

**FACULTY SENATE PROPOSAL**

**Proposition:** 16-09/10 Amended

**Sponsors:** Brown (A&S), Huttlinger (CHSS), Anderson (ACES), Munson McGee (Engineering)

**Proposed Committee**

**Assignment:** University Affairs

**Actual Committee**

**Assignment:** University Affairs 4/15/10

**Approvals:**

**ADAC (Approved May 2009)**

**ADC (Approved April 12, 2010)**

**Graduate School/Council (Approved November 5, 2009)**

**Title: Proposal for Graduate Degrees in Water Science and Water Management**

**The Proposal:**

Faculty members at New Mexico State University (NMSU) propose to establish a Master of Science in Water Science & Water Management and a Doctor of Philosophy in Water Science & Water Management. These degrees will be administered by a Management Committee composed of faculty members from the Colleges of Arts and Sciences and Agriculture, Consumer, and Environmental Sciences, and from the New Mexico Water Resources Research Institute.

**Program need and rationale:**

By its very nature as a state in the arid southwestern United States, New Mexico faces a host of water resource management challenges, and these include the provision of adequate water supplies for municipal, industrial, residential, and agricultural uses; meeting interstate and international water deliveries; adequate management of regional groundwater aquifers; protection of water quality in both groundwater and surface water resources; and dealing with a host of challenges related to climate change. The development of graduate degrees in the areas of water resources management will allow faculty to train the future generation of water scientists and managers that can help meet the above need.

According to a March 8, 2009 article in the New York Times, the Bureau of Labor Statistics predicted the demand for hydrologists will grow 24 percent from 2006 to 2016, much faster than the average for all occupations. In December 2008, a needs survey was sent to 624 water employees of government and non-government organizations (excluding academic

institutions). Results of the survey suggest that graduates of the proposed program would find numerous employment opportunities. The survey responses indicate that potential demand for the program is strong. Some highlights of survey responses include:

- 79% of respondents agreed that the proposed program fulfills a need not being met by other graduate programs. Only 2% disagreed.
- 86% of respondents agreed that they would advise a student to enroll in these graduate programs
- 68% of respondents said that they would personally or know someone who would likely enroll in these graduate programs
- 68% of the respondents agreed that they would be interested hiring graduates from these graduate programs
- 73% of respondents agreed to offer internships to students in these programs
- 70% of respondents agreed that the proposed graduate programs are sufficient for development of professional working at the local, state, regional, and international levels

Due to a strong collection of faculty researchers in the area of water resources research, the existence of the New Mexico Water Resources Research Institute, and a concerted efforts of faculty and administrators on campus, NMSU is well positioned to advance interdisciplinary Masters and Ph.D. programs in water science and management. At NMSU, 85 graduate courses are taught, and water research is conducted across seven colleges and 16 academic departments. To unify these programs, the Water Science and Education Center was formed in 2006 as part of the Natural Resource Sustainability and Renewal Program. This Center has assembled 84 faculty members conducting water research, teaching, and outreach at NMSU and has unified the diverse water programs through the development of goals for interdisciplinary research, teaching, and outreach. The program being proposed would build on these strengths at NMSU and allow faculty to support and advance graduate degree programs to meet the water resource management challenges that New Mexico faces. The proposed Masters and Ph.D. of water science and management degree program at NMSU would be unique. Such a program is not offered at any other institution in New Mexico.

### **Program details and overview**

The proposed graduate degree program in water science and management would offer two graduate degrees:

- Master of Science in Water Science & Management
- Doctor of Philosophy in Water Science & Management

The full proposal has extensive details on the courses offered, resources available at NSMU, and management strategy. Courses offered will come from a range of departments and

colleges, and these include classes on the specifics of water resources management, statistics and related tools and technique areas, seminar experiences, and thesis and dissertation credits to be lead by the supervising faculty member. Thesis and research committees would draw on the expertise of faculty in numerous colleges and departments, allowing broad participation on campus and a wide and encompassing perspective from many disciplines. The majority of the resources needed to support the program are already resident at NMSU, and the proposal requests limited resources only for administration and clerical support, graduate assistantships, one new faculty line, and library acquisitions. Projections of enrollment and Tier 2 classes that the program would generate see the program as being basically revenue neutral in the out years after year three.

### **Program outcomes and benefits**

Graduates of this program would secure the training and education needed to help meet the serious water resource management challenges that New Mexico faces, and these graduates would work both as academic researchers and teachers in universities, and as managers and decision makers in water resource management agencies. The demand for these jobs clearly exists, as noted in the New York Times article referenced above, and we have gathered numerous letters of support from likely employers that clearly demonstrate that our proposed program would meet these combined needs. In addition, the proposed degree programs are highly consistent with several objectives of the NMSU “Living the Vision” master plan (available on the Web at: <http://ltv.nmsu.edu/>), and the degree program would have the following specific outcomes:

- Foster the discovery and application of knowledge about water resources to promote human well-being and sustainable development,
- Prepare the next generation of water scientists and managers for professional and academic careers at the local, state, national, and international levels,
- Provide graduate students with knowledge in disciplines relevant to water resources, including a broad understanding of hydrology and the interplay among the biophysical and social sciences in water management,
- Provide teaching and research opportunities to improve the exchange of knowledge between students, faculty, professionals, and citizens, and
- Improve the availability, security, and reliability of water supplies across all sectors, regions, and uses in New Mexico.

## **Program Management**

The proposed graduate program will be administered by a management committee composed of faculty members from the Departments of Agricultural Economics and Business; Animal and Range Sciences, Geography, and Plant and Environmental Sciences, and the Chairperson of the Water Research and Education Center (WSEC). The chairpersonship of the program management committee will rotate across the four members involved on a bi-annual basis. The management committee will provide guidance and leadership on decisions related to admission of applicants, distribution of assistantships, and composition and leadership of thesis and dissertation committees. In addition, the existing Steering Committee from the WSEC will comprise an advisory committee to provide technical and policy input to the program management committee.

**A full version of the proposal has been forwarded to Dr. Christopher Erickson, Chair of the NMSU Faculty Senate, and is also available to Senators who have interest in reviewing the entire document.**