The Department of Natural Resources and Environmental Management (NREM) offers BS, MS and PhD degrees with current enrollments of 76, 50, and 29 students respectively (Fall 2012). The Master’s program has two tracks, Academic and Professional. The Academic or Plan A track requires a thesis and the Professional or Plan B track, requires more course work plus an externship/practicum. So far this century, 84 Master’s degrees have been awarded; of which 42 were academic (thesis) and 42 were professional degrees.

This a proposal to change the degree title on the non-thesis or Plan B track from a Masters in Science in Natural Resources and Environmental Management to a Masters in Environmental Management (MEM). This name change is consistent with the national Professional Science Masters movement.¹ No new resources are requested and no impact on current course loads is anticipated.

The Masters in Environmental Management or MEM degree is currently being offered by Yale, Duke, Portland State, Salisbury University, University of New South Wales, Webster University, University of Queensland, the Freie University (Berlin), and others. Very similar professional master’s degrees are being offered at many Mainland institutions, including Harvard (Sustainability & Environmental Management), University of Pennsylvania (Environmental Studies), UCSB (Environmental Science and Management), and the University of Rhode Island (Environmental Science and Management).

This simple name change will have two significant impacts. The first and most significant is that it will make our graduates more competitive, providing them with a degree title that describes their preparation and that is similar to those awarded by other institutions providing professional masters in environmental management. It also may facilitate future recruitment.

If this change is approved, NREM will then offer a BS, MS, and PhD in Natural Resources and Environmental Management and a Masters in Environmental Management, and the MS degree will no longer have the Plan B option. Most of our Plan B students are expected to be self funded.

Background

NREM is a relatively new department, formed by merging the Department of Agricultural and Resource Economics with part of the Agronomy and Soil Science Department. The first student graduated from NREM in 2004. Since then, the number of graduates has been increasing.

¹The Professional Science Master’s (PSM) is an innovative, new graduate degree designed to allow students to pursue advanced training in science or mathematics, while simultaneously developing workplace skills highly valued by employers. PSM programs consist of two years of academic training in an emerging or interdisciplinary area, along with a professional component that may include internships and “cross-training” in workplace skills, such as business, communications, and regulatory affairs. All have been developed in concert with employers and are designed to dovetail into present and future professional career opportunities”, http://www.scienemasters.com.
Graduates have found jobs in Universities, government agencies, the private sector, and non-profits. Anecdotally, graduates with professional science masters have been quite successful in finding jobs directly related to their training, often with the organization where they interned.
Attachment 2—Faculty

C. Chan-Halbrendt, PhD — International agricultural development and environmental economics
L. J. Cox, PhD — Community economic development
S. E. Crow, PhD — Soil ecology and biogeochemistry
C. I. Evensen, PhD — Natural resource management, environmental quality
A. Fares, PhD — Watershed hydrology
J. B. Friday, PhD — Tropical forestry/agroforestry extension
P. V. Garrod, PhD — Marketing and production economics
S. A. Gray, PhD - Social-Ecological Modeling, Collaborative Resource Management
T. W. Idol, PhD — Tropical forestry/agroforestry
J. K. Leary, PhD — Invasive species control
C. Lepczyk, PhD — Ecosystem management, wildlife ecology, landscape ecology
P. S. Leung, PhD — Aquaculture and fisheries economics, systems modeling
C. Litton, PhD — Terrestrial ecosystem ecology, biogeochemistry
T. Miura, PhD — Geospatial analysis, remote sensing
K. L. Oleson, PhD — Ecosystem service valuation, environmental ethics, policy analysis
J. F. Yanagida, PhD — Production economics, price analysis, international trade

Cooperating NREM Graduate Faculty
K. Burnett, PhD (UHERO) — Invasive species assessment and management
J. DeFrank, PhD (TPSS) — Herbicide management
A. El-Kadi, PhD (G&G/CEE) — Groundwater hydrology
T. Giambelluca, PhD (GEOG) — Climatology, hydrology
M. Habte, PhD (TPSS) — Soil ecology, microbiology
N. V. Hue, PhD (TPSS) — Organic cycling
Q. Li, PhD (MBBE) — Environmental chemistry
T. Radovich, PhD (TPSS) — Organic and Sustainable farming
C. Ray, PhD (CEE) — Ground water hydrology and chemistry
H. Valenzuela, PhD (TPSS) — Vegetation physiology and management

