2007 ANNUAL REPORT

ENVIRONMENTAL SCIENCE GRADUATE PROGRAM

Division of Applied Science & Technology

College of Information Technology and Engineering

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2006

I. Assessment Activities

A. Program Goals

1. Increase the effectiveness of Environmental Science students on the job, their opportunities for advancement and their preparation for further education, such as Ph.D. programs and schools of law. Maintain a curriculum that is up-to-date and effective, with new courses added as needed, and serves both majors and non-majors.
2. Promote faculty development so that they may be competitive with practicing professionals in their field, have the competence and expertise to teach current-content, and maintain leadership in the community with regard to environmental protection and management.
3. Effectively transfer technical information to the professional and general community in the form of courses, seminars, library holdings and student reports.
4. Attract qualified students into the program, effectively evaluate them and improve their competencies to work in the Environmental Science field.
5. Deliver graduate courses and seminars at convenient times, provide a convenient registration process, and pursue cultural and ethnic diversity and adequate financial assistance.

B. Learning Outcomes & Data Collection

1. Course effectiveness

The program is playing a major role in the community and region by increasing the effectiveness of students on the job, and students' opportunities for advancement. There are many jobs available in this field for which undergraduate preparation is generally insufficient for the job requirements. Students regularly report promotions and an increase in their employability as a result of the program. Local professionals who participate in some comprehensive project review teams for graduating students have provided feedback that the proficiency of the Environmental Science students is commensurate with the requirements of this field.

2. Faculty

The faculty consist of a program coordinator and three adjunct faculty members. The faculty have considerable experience in the areas taught. They organize and participate in national conferences and local professional activities. The program could <u>significantly</u> expand with additional expertise through the hiring of new faculty. The lone full-time faculty also has responsibilities in the ENVE program, advising students and teaching courses.

3. Community

The program has its primary focus on the local community. Over the past few of years about 20% of the students are not majoring in the environmental science field and take a class because of the material relevant to their needs. The program is therefore beneficial as a valuable community continuing education resource.

4. Student qualifications and competence

The Environmental Science program student entrant average GRE scores have consistently been higher than the average of other Marshall University programs. For students to be admitted they must have the requisite education qualifications (appropriate degree and undergraduate GPA or standardized scores), environmental science background and/or practical science. A GRE exam is required for students who do not achieve an undergraduate GPA of 2.5.

The Environmental Science student exit requirements are focused on the preparation and defense of a comprehensive project. The project involves submitting a project proposal, conducting research, writing an extensive report and making an oral presentation during which the student is questioned extensively by full time faculty and representatives of local industry if in attendance. The Program and College have given the Comprehensive Project a great deal of attention in terms of review and change in procedures the past two years. The Comprehensive Project continues to be well received by the employer. The objective of this effort is to ensure that the student nearing graduation takes advantage of this opportunity. The program is satisfied with the quality and performance of the students. The feedback from industrial representatives regarding this process continues to be good. Thesis is also an option should students so choose.

In each course, students are assessed based on their performance in homework, quizzes, exams, projects and oral presentations. A few courses evaluate the student's contribution to class discussion.

5. Scheduling/diversity/financial aid

The majority of students now access the Web to register. A greater number of courses are being offered. The types and scheduling of courses are continually being modified to address the greater number of full-time, Huntington-based students coming into the program the types of courses. New course offerings are constantly being evaluated and new ideas for academic program delivery being tried. For example, many courses are being offered as video-link between the South Charleston and Huntington campuses to complement standard delivery of courses at Huntington campus and the South Charleston campus.

A significant number of the current Environmental Science students are female and increasing. Although the number of "minorities" is small it is steadily increasing.

Many international students are enrolled in the program.

Most of the full-time students are receiving financial aid, paying their own expenses or receive graduate assistantships with tuition waivers.

6. Enrollment

Enrollment has increased significantly this year. The student enrollments have been: 91 for Fall 2007, 61 for Spring 07, compared to 68 for Fall 2006; 77 for Spring 2006, 75 for Fall 2005. The program larger enrollments in the 1970s, fell in the early 1980s and began rising in 1987. Growth was about 50% per year until 1993. A decline was experienced from 1993 due in part by organizational restructuring by employers of our students, a shift of U.S. government environmental policy and regulations and changing economy. The latest increase in enrollments probably can be explained by the changing economy, increasing environmental awareness and interest from full-time students. ES remains the largest MS program (by class enrollment) in the College. The program could be bigger with more faculty.

7. Policies/Administration

The Division has communicated with students that have not been active recently to complete their MS degrees. Many students have returned to complete their comprehensive projects. There remain files of non-degree students who just take courses for their own professional development

All advising is done by the single full-time faculty member in the program, who also advises some Environmental Engineering students. The proportion of graduate students in the South Charleston region has been decreasing compared to the Huntington campus. The Environmental Science and safety technology programs, in the Division, continually review efficient means to function. Several students in each program take courses in the other program, with the support of their advisors.

