1. New Program Proposal

Form NP

NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s):	Southeast Missouri State University
Program Title:	Master of Science in Environmental Science
Degree/Certificate:	Master of Science
Options:	NA
Delivery Site(s):	Cape Girardeau, Southeast main campus
CIP Classification (provide a CIP code):	03.0104
Implementation Date:	Fall 2009
Cooperative Partners:	NA
Expected Date of First Graduation:	Spring 2011

AUTHORIZATION

Jane Stephens, Provost		
Name/Title of Institutional Officer	Signature	Date

Steve Overmann, Environmental Science Director	(573) 651-2386
Person to Contact for More Information	Telephone

2. Need:

A. Student Demand:

i. Estimated enrollment each year for the first five years for full-time and part-time students

Form SE

STUDENT ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
Full Time	5	10	10	10	15
Part Time	5	5	10	10	10
Total	10	15	20	20	25

ii. Will enrollment be capped in the future?

At this time there is no plan to cap enrollment in the future.

B. Market Demand:

i. National, state, regional, or local assessment of labor need for citizens with these skills

Labor market experts predict that environmental industries will be a major source of new jobs over the coming decades. In addition, federal and state governmental programs involving new employment in environmental positions have been proposed or are under development. The national markets for environmental positions requiring advanced degrees in the public and private sectors are growing.

Federal, state, and local governments employ 43% of all environmental scientists. A bachelor's degree in environmental science is adequate for some entry-level positions, but there is an increasing need for a master's degree in today's marketplace. A master's degree is also the minimum educational requirement for most entry-level applied research and managerial positions in private industry, and in federal and state environmental agencies.

Environmental scientists held approximately 92,000 jobs in 2006. About 35% of these jobs were with state and local governments, 8% were in the federal government, 21% were in management, scientific, and technical consulting services, 15% in architectural, engineering and related services, and 2% were self-employed.

Employment of environmental scientists is expected to increase by 25% between 2006 and 2016, much faster than the average for all occupations. Growth in employment is predicted to be based on increasing demands placed on the environment and water resources by continued population growth. Further demand is expected to result from the

need to comply with complex environmental laws and regulations. Addressing the challenges of mitigation and adaptation to climate change and the shift away from carbon-based fuels will also provide demands for new environmental science positions.

C. Societal Need:

i. General needs which are not directly related to employment

The societal need for highly trained and educated environmental scientists has never been greater. The environmental challenges of the 21st century are unprecedented in scope and magnitude. Environmental quality is under siege from a variety of forces. Global climate change is underway and will potentially be the most serious threat to the stability of social, economic, political, agricultural, and biological systems. Tremendous demands are being placed upon our natural resource support base for water, food, fiber, minerals, and energy. The number of species threatened with extinction is rapidly rising. Human health is jeopardized by continuing contamination of water and air. Rapid, broad scale implementation of new energy sources is required. Landscapes across the globe are undergoing soil erosion and desertification. The world's oceans are under suffering from overfishing, acidification, and nutrient and pollution runoff. These issues are but a part of the long and daunting list of serious environmental challenges facing our society.

Higher education must be among the primary means by which we rise to meet the environmental challenges of the 21st century. It is critical for the future of our society that we develop environmental specialists to deal with the complex, polycentric, and inter-locking environmental issues from local to global levels.

D. Methodology used to determine "B" and "C" above.

United States Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook, 2008-2009 Edition. www.bls.gov/oco/ocos050.htm

United Nations Environment Programme. www.unep.org

Intergovernmental Panel on Climate Change. www.ipcc.ch

United States Environmental Protection Agency. www.epa.gov

3. Duplication and Collaboration: If similar programs currently exist in Missouri, what makes the proposed program necessary and/or distinct from the others at public institutions, area vocational technical schools, and private career schools?

Currently, no public or private institution in the State of Missouri offers a Master of Science in Environmental Science.

Does delivery of the program involve a collaborative effort with any external institution or organization? If yes, please complete Form CL.

No, the delivery of this program does not require collaboration with any external institution or organization.

Form CL

NA, no collaboration with external institutions or organizations.

4. Program Structure:

Admission to the M.S. in Environmental Science program would require a minimum of 20 undergraduate semester credit hours in the sciences with a minimum of a 3.0 GPA in these science hours. All applicants would be required to submit a letter of application stating their academic and professional goals. . The application letter must also include a statement selecting either the thesis or non-thesis track for completion of the M.S, degree. The application would also include two letters of recommendation from professors and/or employers. Other admissions requirements as stipulated by the Southeast School of Graduate Studies would also apply to students entering the M.S. program.

The Master of Science in Environmental Science would require completion of 32 semester hours of graduate-level credit. A maximum of six credit hours could be transferred from other institutions, subject to approval by the School of Graduate Studies and the student's graduate committee. There would be no core course requirements for this degree program. Students, in consultation with their graduate committee, would select courses that best serve their desired academic and/or professional outcomes. The M.S. program would require students to complete a minimum of 18 Environmental Science (courses with the EV prefix) credit hours.

