

PROJECTED UNDERGRADUATE CLUSTERED CERTIFICATES
FOR AN INTERDISCIPLINARY
SUSTAINABILITY STUDIES PROGRAM

Prepared by the Chancellor's Council on Sustainability
Curriculum Committee
University of Hawai'i at Manoa
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I. Definition of Sustainability from Hawai‘i 2050 Sustainability Task Force Report
(Source: The State of Hawai‘i Auditor December 2005)

HAWAI‘I 2050 SUSTAINABILITY TASK FORCE REPORT
A Report to the Governor and the Legislature of the State of Hawai‘i

While a format and operational definition of “sustainability” will be later determined by community as part of the creation of the Sustainability Plan, the Office of Sustainability at the University of Hawai‘i offers the following as a working definition of sustainability- “living in ways that meet our present needs without limiting the potential of future generations to meet their needs.” The Task Force emphasized that sustainability will also maximize opportunities for future generations.

Other definitions which encompass the Task Force’s current concepts of sustainability include:

Sustainability means using, developing and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs. (*State of Oregon*)

Sustainability is the capacity to provide the best of ourselves, each other and all things in our environment now and in the future. (*Sustain Hawaii*)

Sustainability is the long-term, cultural, economic and environmental health and vitality with emphasis on long-term, together with the importance of linking our social, financial, and environmental well-being. (*Sustainable Seattle*)

For the purposes of this report, the above-referenced concepts of sustainability will be generally used.

II. Program Summary

The complexity of concerns about the long-term environmental, economic and cultural health of our communities demands the attention of individuals educated and trained to think critically and to resolve problems across disciplinary boundaries. The Undergraduate Clustered Certificates in Interdisciplinary Sustainability Studies Program addresses the academic, research, and professional needs related to the environment and sustainability. The projected program reflects the broad range of expertise available at the University of Hawai‘i at Manoa, and takes advantage of the diverse environmental conditions found in the Hawaiian Islands for education, research and career internship opportunities. Certificate students will learn to recognize the need for input from a variety of disciplines and stakeholder groups. A Sustainability Studies Certificate will provide practical skills for success in graduate degree programs and professional careers. Students will be conversant across the academic continuum, and will be trained in skills that increasingly are demanded by decision makers and communities trying to sustainably balance economic health and ecologic integrity.

III. Outline of Program Objectives

- To offer Certificates that focus on complex, transdisciplinary analysis and problem solving related to sustainability issues.
- To create models of learning for sustainable research, practice, and community service.
- To educate for life long learning.
- To matriculate individuals who as graduates become part of an educated and skilled labor force capable of making informed decisions and who are responsible citizens.
- To facilitate research that addresses community identified concerns.
- To consolidate existing strengths within UH that demonstrate commitment to the natural, economic, and cultural environment of these islands.
- To contribute to the enhancement of campus diversity and build an engaged scholarly community by collaborating with faculty on projects, classroom teaching, providing support for visiting faculty and distinguished speakers, organizing conferences, and developing new courses with a focus on sustainability.
- To position the State of Hawai‘i as a leader in discussions on and practice of sustainability in the Asia-Pacific region.

IV. Projected Structure of Clustered Certificates Program

Required Minimum Credit Total: 21 credits

Required: Certificate Program Introductory course to satisfy Focus requirement for Hawaiian, Asian, and Pacific Issues (H) (open to all UHM students) (3 credits)

Required: Sustainability Studies course to satisfy Contemporary Ethical Issues Focus Requirement (to be developed and open to all UHM students) (3 credits)

Required: Certificate Program Capstone course (to be developed and limited to Certificate students) (3 credits)

Required: 12 additional credits of 300-400 level courses selected from course lists

Required: 3.0 Cumulative GPA for all courses counted toward a Certificate

Sustainability Fellowships Program

The proposed program provides opportunities for students to become UHM Sustainability Fellows. The fellowship program will be supported by sponsoring agencies or individuals identified by the UH Foundation and elsewhere. Participating students demonstrate promise as future leaders in the area of Sustainability Studies and develop skills through applied research and praxis with faculty and community mentors.