The program relies on an informal advisory process, wherein adjunct faculty, graduates, students and employers would meet with the full time faculty to help decide policy, procedures and curriculum plans. A college-wide board consisting of local professionals meets periodically to review the college operation.

8. Goal Attainment

Many of the students entering this program are already working in their chosen field. One measure of success for the program is whether graduates achieve the promotions they seek, and whether those not employed in this field are able to enter it. Formal and informal feedback from students indicates that they are satisfied with their investment in Environmental Science graduate education. In addition, employers frequently call when searching for new employees. Many graduates are employed by the West Virginia Department of Environmental Protection with which the division and college maintains a very close relationship. Employers are increasingly contacting the division seeking employees.

C. Results

The Environmental Science program gives the graduate students the appropriate preparation and strengthened abilities to perform more effectively compete in the job market. Most of the environmental classes being taught presently are utilizing Web/Vista as part of the Vista pilot project. This system places all notes, assignments, communications on-line, allowing students instant access to course material and discussions anywhere they have internet access.

II. Current Plans

A significant effort is being made to further develop the Environmental Science program, together with the graduate safety technology program. The Environmental Science program has improved the program assessment tools and assessment plan.

Laboratory space is currently unavailable at the SC campus, but some lab space is available for the Environmental Science program in Gullickson Hall, which is shared with the Engineering Program. Work will continue to develop the laboratory, acquire equipment and integrate it into the program. Use of the lab in the new Engineering Lab will be very beneficial. The lack of lab space has been detrimental to the program, as many course would benefit from a lab and field component. Although many Environmental students tend to have significant work experience newly dedicated space serves for storage, calibration and demonstration of table-top experiments and field instrumentation are needed and would add value to the program. Additionally, recent equipment purchases will allow for direct field experience in several of the

ES courses. There is also the potential for utilizing the laboratory facilities of the Safety Technology program in Huntington.

The program has created close ties to programs in the College of Science. Listing of ES courses as requirements or electives in COS programs is common, as are students enrolling in ES courses from the programs. As an emphasis in Water Resources Management is being created this year in the ES program, similar listing of COS courses will occur. It would be hugely beneficial if the CITE ES MS program had a corresponding BS program in CITE. BS ES programs are growing nationally, and MU is not taking advantage of that potential growth.

III. Assistance Needed

There continues to be a need for better quality classroom and laboratory space. Currently, classes are being offered at South Charleston campus and Huntington campus through two-way video link. Additional lab and field equipment is also needed. The video link largely prevents any field experience, as coordinating two groups at 2 campuses is nearly impossible. Classes are sometimes split, with each having a field experience, but this also makes for complicated logistics and burden on faculty. The program desperately needs additional faculty, dedicated lab space, and less reliance on video-link, especially for classes that could benefit from lab or field studies.

Simply put, the program can not live up to its potential with only one faculty member and no dedicated lab. The program has "hit a wall" as far as being able to grow, and this problem is largely due to lack of full-time faculty. Field and lab experiences are critical tools, but can not be added under current conditions (i.e. lack of faculty and lab space). New courses and areas of emphasis are needed, but difficult to add due to lack of faculty and lab space. CITE should have the MS-ES, MS-ENVE and a BS-ES under one umbrella, with a minimum of 3 full-time faculty and at least one dedicated lab in Huntington. This would allow sharing of resources, cross-listing of 400-500 level courses, and continuity between BS and MS programs, as well as the connection between these multi-disciplinary fields as is seen in the profession.

IV. What we have learned though this process

This assessment process serves to monitor the relevance and marketability of the Environmental Science program, helps to focus on specific issues and establishes a yearly record for the 5-year program review. The assessment reaffirms that the Environmental Science program serves effectively a diverse population of professionals, and increasing number of full-time students, who deal with the impact of modern civilization activities on the natural environment.

Assessment of Student Outcomes: 2007

Program: MS Environmental Science

Component / Course / Program Level					
Student Outcome	Person or Office Responsible	Assessment Tool or Approach	Standards/Benchmark	Results/Analysis	Action Taken
1. Improve the effectiveness of environmental scientists and managers in their efforts to protect the public health and welfare with respect to environmental pollution.	Program Coordinator	Working closely with graduating students and employers to determine the needed skills for the profession	Selected topics in ES 614, ES 660 and ES 630, with overlay among the courses on critical areas.	Based on responses to the specific topics, students are obtaining the needed education in the critical areas. Also validated by Comprehensive project presentations.	None.
2. Provide a forum for trained professionals to exchange information regarding protection of the environment	Program Coordinator	Have full time and adjunct faculty that stay current in the field and maintain a relationship with other practitioners	Class presentations required in several core courses.	Based on the instructor and peer evaluation of a variety of presentations more foundation is needed for the full-time students.	Incorporation of more explicit instructions and examples prior to presentations.
3. Provide the community with information, resources and trained professionals to assist them in making effective choices in public debate and private decisions regarding the environment	Program Coordinator	Insure that students and faculty are well-rounded, well-trained, and involved	Reputation of program among professionals, policy makers, and the public	The program continues to be a major “go to” organization in the region regarding all aspects of environmental policy and science	None.