

## Environmental Sciences Undergraduate Program

Prepared by David K. Lewis

**Executive Summary** (full report available upon request)

| Degree Program(s)<br>Assessed        | Assessment<br>Methods   | Number<br>of Individuals<br>Assessed |
|--------------------------------------|---|--------------------------------------|
| B.S., Environmental<br>Policy Option | <ul style="list-style-type: none"> <li>• Grades and "Client Reports" from Environmental Science Applications and Problem Solving (ENVR 4813)</li> </ul>   | 13                                   |
| B.S., Water<br>Resources Option      | <ul style="list-style-type: none"> <li>• Exit interviews</li> <li>• Alumni surveys conducted by the Office of University Assessment Fall 2004</li> </ul>  | 4<br>12                              |
| B.S., Natural<br>Resources Option    | <ul style="list-style-type: none"> <li>• Recruitment and retention data compiled by the College of Agricultural Sciences and Natural Resources Student Services Office</li> <li>• Placement statistics compiled by the College of Agricultural Sciences and Natural Resources Career Services Office</li> <li>• Statistics on enrollment, degrees conferred, faculty survey, and placement compiled by the College of Agricultural Sciences and Natural Resources for the FAEIS report</li> <li>• Employer interviews conducted by the College of Agricultural Sciences and Natural Resources Career Services Office</li> </ul> | 17<br>--<br>--<br>--                 |

This report is the outcomes based assessment of the Environmental Sciences Undergraduate Program by the Environmental Science Steering Committee.

### ASSESSMENT

**Results of previous assessments.** Previous assessments have resulted in the following.

- Creation of an Environmental Science Task Force to develop recommendations regarding the administration and support for the Program.
- Review and revision of the curricula for the Environmental Science options by the Environmental Sciences Faculty.
- Development, with the Fire Protection and Safety Technology Faculty, of an academic course that leads to "HAZWOPER-40" certification.
- Development of a course focused on ethical issues associated with the environment.
- A review of quantitative skills required for environmental science professionals.
- Development and delivery of a course on environmental impact assessment.
- Development of a course on "Land Measurement and Site Analysis" in cooperation with the Biosystems and Agricultural Engineering Faculty.
- Participation by the Director in the Summer 2003 and Winter 2004 meetings of the Council of Environmental Deans and Directors. Discussion of common elements in environmental science instruction programs was an agenda item at both meetings.

**2003-04 Assessment.** In terms of "The Desired Student Outcomes" the measurable standards for the program were met by the 13 seniors enrolled in Environmental Science Applications and Problem Solving (ENVR 4813). The interviews with graduating seniors indicate that they have positive feelings about the program; and their educational experience, including relationships with their advisors and other faculty. These interviews also support implementation of the results of previous assessments.

**Planned efforts.** Future efforts will be focused on implementing the results of previous assessments. However, the implementation of any of these efforts requires the commitment of resources beyond the control of the Program in its current condition.

An additional future effort will include participation in the efforts of the Council of Environmental Deans and Directors to examine and review the curricula of environmental programs of instruction. The Council of Deans and Directors is also examining the opportunities for certification of environmental science professionals. This deserves to be monitored as well.

## **INFORMATION SOURCES FOR ASSESSMENT**

**Grades and “Client Reports” from Environmental Science Applications and Problem Solving (ENVR 4813).** Thirteen students were enrolled in Environmental Science Applications and Problem Solving (ENVR 4813) during Spring Term 2004. Students completed projects for the Indian Nations Council of Governments (Assessment of Municipal Wastewater Treatment Plant’s in Metropolitan Tulsa Vulnerability to the Introduction of Chemical, Biological, and Radiological Pollutants), Oklahoma Department of Agriculture (Analysis of Odor Abatement Technologies for Existing LMFO’s: A comparison of Technologies on the Basis of Effectiveness, Feasibility, and Cost), and Oklahoma Water Resources Board (Summary and Analysis of Water Watch Data from Lakes Eucha and Carl Blackwell). Final grades in the course were A’s and B’s. Grades were distributed as follows:

|   |   |     |
|---|---|-----|
| 6 | - | A's |
| 7 | - | B's |

Client evaluations for the projects ranged from 8 to 9 with a mean of 8.6 on a 10 point scale.

**Exit interviews of seniors at the time of graduation.** Exit interviews of graduates were conducted by [REDACTED]. The results of four interviews were available for this assessment. The interviews indicate a high level of satisfaction with advising, course content, and faculty. Suggestions were offered to strengthen field work and application elements of the curriculum, and increase course offerings in social sciences and water resources in the curriculum. The need for a Program Coordinator and increased program visibility were identified.