V. Existing and Proposed Undergraduate Clustered Certificates in Interdisciplinary Sustainability Studies and Corresponding Course Lists

Certificates: Environmental Studies; *Ecotourism*; *Summits to Sea*; *Sustainable Agriculture*; *Sustainable Design and Technology*; *Education for Sustainability* (italics indicate proposed Certificates)

<u>ENV STUDIES</u>	<u>ECO-TOURISM</u>	<u>SUMMITS TO SEA</u>	<u>SUSTAINABLE AGRICULTURE</u>	<u>SUST DESIGN AND TECH</u>	<u>EDU for SUSTAIN</u>
AMST 320/420	ANTH 415	ANTH 415	ANTH 427	ANTH 303	AMST 320/420/ 425
ANTH 303/415/ 435	BUS 310/313/ 345/395	BIOL 310	ANSC 200	ARCH 302/341/ 405/477	ECON 466
ARCH 341	ECON 320/358/ 410/430/ 434/460	BOT 350/351/ 440/442/ 444/446/ 450/453/ 454/455/ 457/458/ 459/460	BIOL 201	CEE 330/355/ 361/375/ 405/424/ 431/433/ 451/464	EDCS 433/450
BIOL 310/360/ 410/425	ES 340	ES 340	FSHN 250/476	GG 425/454/ 455	EDEF 310
BOT 351/351L/ 450/453/ 454/455	FIN 341	GEOG 305/405/ 412	HWNST 207	MBBE 401/412	GEOG 326/328/ 390/410/ 412
ECON 358/491	MGT 320/345	HWNST 207/351/ 352/455 457/458/ 459/460	NREM 210/220/ 301/302/ 480/491	OCN 330/331	HWNST 207/457/ 458
GEOG 300/301/ 305/309/3 26/328/ 330/335/ 380/401/ 405/410/ 412/415	MKT 311/331	OCN 320	OCN 450		IS 361
IS 361/489	TIM 320/321/ 324/325/ 420/369(J) 469(B)	PLAN 310	PEPS 421/422/ 491		NREM 210

GG 454/455			TPSS 200/300/ 409/431		OCN/OEST 310
NREM 432			ZOOL 466/485		PHIL 103/316
OCN 320/330/ 331					PEPS 412
PLAN 310/399					POLS 378G
PPST 412					
SOC 412					
ZOOL 439/439L/ 450/485					
48 courses	24 courses	23 courses	22 courses	22 courses	22 courses

VI. List of Existing Courses

American Studies 320 American Environments: Survey
American Studies 420 American Ideas of Nature
American Studies 425 American Environmental History
Animal Sciences 200 Humans, Animals, and Agriculture
Anthropology 303 Technology and Culture
Anthropology 415 Ecological Anthropology
Anthropology 427 Food, Health, and Society
Anthropology 435 Human Adaptation to Forests
Architecture 302 Asia-Pacific Architecture Studio
Architecture 341 Introduction to Planning
Architecture 405 Selected Design Studio
Architecture 477 Research Seminar
Biology 201 The Biotechnology Age: Issues and Impacts
Biology 310 Environmental Issues
Biology 360 Island Ecosystems
Biology 410 Human Role in Environmental Change
Biology 425 Wildlife and Plant Conservation
Botany 350 Resource Management and Conservation in Hawai'i
Botany 351/351L Inside Tropical Ecosystems
Botany 440 Advanced Ethnobotany
Botany 442 Medical Ethnobotany
Botany 444 Ecological Ethnobotany
Botany 446 Hawaiian Ethnobotany
Botany/Zoology 450 Natural History of the Hawaiian Islands
Botany 453 Plant Ecology and Environmental Measurements
Botany 454 Vegetation Ecology
Botany 455 Analysis of Biological Data
Botany 457 'Aina Mauliola: Hawaiian Ecosystems
Botany 458 Natural Resource Issues and Ethics

