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CSU Channel Islands

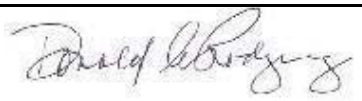
PROPOSAL TO AMEND

THE ACADEMIC MASTER PLAN (Short Form)

SIGNATURE PAGE

Name of Proposed Degree/Credential:	Masters of Science in Coastal Sustainability
Date of Submission:	9/30/10
Faculty Proposing New Program:	Donald Rodriguez, Sean Anderson, Christopher Cogan

Review and Approval Signatures:

1. Proposer:		Date:	9/30/10
2. Curriculum Chair:		Date:	
3. Academic Senate Chair:		Date:	
4. AVP Academic Programs and Planning		Date:	
5. Provost:		Date:	
6. President or Designee:		Date:	

Internal Note: Please return this document to Academic Programs and Planning after all signatures are completed.

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THE ACADEMIC MASTER PLAN (Short Form)

This *Proposal for a New Degree*, or 'short form,' is the method for adding a new degree, minor, or credential to the Academic Master Plan. Completed forms should be submitted to the Academic Programs and Planning office, Sage Hall, Room 2053 no later than the first Monday in October of each year.

Approval Process: Proposals for new degrees, minors, and credentials are reviewed by the Academic Planning Committee early each fall semester, and submitted to the Curriculum Committee, the Academic Senate, and the Provost and President for approval. As an additional step, new degrees (but not minors and credentials) are submitted to the CSU Office of the Chancellor in January of each year, for review and approval by the Board of Trustees.

1. Program Identification

A. Program Name: Environmental Science and Resource Management

B. State Support or Self-Support (identify one): Self Support (PSM)

C. Academic Year of Implementation: 2012

D. Name of the program area or unit that would offer the proposed degree or program: ESRM

E. Name, title, and rank, of individual(s) primarily responsible for drafting the proposed degree program: Donald Rodriguez, Associate Professor and Chair ESRM

2. Program Description

A. Description of the degree program. Major subject matter elements of the program, core content areas, and representative courses taught. (250 words)

The Master of Science in Coastal Sustainability is a multidisciplinary degree that focuses on contemporary problems and conflicts arising from increased use of coastal areas and emphasizes ecological restoration, land use practices, and the evaluation of alternative policy management solutions in the coastal zone. The M.S. in Coastal Sustainability trains students in an array of scientific methodologies and the practical application of research skills to identify and solve environmental problems unique to the coastal zone. Students will gain proficiency in ecological restoration, geospatial assessment strategies, quantitative data analysis, evaluation of land use practices, teaching environmental science and resource management concepts, and the human dimensions of coastal management. Students will learn to design, administer, monitor and evaluate land use and restoration plans that can help public and private organizations respond to changing ecological conditions in the coastal zone. Graduates in Coastal Sustainability will be well equipped to either pursue a doctoral degree in various related science fields (marine science, ecology, geography, etc.) or to begin or continue careers in land use planning, ecological restoration, protected area management, GIS, education, interpretation, program analysis, grant writing, public policy or outreach. The Master of Science degree in Coastal Sustainability will prepare students who skillfully integrate ecological theory, research methods, and professional ethics; while also providing meaningful and practical opportunities for field experience and internships.

B. Student Learning Objectives: Principal content and skills that students will learn in the program. (150 words)

The core of the M.S. in Coastal Sustainability provides rigorous training in methodologies for research and analysis to be applied in a variety of professional and/or community settings. These advanced research skills will also prepare students to advance in an academic career toward a Ph.D. in Environmental Science, Resource Management, or a related science. Competency in basic ecological and land use assessment will be augmented with instruction in specific methodologies of field data collection and more advanced methods of ecosystem assessment. Rigorous training in research methods and statistical analysis will be bolstered by a sound theoretical foundation in the discipline, and substantive emphases in relevant environmental issue areas (such as water quality monitoring, ecological inventory and monitoring, human dimensions research, GIS applications of land use issues, restoration, law and policy of the coastal environment, education, etc.) tailored to each student's individual plan of study.