The M.S. degree program would be completed through either thesis or non-thesis tracks. The thesis track would require a rigorous, extensive, scientific research project and publication-grade written paper or thesis. The non-thesis track would require the preparation of a scholarly paper based on experiential learning (i.e., internship or research) activities. Thesis track students would present an oral defense of their research project and thesis. Non-thesis students would present an oral defense of their scholarly paper and also successfully complete a comprehensive written examination. The thesis track would require 6 credit hours of thesis research credit. The non-thesis track would require 6 credit hours of internship and/or research.

Students selecting the non-thesis track option in their letter of application will be assigned a faculty advisor at the time of admission by the Program Director and Graduate Coordinator. Students selecting the thesis track option in their letter of application would be required during the first semester of graduate study to secure agreement from a faculty member to supervise their thesis research. The faculty would provide written confirmation of this agreement. Students who do not complete this requirement for an agreement of research support from a faculty member during the first semester of study would be switched to the non-thesis track and assigned a faculty advisor by the Program Director and Graduate Coordinator. Students who opted for the non-thesis track at the time of application may switch to the thesis track option if the agreement of research support from a faculty member is completed during the first semester of study.

Each student in the program would have an advisor to assist timely completion of the degree. The specific responsibilities of the advisor would include: 1) to act as advisor on all academic matters; 2) to provide advice in the thesis or scholarly paper proposal; 3) to

assure that the final written product meets university graduate school standards, and; 4) to act as chairperson of the student's oral defense of the thesis or scholarly paper.

The student's committee would be composed of the advisor and at least two additional Environmental Science faculty members. The selection of the committee members would be the responsibility of the student and the advisor. The members of the committee would be from at least two different academic departments so that interdisciplinary perspective and advice may be provided to the student. The Dean of the School of Graduate Studies would also be available to provide advice and assistance in the selection of committee members. The responsibilities of the committee would include: 1) providing professional advice and input to the student and the faculty advisor; 2) acting as readers of the thesis or scholarly paper, and; 3) sitting on the oral defense panel for the thesis or scholarly work paper.

Students following the non-thesis track would be required to complete a comprehensive written examination that integrates the academic course work taken by the student. The examination would be written by the committee and evaluated by the committee on a pass/no pass basis. This examination could be taken a maximum of two times, but only once per semester.

Form PS

PROGRAM STRUCTURE

A. Total credits required for graduation: 32 credit hours

B. Residency requirements, if any: none

C. General education (total credits): NA

General education courses (specific courses OR distribution area and credits):

NA	cr.		cr.		cr.
	cr.		cr.		cr.
	cr.		cr.		cr.
	cr.		cr.		cr.

D. Major requirements (total credits): 18 Environmental Science (EV) credit hours

EV courses	18 cr.		cr.		cr.
	cr.		cr.		cr.
	cr.		cr.		cr.
	cr.		cr.		cr.

E. Free elective credits
(sum of C, D, & E should equal A): 14 credit hours

F. Requirements for thesis, internship

or other capstone experience: Thesis track – 6 hours of thesis research

Non-thesis track – 6 hours of internship and/or research

G. Any unique features such as interdepartmental cooperation: The Environmental Science Program is highly

interdepartmental – see Section 9

5. Financial Projections (for public institutions only): (deleted)

6. Program Characteristics and Performance Goals: For collaborative programs, responsibility for program evaluation and assessment rests with the institution(s) granting the degree(s).

Form PG

PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name: Southeast Missouri State University

Program Name: Master of Science in Environmental Science

Date: Fall 2009

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

Program's Goal:

To develop Master's level environmental scientists for government and the private sector. These highly trained specialists will help to meet the growing need for personnel with expertise on the environmental issues facing society.

Program's Objectives:

1. To further develop the interdisciplinary scientific knowledge base of students regarding environmental issues.

2. To further develop the ability of students to critically analyze environmental challenges.

3. To further develop the ability of students to formulate, implement and manage short- and long-term solutions to environmental challenges.

4. To prepare students for productive professional careers in environmental science.

5. To provide students the academic preparation for successful application to doctoral programs.

Student Preparation

Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

1. Admission to the program will require a B.S. degree from an accredited college or university with 20-hours minimum of undergraduate credit in science and at least a 3.0 GPA in these science hours.

2. All applicants must submit a letter of application stating their academic and professional goals.

3 All applicants must submit two letters of recommendation from professors and/or employers.

4. Compliance with the university and the experiential learning sites' requirements regarding criminal background checks.

5. Other admissions requirements as stipulated by the School of Graduate Studies also apply to students entering the program.

Characteristics of a specific population to be served, if applicable

This program will most immediately serve individuals within academic backgrounds in environmental science and the other sciences.

Faculty Characteristics

Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate

The Environmental Science faculty have the degrees and training necessary to teach in this program. Instructors will be members of the Graduate Faculty of the University.