Botany 459 Strategies in Hawaiian Resource Use
Botany 460 Hui Konohiki Internship: Applied Resource Management
Business 310 Statistical Analysis in Business
Business 313 Principles of Marketing
Business 345 Strategic Management
Business 395 Internship
Civil and Environmental Engineering 330 Environmental Engineering
Civil and Environmental Engineering 355 Geotechnical Engineering
Civil and Environmental Engineering 361 Fundamentals of Transportation
Civil and Environmental Engineering 373 Construction Materials
Civil and Environmental Engineering 405 Engineering Economics
Civil and Environmental Engineering 424 Applied Hydrology
Civil and Environmental Engineering 431 Water and Wastewater Engineering
Civil and Environmental Engineering 433 Water Quality Laboratory
Civil and Environmental Engineering 451 Soil and Site Improvement
Civil and Environmental Engineering 464 Urban and Regional Transportation
Economics 320 Introduction to Tourism Economics
Economics 358 Environmental Economics
Economics 410 Economic Development
Economics 430 Economics of Human Resources
Economics 434 Health Economics
Economics 460 International Trade and Welfare
Education and Curriculum Studies 433 Interdisciplinary Science Curriculum
Education and Curriculum Studies 450 Methods and Materials in Science
Educational Foundations 310 Education in American Society
Ethnic Studies 340 Land Tenure and Use in Hawai'i
Finance 341 Financial Aspects of New Ventures
Food Science and Human Nutrition 250 Human Needs and Environmental Resources
Food Science and Human Nutrition 476 Cultural Aspects of Food Habits
Geography 309 Plants, People and Ecosystems
Geography 324 Geography of Global Tourism

Geography 326 Environment, Resources and Society
Geography 328 Culture and Environment
Geography 390 Tutorial in Geography
Geography 405 Water in the Environment
Geography 410 Human Role in Environmental Change
Geography 411 Human Dimensions of Global Environmental Change
Geography 412 Environmental Impact Assessment
Geography 455 Resource Management
Geology 308 Earth History
Geology 420 Sea Levels, Ice Ages, and Global Change
Geology 421 Geologic Record of Climate Change
Geology 455 Hydrogeology
Hawaiian Studies 207 Malama Ahupua‘a: Resource Management
Hawaiian Studies 351 Mahi‘ai Kalo I: Taro Cultivation
Hawaiian Studies 457 ‘Aina Mauliola: Hawaiian Ecosystems
Hawaiian Studies 458 Natural Resource Issues and Ethics
Hawaiian Studies 459 Strategies in Hawaiian Resource Use
Hawaiian Studies 460 Hui Konohiki Internship: Applied Resource Management
Interdisciplinary Studies 361 People, the Ocean, and the Environment
Interdisciplinary Studies 489 Environmental Practicum
Management 320 Fundamentals of Entrepreneurship
Management 345 Entrepreneurial Ventures
Marketing 311 Consumer Behavior
Marketing 331 Marketing Communications
Natural Resources and Environmental Management 302 Natural Resource and Environmental Policy
Natural Resources and Environmental Management 432 Natural Resource Economics
Ocean and Earth Science and Technology/Meteorology/Oceanography 310/310L Global Environmental Change
Oceanography 331 Living Resources of the Sea
Peace Studies 477 Culture and Conflict Resolution

Philosophy 103 Environmental Philosophy
Planning 399 Introduction to Environmental Impact Assessment
Plant and Environmental Protection Sciences 350 Invasive Pest Species
Plant and Environmental Protection Sciences 491 Topics in Plant and Environmental Protection
Population Studies 412 Analysis in Population and Society
Psychology 481 Environmental Psychology
Sociology 412 Analysis in Population and Society
Travel Industry Management 101 Introduction to Travel Industry Management
Travel Industry Management 320 Introduction to Tourism Economics
Travel Industry Management 321 Sociocultural Issues in Tourism
Travel Industry Management 324 Geography of Global Tourism
Travel Industry Management 325 Tourism Development: Hawai'i and Asia Pacific
Travel Industry Management 420 Principles of Sustainable Tourism
Travel Industry Management 369(J) Current Topics in Travel Industry Management: Tourism Management
Travel Industry Management 469(B) Advanced Topics in Travel Industry Management: Tourism Planning
Zoology 439/ 439L Animal Ecology
Zoology 450 Natural History of the Hawaiian Islands
Zoology 485 Biogeography