C. How the program aligns with the University mission and strategic planning goals.

Coastal Sustainability integrates well with all four University Pillars as well as the overall campus goals of providing a 21st Century workforce capable of dealing effectively with current and future challenges in Ventura County. The M.S. in Coastal Sustainability directly addresses two CSUCI strategic initiatives 1) Increasing enrollment and research in STEM disciplines. The program will target women and increase enrollment of underrepresented students in STEM fields and 2) Developing curriculum and increasing student engagement in sustainability. Mobilizing and preparing a workforce for the much-lauded Green Economy has been identified as a priority for the CSU, State of California, and the Nation as a whole.

3. Program Need

Growing the green economy has been predicted to be the economic driver of the 21st century, and green jobs in energy efficiency and sustainability will continue to be a growth industry. The global environmental goods and services sector is expected to double by 2020 to become a $2.7 billion market, according to a 2008 United Nations Environment Programme study. Ventura County and the tri-county area served by CSU Channel Islands has one of the largest cadres of practicing environmental professionals in the country that require the education and practical experience needed to advance their careers. The Professional Science Masters in Coastal Sustainability offers working professionals and qualified undergraduates an application oriented interdisciplinary degree that can easily adapt to the individual needs of students. A recent national study on Professional Science Masters degrees revealed Environmental and Geosciences ranked second in total enrollments of PSM's across the country. The PSM has been recognized in several major pieces of proposed Congressional legislation. The America COMPETES Act, passed in 2007, contains a $73 million congressional authorization to support local PSM programs.

The California State University (CSU) has initiated the largest systemwide PSM support program in the nation. CSU currently has 12 PSM programs on 8 campuses and by Fall 2009 will have 18 PSM programs on 14 campuses (currently there are 2 environmental science PSM degrees offered in the CSU at Chico and San Bernardino, neither of which have a coastal emphasis). In a recently published report the National Research Council had this this to say about PSM's:

> *"Industry, government, and nonprofits need employees who have deep scientific knowledge as well as skills to apply that knowledge in innovative ways. A reinvigorated master's degree in the natural sciences can answer the demand for such science professionals and help ensure that the U.S. has the work force it needs to stay competitive. Policymakers, universities, and employers should work together to speed the development of professionally oriented master's degree programs in the natural sciences. Graduates of these programs - which build both scientific knowledge and practical workplace skills - can make a strong contribution to the nation's competitiveness."* (National Research Council, 2008).

By pairing graduate students with a faculty mentor and a professional mentor in the corporate or government sector students will be able to apply their coursework and experiences to real world problems. This model of community based research serves to advance student and faculty scholarship while addressing important community needs.

Students at CSU Channel Islands would benefit from an Applied M.S. program because so many will already be at work in applied settings where greater sophistication in statistical and field analysis is required by employers. An applied degree will not compete with other campuses in the area offering an M.S. in Biology (such as CSUN,) but offers an innovative alternative program to meet distinct needs.

A. Other Universities and CSU campuses and that currently offer the proposed degree or program. How is this degree distinctive?

The following CSU campuses offer M.S. degrees in general Environmental Science or Resource Management:

Chico
Fullerton
Humboldt (Natural Resources)
Los Angeles
Monterey Bay
Pomona
San Bernardino
San Diego
San Jose
Stanislaus (Ecology and Sustainability)

Please note: in comparing MS programs, no M.S. programs in Coastal Sustainability or Coastal Management exists or is planned anywhere in the CSU system.

UCSB Bren School of Environmental Science and Management does offer an interdisciplinary Masters of Environmental Science and Management that may compete with our degree. We do see some distinctions that are important to point out between the two programs.

A Brief comparison between our PSM and the Bren School's Masters degree:

The following table highlights the unique characteristics of each program

	CSU Channel Islands PSM in Coastal Sustainability	UCSB Bren School Masters in Environmental Science and Management
Duration	2 years working professionals	2 years (full time) 3 years (working professionals)
Distinguishing aspects	Coastal Management focus Interdisciplinarity Emphasis on Environmental Sustainability Management of interface zones (urban-wildlands, urban-agriculture, terrestrial-marine) Ecological Restoration	Network of Graduates Interdisciplinarity Group-based research
Key networks	CSU COAST CESU	UC System CESU
Applicant pool	California, emphasis Ventura County	California/Nation
Primary applicant pool	working professional	recent grads 4-yr schools