Estimated percentage of credit hours that will be assigned to full-time faculty. Please use the term "full-time faculty" (and not FTE) in your descriptions here.

All courses to be offered in the proposed program will be taught by full-time faculty. There will be no part-time or adjunct instructors. No additional full-time faculty are required by the new program. Courses will be offered as part of the regular teaching loads of current Environmental Science faculty.

Expectations for professional activities, special student contact, teaching/learning innovation

The required face-to-face contact time with students is 45 hours per course. Instructors are required to demonstrate effective teaching skills and quality applied work.

Enrollment Projections

Student FTE majoring in program by the end of five years

The estimated number of full-time graduate students at five years after implementation is 15.

Percent of full-time and part-time enrollment by the end of five years

By the end of five years the percent of full time enrollment is expected to be 60% and part-time enrollment is expected to be 40%.

Student and Program Outcomes

Number of graduates per annum at three and five years after implementation

At three years after implementation the M.S. program should graduate approximately 7-8 students per year. At five years after implementation the M.S. program should graduate approximately 10 students per year.

Special skills specific to the program

The skills developed in students of the M.S. program will reflect the expertise of their Environmental Science faculty mentors. The expertise of the Environmental Science faculty are in areas of: bioremediation, conservation biology, environmental chemistry, environmental economics, environmental ethics, environmental geoscience, environmental health, environmental law, epidemiology, geographic information systems, hydrology, natural resource management, remote sensing, risk assessment, soil science, toxicology, and wetlands management.

Proportion of students who will achieve licensing, certification, or registration

NA There are no licensing, certification, or registration agencies or organizations for environmental science. However, individual participating departments may propose appropriate certifications, e.g., Certified Professional Soil Scientist.

Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.

NA There is no standardized exam for environmental science.

The thesis project will act as an important metric for measurement of student performance. It is expected that each thesis will be of sufficient quality to result in one or more professional publications.

Placement rates in related fields, in other fields, unemployed

Environmental science is a growing and evolving discipline and professional positions for Masters level graduates are found in governments, private business, and higher education. Due to the high national demand for graduates with the qualifications obtained from this program, we anticipate high employment for our graduates.

1. Anticipated rate of employment in related fields (e.g., government, private sector) = 85-90%
2. Anticipated rate of employment in other fields (e.g., higher education) = 10-15%

3. Anticipated rate of unemployed or under employed = 0%

Transfer rates, continuous study

We anticipate a very low rate of transfer from this program and a high rate of graduation for those whose begin the program.

Program Accreditation

Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.

There is no institutional plan for accreditation because there is no accreditation body for this type of program.

Alumni and Employer Survey

Expected satisfaction rates for alumni, including timing and method of surveys

To insure quality instruction, students will evaluate their instructors and experiential learning supervisors at the end of each course. Also, students will complete an exit interview upon completion of the degree requirements. Students will also be mailed a questionnaire 1 year and 3 years after graduation to assess course preparation and track employment. The expected satisfaction rate is 80-85%.

Expected satisfaction rates for employers, including timing and method of surveys

A questionnaire will be developed to gather information about employers' perception of the M.S. program, suggestions for improvement and their overall satisfaction with graduates of the M.S. program. The questionnaire will be mailed to employers 6-8 months after hiring the M.S. program graduate. The expected satisfaction rate is 80-85%.

7. Accreditation: If accreditation is not a goal for this program, provide a brief rationale for your decision. If the institution is seeking program accreditation, provide any additional information that supports your program.

NA There is no accreditation body for this type of program.

8. Institutional Characteristics: Please describe succinctly why your institution is particularly well equipped or well suited to support the proposed program.

Southeast Missouri State University was the first publicly-funded institution in Missouri to develop a B.S. in Environmental Science. The Environmental Science Program is well established and is fiscally and pedagogically effective. The Environmental Science Program is interdisciplinary and interdepartmental. All faculty participating in the Environmental Science Program have full-time appointments in a traditional, "home" academic department within the University. These departments include: Agriculture (School of Polytechnic Studies), Biology, Chemistry, Physics and Engineering Physics (College of Science and Mathematics), Economics and Finance (Harrison College of Business), Elementary, Early and Special Education (College of Education), and Political Science, Philosophy, and Religion (College of Liberal Arts).This innovative approach minimizes the fiscal costs of the Program while maximizing the interdisciplinary nature of the Environmental Science curriculum. The proposed M.S. in

Environmental Science would be a logical expansion of an already successfully functioning interdisciplinary, interdepartmental Environmental Science Program.

The proposed M.S. in Environmental Science is consistent with the newly adopted Strategic Plan for Southeast Missouri State University. The University has identified as an institutional priority "efforts to protect the environment and conserve natural resources".

9. Any Other Relevant Information:

The proposed M.S. in Environmental Science program will expand utilization of existing resources, including the David M. Barton Agricultural Research Facility, the I.R. Kelso Wildlife Sanctuary, and the Center for Environmental Analysis.