VII. Proposed Required Certificate Program Introductory Course Syllabus

Course Title: Gateways to Sustainable Literacy

Course Description: The primary goal is to orient students to the UHM campus as part of a natural topographic feature, Manoa Valley. Land use practices, past and present, are identified in their historical context and situate the campus in its current physical place. The valley's relationship to the drainage divides, mountain slopes, and coastal and nearshore environment is investigated to understand and appreciate tropical island ecosystems and the potential for reintroduction of sustainable practices into the built environment on the UHM campus and in surrounding communities. Topics include environmental philosophy, green politics, environmental economics, sustainable technologies, and alternative planning and design of a sustainable built environment. An extensive literature review will be conducted by students to provide currency to the themes and topics of sustainability, thus ensuring a minimum level of transdisciplinary literacy.

Methods: Classroom meetings will be used to review the increasing scope and depth of sustainability-related literature. Faculty affiliated with the proposed Certificate Program will be responsible for conducting at minimum two weeks of class meetings. Lectures introduce specific topics and themes that are followed with site visits and guest speakers. A field-oriented, place-based component gives students a practical understanding of the natural and cultural environment of University facilities and adjacent communities. For example, a hike to the summit of Diamond Head and visit to Waikiki Aquarium follow lectures on drainage basin geomorphology and the hydrologic challenges of a coastal urban environment; a visit to the Center for Hawaiian Studies focuses on taro cultivation and the debate over genetic modification of our food supply; and Lyon Arboretum serves as an outdoor classroom to discuss *in-situ* and *ex-situ* conservation biology and ecological restoration methods. Campus facilities and grounds management and staff provide hands-on learning opportunities for students to monitor and assess water and energy use, the implementation and maintenance of a campus-wide recycling program, and the

improvement and maintenance of landscaping. Students will actively participate in the identification of campus successes and failures at becoming a model for sustainable practices.

Additional Activities: Students participate in an Adopt-a-Landscape/Building program to connect them to the campus and cultivate a long-term relationship between students and the University of Hawai‘i.

Evaluation: Students keep a journal to record observations that serve as the basis of information for a series of 2-3 page essays on topics focusing on sustainability. Each student completes one independent and one collaborative research project (10-15 page papers). Both projects are presented to affiliated faculty and fellow students at conferences. The instructors consult regularly with individual students to ensure steady improvement in the quality of writing and analysis in the process of completing proposals, drafts, and final papers.

Proposed Outcomes:

Orientation to the UHM campus and surrounding communities

Appreciation of the natural and cultural history of urban Oahu

Cultivate a sense of belonging to and stewardship of the UHM campus

Improve skills of observation and writing through interdisciplinary learning approaches

Opportunity to participate in a conference presentation (individual research project) and panel discussion (collaborative research project)

Potential General Education Focus Requirement: Hawaiian, Asian and Pacific Issues (H)

Develop UH’s leadership role in sustainability studies and practice

VIII. Tentative Required Certificate Program Capstone Course Description and Objectives

The Certificate program is designed to promote the goal of demonstrated leadership in Sustainability Studies by the UH academic community. A key objective of a proposed capstone course will be to create the conditions for collaborative research that ultimately

reduces the environmental footprint of the UH System. The capstone course will be designed as a means to address campus and community identified concerns and problems.

Affiliated faculty mentors will provide advising and guidance on the identification of research projects, methods of inquiry, data analysis, and communication of research results. Student research projects will be presented at a public forum to demonstrate the application of learning outcomes to UH campuses and other places in the Asia-Pacific region. Initial research projects in the Certificate Program will create a baseline understanding of specific concerns and problems; for example, campus energy and water use, landscaping and irrigation networks, recycling effectiveness, waste reduction, and curriculum deficiencies. These initial projects will serve as the foundation for eventual design and construction of demonstration projects, such as installation of solar panels for campus lighting, water catchment systems for landscaping irrigation and water features, wireless outdoor learning centers, and new courses and degree options. On-going research projects will enable students to contribute to sustainable practices and leave a positive legacy on campus.