	CSU Channel Islands PSM in Coastal Sustainability	UCSB Bren School Masters in Environmental Science and Management
Coastal zone focus	-core of study -include both terrestrial and marine aspects of coastal zone	-optional topic for specialization (max of 2 courses focus on marine environment), from a field of 7 specialties -generally ignore coastal size of coastal zone
Research model	faculty & outside advisor for each student	faculty advise group projects (4-6 students)
Graduate employment	unknown, current undergrad program >85% students working locally, we expect ~75% to remain in coastal southern California	37% of graduates employed locally
Tuition (overall)	$21,000	$42,000-57,000

B. Professional uses of the proposed degree program:

The program is intended for employees of government and industry seeking career enhancement, as well as recent college graduates seeking careers in planning and management with government agencies, industries, and other activities depending on or affecting the coastal zone or its resources. The program can also be of value for enhancement of careers in education.

Restoration ecology, wetlands ecology, land use planning, coastal zone management, environmental law and policy analysis, resource sustainability, GIS and applied GIS, environmental quality, park and protected area management, water quality, environmental planning.

A possible participant and professional mentors list from the following organizations in Ventura County include: California Association of Resource Conservation Districts, California Coastal Conservancy. California Department of Conservation, California Geological Survey, California Department of Fish and Game, California Department of Forestry and Fire Protection, California Department of Water Resources, California Fish and Game Commission, California Integrated Waste Management Board, California State Parks, Channel Islands National Marine Sanctuary, Channel Islands National Park, Los Padres National Forest, Ojai Valley Land Conservancy, Santa Monica Mountains National Recreation Area, Santa Monica Bay Channel Keeper, State Water Resources Control Board, Surfrider Foundation, United States Department of Agriculture, United States Forest Service, Ventura Coast Keeper, United States Geological Survey, Ventura County Planning Department, Ventura County Watershed Protection District, Wishtoyo Foundation, City of Ventura Planning Department, Ventura County Office of Education, United States Minerals

Management Service, United States National Resource Conservation Service, United States Farm Bureau, Ventura County Agriculture Commission, Conejo Open Space Conservation Agency, Calleguas Water District, Camrosa Water District, Pleasant Valley Water District, United Water Conservation District, Santa Monica Mountains Conservation District. The following environmental consultants will also participate in the program: Anchor Environmental, West Coast Environmental, Impact Sciences, Rincon Associates, NCER, Hawks and Associates, David Magney and Associates.

C. What sources of information provide evidence for regional, state, and/or national need for the program?

Coastal conservation is emerging as a global concern. As more and more people settle at the coasts and nature gives way to human development, communities search for better ways to sustain both economic opportunities and the fundamental elements of nature that make such opportunities possible. Human activities have transformed many coastal watersheds, altered hydrologic regimes, contaminated water, soil, and living tissues with toxic material and debris, introduced alien species from afar, and depleted living ocean resources. Restoring the ecological integrity and rebuilding lost productivity of coastal ecosystems is becoming a growth industry. Leadership and practical strategies are needed to restore nature and to sustain coastal communities.

Ventura County currently hosts premier State and Federal practitioners of coastal ecological restoration and stewardship. The State of California recently invested in one of the world's largest and most innovative networks of marine reserves at the California Channel Islands, in Ventura and Santa Barbara counties. The network's purpose is to restore and sustain the ecological integrity and productivity of coastal ocean resources. The county is also home to Channel Islands National Park, Channel Islands National Marine Sanctuary, and Santa Monica Mountains National Recreation Area, which all administer well-established federal conservation management programs. These programs encompass a broad array of professional endeavors, ranging from facilities management and business practices to law enforcement, communication, and environmental sciences, that provide practical, hands-on experience.

The county's educational institutions are building on a firm foundation of experience, with new opportunities to serve growing coastal populations. The M.S. in Coastal Sustainability will establish CSU Channel Islands' role in regional education with a campus-wide interdisciplinary approach that seeks to integrate environmental sciences with political science, biology, communication, chemistry, economics, education, and geography. These broad-based, integrative approaches to education reflect the practical realities needed to integrate coastal conservation management in practice today. Ventura County presents extraordinary opportunities to combine practical experience with educational programs that are designed to focus and integrate technical and professional disciplines to achieve desired coastal conservation goals.