Affiliate NREM Graduate Faculty
G. Bruland, PhD (Principia College) — Soil and water conservation
K. Chaston (NOAA) — Coral and coastal management
D. Drigot (US Army Corp of Engineers) — Natural resource management
J. Fox, PhD (East-West Center) — Social forestry
C. Giardina, PhD (IPIF - USDA-FS) — Forest Ecology
S. Hess (USGS-BRD) — Wildlife ecology and management
Y. Li, PhD (UH Hilo) — Forest ecosystem management
R. Mackenzie, PhD (USDA Forest Service) — Aquatic ecology
D. Meason, PhD (Scion, New Zealand) — Forest ecosystem analysis and modeling
M. Pan, PhD (NOAA Fisheries) — Fishery economics
S. Pooley, PhD (NMFS) — Marine resource economics
M. Robotham, PhD (USDA) — Conservation technology
C. Smith (USDA) — Soil genesis, survey and classification
M. Walker, PhD (Univ. of Nevada, Reno) — Water quality, microbiology
Plan B is a course-driven professional degree that requires a total of 36 credits. Students are required to declare a concentration from one of four possible concentration areas (see below). Courses include the Primary MS Core (9 credits), research methods (3 credits), a minimum of 9 elective credits from the chosen concentration area, a minimum of 3 elective credits from each of the other three concentration areas, and a 6 credit capstone experience. Of the 18 elective credits required: (i) at least 12 credits must be NREM courses; and (ii) a maximum of 6 credits of upper-division undergraduate course credits (400-level) are allowed.

**Primary Core (9 credits)**
- NREM 600 Evaluation of Natural Resources Management (3)
- NREM 601 Economic Analysis of Natural Resource Management (3)
- NREM 605 Research Skills (2)
- NREM 701 Research Seminar in NREM (1)

**Research Methods (3 credits)**
- Course in graduate research methods (3)

**Plan B Concentration Areas (total 18 credits)**
Plan B students will select a concentration area from the 4 listed below. Each student is required to take a minimum of 9 credits from their concentration area, and 3 credits from each of the other areas. The following list is not comprehensive, and substitutions will be considered at any time by petitioning the NREM Graduate Committee via your faculty advisor. There is no guarantee that these courses will be offered, so students should check with the respective instructors in planning their curriculum.

**Geospatial Analysis & Modeling**
- GEOG 470 Remote Sensing
- NREM 477 GIS for Resource Managers
- NREM 627 Applied Microeconomic Analysis
- NREM 664 Small Watershed Modeling
- NREM 677 Remote Sensing of the Environment
- NREM/ECON/TPSS 429 Spreadsheet Modeling for Business and Economic Analysis
- PLAN 673 Information Systems for Disaster Management and Humanitarian Assistance

**Natural Resources Economics and Environmental Planning**
- NREM 420 Community and Natural Resource Management
- NREM 458 Project Evaluation and Resource Management
- NREM 611 Resource and Environmental Policy

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2 Department of Natural Resources and Environmental Management, *Graduate Student Guide*, August 2012. If the new name is approved MEM will be substituted for Plan B.
- NREM 637 Resource Economics
- NREM 671 International Agricultural Systems
- GEOG 621 Coastal Management and Planning
- GEOG 622 Environmental Impact Assessment
- PLAN 640 Land Use Policies and Programs
- PLAN 620 Environmental Policies and Programs
- PLAN 625 Environmental Planning
- PLAN 628 Urban Environmental Problems

**Land & Water Resource Management**
- NREM 461 Soil and Water Conservation
- NREM 463 Irrigation and Water Management
- NREM 467 Natural Resource Conservation Planning
- NREM 612 Prediction and Controlling Degradation in Human-Dominated Terrestrial Ecosystems
- NREM 660 Hydrologic Processes in Soils
- NREM 662 Watershed Hydrology
- NREM 665 Coastal and Wetland Ecology and Management
- ORE 677 Marine Renewable Energy
- LWEV Legal Aspects of Water Resources and Control

**Applied Terrestrial Ecology**
- NREM 450 Wildlife Ecology & Management
- NREM 480 Applied Forest Ecology
- NREM 680 Ecosystem Ecology
- NREM 682 Restoration Ecology
- NREM 684 Landscape Ecology
- NREM 686 Forest Nutrition and Biogeochemistry
- NREM/BOT/ZOOL 690 Conservation Biology
- ZOOL 750 Topics in Conservation Biology

**Plan B Capstone Experience (6 credits)**
A capstone experience is required for all Plan B students. The capstone experience consists of: (i) NREM 695 (1 cr) Capstone Preparation, to be taken when the student is preparing their proposal; (ii) NREM 696 (3 cr) Capstone Experience and (iii) NREM 699 (2 cr) Directed Research (register with faculty advisor); to be taken when the student has completed their capstone experience and is writing up their final document. All capstone experiences require approval from the Plan B Capstone Panel, which consists of the faculty advisor, the NREM 695 course instructor, and an at-large Panel member.

The Capstone Experience requirement may be fulfilled in a number of ways, based on each individual student's interests. In as much, it will vary from student to student, but typical capstone experiences will involve: (i) an internship/coop/special field experience; (ii) an investigation of a special topic; and/or (iii) development of a project, directed readings/study, or a research project. Each student is expected to take the primary role in identifying and organizing their capstone experience. In meeting this requirement, it will be important for students to demonstrate that they are getting an "integrative" experience in natural resources and environmental management. Each student will be required to give a
public proposal and defense presentation, and provide a written proposal and final document on their capstone experience, both of which will be evaluate\textsuperscript{3}d by the Plan B Capstone Panel.

Past and current Plan B students (the professional science masters) had or have internships in the public, private, and non-profit sectors. For a significant number of the past graduates, the internship has led directly to a professional placement in the same organization.