The proposed course addresses issues of importance to the local and global environment and communities. Such emphasis in the short term informs students of current developments in academia and in the long term improves environmental literacy and practice among members of society. Learning outcomes include training in research methods, quantitative and qualitative, which will be an added value to undergraduate curriculum in preparation for the rigors of graduate school and professional careers. The course includes outreach and service components to nurture community leadership skills. Students will be conversant across the academic continuum of Sustainability Studies, and will be trained to resolve present and future conflicts that arise due to resource scarcity, unequal distribution of wealth, and social injustice. Such skills are increasingly demanded by contemporary societies to sustainably balance economic health and ecologic integrity.

IX. Partial List of Employment/Fellowships Announcements June 2005-February 2006
with Keywords *Sustainability* and/or *Interdisciplinary* Stated in Desired Qualifications or
Job Description

Antioch New England Graduate School, New Hampshire: Department of Environmental
Studies

Arizona State University: International Institute for Sustainability; School of Justice and
Social Inquiry

BirdLife International, Belgium

Brown University, Rhode Island: Department of Environmental Studies

Bryn Mawr College, Pennsylvania: Program in Growth and Structure of Cities and Urban
Environmental Problems and Policy

Centre for Interdisciplinary Studies in Environment and Development, Bangalore, India:
Water Resources and Energy and Pollution

Clark University, Massachusetts: Department of International Development, Community,
and Environment; George Perkins Marsh Institute

Clemson University, South Carolina: Environmental Design and Planning

Colorado State University: Natural Resource Ecology Laboratory

Cornell University, New York: Department of Natural Resources

Eckerd College, Florida: Department of Environmental Studies

Evergreen State College, Washington: Sustainability Studies

Global Bio-Cultural Initiative, California

Innovative Farmers of Ohio

International Centre for Integrated Mountain Development (ICIMOD), Nepal

Michigan State University: International Environmental Policy and Law

Morris K. Udall Foundation Environmental Public Policy and Conflict Resolution

North Carolina State University: Urban Ecosystems, Green Infrastructure, and Urban and
Community Forestry

University of California: Society and Ecosystem Management

University for Peace, Costa Rica: Natural Resources and Sustainable Development

University of Florida: Tropical Conservation and Development Program

University of Illinois: Department of Environmental Studies

University of Manchester, UK: Institute for Development Policy and Management

University of Montana: Environmental Studies Program

University of Surrey, England: Lifestyles, Values and Environment

Vanderbilt University, Tennessee: Department of Anthropology

Wildlife Conservation Society, NYC

World Resources Institute, Washington D.C.: International Financial Flows and Environment Project

Yale University, Connecticut: School of Forestry and Environmental Studies

X. Employment Titles Related to Sustainability Studies

Building energy consultant

Coastal engineer and GIS coordinator

Consultant for international environmental mediation

Consultant to conservation organizations

Coordinator for NGO advocating ecosystems approaches to land mediation

Director of public land trust

Director of public resource conservation district

Director of conservation project

Environmental assessment for public and private institutions

Environmental dispute resolution staff

Facilities analyst for public institutions

Higher Education researcher and instructor

International agricultural researcher & project planner

Landscape architect

Legislative advocate

Organic agriculture producer and advocate

Planner with environmental and planning services firm

Policy planner and advocate

Public Interest Research Group staff

Recycling program staff

Restoration ecologist

Science writer

Tourism operator

XI. Materials Available Upon Request

Sustainability Non-Degree and Certificate Programs in Canada and the United States

(Source: University Leaders for a Sustainable Future <http://www.ulsf.org/>)

International University and College Sustainability Websites (Source: University

Leaders for a Sustainable Future <http://www.ulsf.org/>)

The Talloires Declaration 10 Point Action Plan Signed by the Association of University

Leaders for a Sustainable Future (Source: University Leaders for a Sustainable Future

<http://www.ulsf.org/>)