowledge of photovoltaic, thermal, wind, hydro, ocean thermal, fossil, ocean wave, and absorption systems, with emphasis on solutions for residential and commercial applications in Hawai'i.
Geography	GEO 101/101L: The Natural Environment	Undergraduate	SF	Surveys the natural environment: weather, climate, soil, vegetation, and landforms, with emphasis on Hawai'i. Lab optional.

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Sustainable Science Management	SSM 101: Intro to Science of Sustainability	Undergraduate	SF	Identifies sustainability concepts which have become evident from early human movement toward Industrialization in the 1500s to present. Examines diverse approaches in resource use including water, energy, waste, land use, economies, and oceans. 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 they're applied relevance.
	SSM 201: Sustainable Building Design	Undergraduate	SF	Examines principles of green building, design and operations; including site planning and zoning, construction practices, energy efficiency, economics of green building, benefits and barriers, and the LEED rating system.
	SSM 202: Sustainable Island Communities	Undergraduate	SF	Introduces concepts of sustainability on islands, specifically Hawai'i. Examines unique aspects of islands as related to sustainable management of limited resources, including land use planning, waste management, water, sustainable tourism, renewable energy resources, and natural resource management. Compares island communities to sustainable urban environments.
	SSM 275: Basic Energy Production	Undergraduate	SF	Introduces basic energy concepts including gravitational and kinetic energy, heat, electromagnetism, chemical energy and the transducers used to convert from one form of energy to another. Transitions from the electric power grid to integrating renewable energy sources into contemporary grids and distributed systems.

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	SSM 301: Sustainable Organizations	Undergraduate	SF	Examines methods of assessing sustainability and distinguishing marketing claims from actual progress. Studies triple bottom line, cradle to cradle/grave, carbon neutrality, and carbon footprint; as well as life cycle assessment, energy analysis, and sustainability indicators that customize data collection and analysis. Final project develops a business case, adding indicators to demonstrate its integrity.
	SSM 302: Environmental Health	Undergraduate	SF	Evaluates the impact that chemical, physical, and biological agents have on environmental ecosystems. Examines how political, economic, and demographic diversity affects the natural environment with particular emphasis on island settings.
	SSM 384: Sustaining the Globalized Ocean	Undergraduate	SF	Examines the oceans as a life support system and the factors that increase pressure on marine sustainability. Explores the interactions between the marine environment and the economic, social, cultural and political features inherent to that system. Analyzes the effectiveness of the regulations and policies in place to ensure sustainable development in ocean environments.
	SSM 392V: SSM Internship	Undergraduate	SF	Applies skills to workplace in an occupation within the student's area of interest in sustainable science management. Provides practical experience to develop knowledge and skills in the application of theory to actual problems in a non-classroom setting. Develops employment skills in the sustainable science management areas of energy, renewable energy, energy management, waste management, water and wastewater, policy, and related fields. Prepares students for the senior capstone project. (May be repeated for a maximum of 6 credits.)

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	SSM 401: Environmental Law-Policy-Justice	Undergraduate	SF	Introduces legal and policy issues of environmental protection and decision-making. Explores the history, processes, and politics in the formulation and implementation of U.S. federal, state, and local environmental policies.
	SSM 402: Water Resources Management	Undergraduate	SF	Examines typical means of managing freshwater resources with emphasis on island water and wastewater management techniques. Introduces water quality techniques and parameters as well as advanced wastewater treatment processes. Discovers principles of sustainability from hydraulics, hydrology, and distribution systems. Discusses water reuse and recycling practices on Maui.
	SSM 422: Sustainable Systems Thinking	Undergraduate	SF	Explores the theory and application of established systems thinking practices, models and programs, as applied historically and in a sustainability context. Examines complex, multi-discipline problems and proposed solutions in real world scenarios. Develops skills using modeling software for tracking, illustrating, and verifying systems analysis.
	SSM 403: Renewable Energy Integration	Undergraduate	SF	Analyzes and describes issues for integrating renewable energy onto a grid structure, the fundamentals of a smart grid, and energy storage technologies. Instructs students how to use software tools applicable to smart grid operation and maintenance. Explores different electrical energy storage technologies and their feasibility for intended applications.

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	SSM 495: SSM Capstone I	Undergraduate	SF	Provides an opportunity to demonstrate the techniques and understanding developed throughout the BAS Sustainable Science Management program in a final project. Includes energy auditing, computational analysis, sustainable strategic planning and financial assessment, water and resource conservation, impacts to human and ecosystem health, land use and transportation, policy and regulatory analysis, and social equity and ethical considerations.
	SSM 496: SSM Capstone II	Undergraduate	SF	Provides an opportunity to demonstrate the techniques and understanding developed throughout the BAS Sustainable Science Management program in a final project. Includes energy auditing, computational analysis, sustainable strategic planning and financial assessment, water and resource conservation, impacts to human and ecosystem health, land use and transportation, policy and regulatory analysis, and social equity and ethical consideration.
Oceanography	OCN 201/201L: Science of the Sea	Undergraduate	SR	Introduces basic concepts of geological, physical, chemical, and biological oceanography. Emphasizes relationships between land-based and marine-based sciences.
	OCN 293V: Ocean Intern & Research	Undergraduate	SR	With faculty guidance, students design and carry out marine-related internships, practical research projects, or field experiences on or off campus. This course does not fulfill Natural Science core requirements. (May be repeated for a maximum of 9 credits.)

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Zoology	ZOOL 200: Marine Biology	Undergraduate	SR	Surveys physical and biological characteristics of the marine environment. Discusses local marine flora and fauna. Surveys topics including fisheries, aquaculture, pollution, and marine resources.