**Placement statistics compiled by the College of Agricultural Sciences and Natural Resources Career Services Office.** The statistical evidence on placement is limited. However the general view is that graduates are continuing their education in nationally ranked graduate programs or finding employment in the environmental science professions. Those seeking employment are finding jobs in a reasonable length of time and at compensation levels above the average for the College.

**Recruitment and retention data compiled by the College of Agricultural Sciences and Natural Resources Student Services Office.** The statistical information compiled by the College of Agricultural Sciences and Natural Resources Student Services Office does not include all of the students who entered the program in 2003-04 only those students who were involved in the College’s recruitment program. However, this information is consistent with the observations of faculty. Eight (47%) of 17 students that entered the program in Fall Term 2003 were transfer students and six (35%) of the 17 students that entered the program Fall Term 2003 had transferred out or withdrew from the University by the end of Spring Term 2004.

**Statistics on enrollment, degrees conferred, faculty survey, and placement compiled by the College of Agricultural Sciences and Natural Resources for the FAEIS report.** The current FAEIS report indicates that slightly less than half (44%) of the students enrolled (Fall Term 2003) in the Environmental Sciences Program were Caucasian males. The balance were distributed among gender and racial minorities.

**Employer interviews conducted by the College of Agricultural Sciences and Natural Resources Career Services Office.** The results of employer interviews conducted by the College of Agricultural Sciences and Natural Resources were not available at the time this report was prepared.

**Alumni surveys conducted by the Office of University Assessment.** No information from alumni surveys beyond that reported in the 2001-02 assessment were available at the time this report was prepared.

## RESULTS OF PREVIOUS ASSESSMENTS – STATUS

**Environmental Sciences Task Force.** In 2001 recommendations were made by the Environmental Sciences Task Force which was convened in response to previous assessments. The following recommendations were presented and accepted by the College of Agricultural Sciences and Natural Resources.

- The Undergraduate Environmental Science Program should remain as interdisciplinary program under the Associate Dean for Academic Programs. – **Implemented**
- A chair position should be established to lead the Environmental Science Program. – **Implemented** (Position of “Director, Environmental Sciences Undergraduate Program” was established and filled in December 2002).
- An Environmental Sciences Undergraduate Program Coordinator position should be established. – **Accepted but not implemented**
- Office space should be provided for the Program Coordinator. - **Accepted but not implemented**
- A Classroom/laboratory and a seminar/conference/workroom should be provided for the Environmental Sciences Undergraduate Program. – **Accepted but not implemented (Efforts have been initiated to develop a proposal for a shared teaching laboratory that will meet the immediate needs of the Program.)**
- An annual cash award of \$1,000 should be established as an incentive and reward for contributions to the Environmental Sciences Undergraduate Program. – **Implemented**
- An annual review of the Environmental Sciences Undergraduate Program and should be presented to the College’s academic department heads and administration. – **Implemented**

**Development of an academic course that leads to “HAZWOPER-40” certification.** A course titled “Hazardous Waste Site Safety Management” (FPST 4050) has been developed by the Fire Protection & Safety Technology Faculty (██████████) in cooperation with the Environmental Science Steering Committee. The course has been offered twice for academic credit through Engineering Extension and failed to have sufficient enrollment. This is due to the restrictive enrollment requirements of Engineering Extension (minimum and maximum enrollment of 32 students). Efforts are continuing to advertise the course with the Environmental Science Graduate Program, environmental engineering curricula offered by the College of Engineering, Architecture, & Technology, and other instructional programs on Campus with an environmental orientation with the goal of achieving the enrollment requirements.

**Development of an ethics course dealing with the environment.** A course “Ethical Issues in Agriculture and the Environment (ENVR 4573)” has been developed, approved for offering, and offered experimentally on two different occasions. Failure to secure a “Humanities” (H) designation resulted in a decision not to offer the course Spring Term 2004. The failure to secure an “H” designation has also resulted in discussions on the advisability of dropping the course. However, the Environmental Sciences Steering Committee is committed to the principle that a course dealing with ethical considerations in the context of decisions related to environmental issues is important to the Environmental Sciences curricula. Further, the Steering Committee believes that ethical considerations in the context of decisions related to environmental issues should be an element most of the programs of instruction offered by the College of Agricultural Sciences and Natural Resources.

**Quantitative skills review.** A review of the quantitative skills required for environmental science professionals was initiated in 2001 and is complete. Four subject matter areas have been identified and specific course descriptions have been developed for three courses (Environmental Impact Assessment, Land Measurement and Site Analysis, and Water Quality Laboratory (FOR 4811)). The Environmental Impact Assessment course was offered for the first time during the 2003-04 Winter Intersession. Plans are underway to offer the course on a regular basis beginning with the 2004-05 Winter Intersession. The Land Measurement and Site Analysis Course will be offered for the first time during Spring Term 2005. The “Water Quality Laboratory” (FOR 4811) has not been offered because of the lack of a suitable laboratory.