As a pioneer in coastal conservation and a center of practical education excellence, Ventura County could become a world leader in coastal conservation management by developing leaders and practical strategies based on real-world experience. Developing countries around the world eagerly seek advice and guidance from North American experiences in conservation of nature and for pragmatic solutions to the challenges of simultaneously sustaining economic development and nature. This is especially relevant for Latin America with its strong cultural ties to southern California and specifically Ventura County. Both private and public interests engaged in coastal development in northern Baja California, Mexico, marine protected area monitoring in the Galapagos Islands of Ecuador, and ecological restoration efforts in the Atlantic rainforest of Brazil have recently come to California's Channel Islands in search of models for coastal conservation management. Channel Islands National Park's Vital Signs Monitoring Program is internationally recognized and emulated widely as a cornerstone of effective protected area stewardship. Over the past 25 years, hundreds of scientists, technicians, and managers have participated in its pioneering development and operation. The M.S. in Coastal Sustainability will create a curricular bridge to engage Latin American land managers and provide unique opportunities for students to gain this unique perspective through the on-going efforts of the ESRM program working with the Coastal Studies unit of the University of Guadalajara in Jalisco Mexico.

A multi-dimensional program of education and professional experience could prepare Ventura County students for diverse careers in coastal conservation management worldwide, improve policies and practices of coastal conservation, and hasten effective restoration and sustainability of coastal ecosystems and communities. The ultimate goal of such a cooperative endeavor is to light the fires of leadership that will inspire coastal conservation for generations to come, not simply fill pails with information.

Parallel with the developments in terrestrial ecology, the concepts of coastal ecosystem-based management can be tied to the writings of Aldo Leopold in the 1940s (Leopold, 1941, 1949), the development of modern biodiversity initiatives such as the Convention on Biodiversity (United Nations Environment Programme, 1992), and actions such as the U.S. Sustainable Fisheries Act of 1996 and the recent reauthorization (2006) of the Magnuson–Stevens Fishery Conservation and Management Act. Recent publications calling for an increased pace of marine and coastal management include the Pew Oceans Commission (2003) report, the US Commission on Ocean Policy report (2004), the Millennium Ecosystem Assessment (2005), a Scientific Consensus Statement on Marine Ecosystem-based Management (McLeod et al., 2005), and a Food and Agriculture Organization of the United Nations (FAO) Fisheries Technical Paper on the ecosystem approach to fisheries (Garcia et al., 2003).

Regional:

Continual inquiry to ESRM faculty by recent graduates and community/industry for about such a program
Regional Comprehensive Plan (2008, Southern California Association of Governments)
State of the Region Report (2007, Ventura County Civic Alliance)
Compact for a Sustainable Ventura County (2009)
CSU Channel Islands Strategic Plan

State:

CSU Council on Ocean Affairs, Science, and Technology
CSU Executive Order No. 987
Governor Schwarzenegger Executive Order S-21-09

National:

President Obama's GreenGov Challenge
Association for the Advancement of Sustainability in Higher Education
America's Living Oceans: Charting a Course for Sea Change (2003, final report of the Pew Oceans Commission)
United States Commission on Ocean Policy (2004)
Marine Ecosystems and Fisheries (2009, U.S. National Academies Report)
Oceans and Human Health (2009, U.S. National Academies Report)
Protecting coastal and marine environments from land-based activities: A guide for national action (2006, United Nations Environment Programme)
Marine and coastal ecosystems and human well-being: A synthesis report based on the findings of the Millennium Ecosystems Assessment (2006, United Nations Environment Programme)

4. Student Enrollment:

A. The expected number of majors in the year of initiation and three and five years thereafter. Please identify the data source(s) for these projections.

	Number of Majors	**Number of Graduates**
Initiation Year:	20	0
Third Year:	40	20
Fifth Year:	40	30

5. Resources and Budget

A. Existing faculty, staff, and programmatic resources that support the program.

Faculty:

Dr. Donald Rodriguez, Chair
Chair & Associate Professor of ESRM

Dr. Sean Anderson
Assistant Professor of ESRM

Dr. Christopher Cogan
Assistant Professor of ESRM

Dr. Simone Aloisio
Chair & Associate Professor of Chemistry

Dr. Brad Monsma
Professor of English

Dr. Sean Kelly
Associate Professor of Political Science

Dr. Dan Wakelee
Associate Professor of Political Science

Dr. Chris Williamson
Lecturer, ESRM

Dr. Linda O'Hirok
Lecturer, ESRM

Staff:

Ms. Mary Devins
Administrative Support Coordinator for ESRM

Program Resources:

ESRM Field Equipment Storage and Dry Processing Lab (Malibu 126)
ESRM Wet Lab (Modoc 170)
ESRM Equipment Prep/Flammable Storage (Modoc 110)
ESRM GIS Lab (Bell Tower 1371)
ESRM GIS Teaching / Training Lab (Bell Tower 1352)
Camarillo Park Site (newly acquired >300 acre property adjoining campus for environmental research, field studies, etc.)
Additional Storage/General Equipment: Aliso Hall Science Building includes teaching and research space

B. Community/industry partnerships. Identify organizations, businesses, and agencies contributing to the academic or financial support or delivery of the degree, and describe their role.

Cooperative agreement with Mineral Management Service (Pacific OCS Region) - to monitor shorebirds on Ventura County beaches. Replicating a study that was done in 1994-1997.

California Coastal Conservancy – research partnership to collect and analyze coastal water from selected sources, monitor of ecological condition and restoration of Camarillo Park riparian habitat through the Southern California Wetlands Recovery Projectl

Cooperative agreement with National Park Service – To inventory and monitor species associated with ice plant removal and restoration on Anacapa Island in Channel Island National Park.

Research Contract with Southern California Water Resource Control Board – To monitor water quality in coastal waters of Ventura County.

Research Contract U.C. Cooperative Extension (Hansen Trust) – To monitor water quality associated with agricultural runoff in Revlon Slough during storm events.

Department of Defense:
US Navy, Naval Base Ventura County – monitoring of endangered species on wetland areas within the base

National Park Service, Santa Monica Mountains National Recreation Area – restoration monitoring and re-vegetation, trail maintenance, visitor management

Mediterranean Research Learning Center – various research projects (Channel Islands bird monitoring Loggerhead Shrike, Scrub Jay, intertidal monitoring, etc), student research internships

US Fish and Wildlife Service (Pacific Southwest Region & Endangered Species Recovery Program) – student research internships, snowy plover nesting habitat recovery project

Commerce:
Barataria-Terrebonne National Estuary – wetland restoration project to monitor invasive plant species distribution after hurricane Katrina.

Education:
US Department of Education

National Science Foundation:

US National Science Foundation (funded projects across campus >$2million)

Ventura County Planning Department – internships, teaching

Ventura County Resource Conservation District – internships

C. Budget. Costs estimated to be associated with the degree in the pre-implementation year, first, third and fifth year of operations. Provide narrative describing these budget estimates.

MS Coastal Sustainability Budget Estimate revised 10/26/10

	Revenue	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
	1st yr. Students	15	17	19	20	20
	2nd yr. Students	0	13	15	17	18
	1st yr students units	15	15	15	15	15
	2nd yr students units	0	15	15	15	15
	Fee/credit	$ 595	$ 595	$ 595	$ 595	$ 595
502001	**Total Revenue**	**$ 133,875**	**$ 267,750**	**$ 303,450**	**$ 330,225**	**$ 339,150**
	Expenses					
601809	*faculty*	*$ 40,500*	*$ 84,000*	*$ 87,000*	*$ 87,000*	*$ 87,000*
601807	*Program Director (6 units)*	*$ 15,600*	*$ 16,200*	*$ 16,800*	*$ 16,800*	*$ 16,800*
	total personnel charges	**$ 56,100**	**$ 100,200**	**$ 103,800**	**$ 103,800**	**$ 103,800**
603803	benefits (40%)	$ -	$ -	$ -	$ -	$ -
	equipment	$ 10,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000
660002	marketing	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
660003	supplies	$ 2,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
606002	travel	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000
660025	Overhead - CO (4%)	$ 5,355	$ 10,710	$ 12,138	$ 13,209	$ 13,566
660835	Admin fee-trust (22%)	$ 29,453	$ 58,905	$ 66,759	$ 72,650	$ 74,613
	Extended University O/H	$ 40,163	$ 80,325	$ 91,035	$ 99,068	$ 101,745
	Total Expenses	**$ 149,070**	**$ 281,140**	**$ 304,732**	**$ 319,726**	**$ 324,724**
	Total Net	**$ (15,195)**	**$ (13,390)**	**$ (1,282)**	**$ 10,499**	**$ 14,426**

D. Facilities. Identify new facilities, building modifications and other physical and space needs associated with the new degree or program.
N/A