Texas A&M University-Corpus Christi

Detailed Assessment Report
2007-2008 BS Environmental Science

Mission/Purpose

The mission of the Bachelor of Science program in Environmental Science is to educate students to succeed in their chosen careers, to transfer environmental knowledge to the community and to peers, and to provide an environmentally literate workforce and citizenry. The program is intended to provide the environmental science major with a broad foundation in the sciences and mathematics, as well as specialized knowledge in marine and coastal resources, Earth system science, environmental health and monitoring, policy and regulations, and science education concentration areas. The environmental science curriculum would prepare students for career positions in environmental science or science education, or for further professional development.

Student Learning Outcomes, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 1: demonstrate command of env sci concepts
Demonstrate a command of environmental science concepts and principles at the undergraduate level, including human impacts, the physical/chemical/biological aspects of the environment, and regulatory/policy/management issues.

Related Measures:

M 2: ESCI 4301 midterm exam
ESCI 4301 Env Regulations midterm exam covers basic regulatory/policy/mgt issues

Source of Evidence: Writing exam to assure certain proficiency level

Achievement Target:
75% of the students will achieve a grade of 80% or better on exam

Findings (2007-2008) - Achievement Target: Partially Met
60% (9/15) of students achieved a score of 80% or better on the midterm exam in Fall 2007. This is an improvement over Fall 2006 results when only 54% achieved a midterm exam score of 80% or better.

Findings (2006-2007) - Achievement Target: Not Met
Only 7/13 (54%) achieved a grade of 80% or better on the Fall 2006 midterm for ESCI 4301.

Related Action Plans:

Improve students' command of env sci concepts
Update labs in ESCI 1401, 1402 to better teach environmental science concepts.

For more information, see the Action Plan Details section of this report.
ESCI Internship added to ESCI BS major
ESCI 4301 Midterm exam covers basic regulatory/policy/mgt issues.
As of fall 2008, curriculum was modified to require an internship ESCI 4498 of all ESCI majors; the internship includes applications of regulations/policy/mgt issues to real-life situations.
For more information, see the Action Plan Details section of this report.

Better scrutiny when waiving course prerequisites
Course prerequisites are GEOL 3443, BIOL 3443, CHEM 4443 or permission of instructor. Instructor will scrutinize students' backgrounds (what other past science courses as well as grades in those courses before permitting waiver of those prerequisites so students may take ESCI 4301.
For more information, see the Action Plan Details section of this report.

M 3: ESCI 3403 final exam
ESCI 3403 final exam covers physical and chemical issues of the environment
Source of Evidence: Writing exam to assure certain proficiency level
Achievement Target:
75% of the students will achieve a grade of at least 80% in the final exam
Findings (2007-2008) - Achievement Target: Met
87.5% (14/16) of students achieved a score of 80% or better in the Fall final exam for ESCI 3403.
Findings (2006-2007) - Achievement Target: Met
20/21 (95%) of the students received a raw score of at least 80% on the Fall 2006 ESCI 3403 final exam.

Related Action Plans:
Better scrutiny when waiving course prerequisites
Instructor will better scrutinize student transcripts for science courses taken and grades received before waiving stated course prerequisites.
For more information, see the Action Plan Details section of this report.

M 4: ESCI 3351 Oceanography midterm exam
ESCI 3351 Oceanography midterm exam covers primarily physical/chemical aspects of the environment
Source of Evidence: Writing exam to assure certain proficiency level
Achievement Target:
75% of students will achieve a grade of 75% or better
Findings (2007-2008) - Achievement Target: Met
77% (17/22) of students achieved a score of 75% or better on the ESCI 3351 midterm exam in Fall 2007. This is a marked improvement over Spring 2007 when only 29% achieved a score of 75% or better on the ESCI 3351 midterm exam.
Findings (2006-2007) - Achievement Target: Not Met
Only 6/21, or 29%, achieved a grade of 75% or better on the ESCI 3351 Midterm for Spring 2007.
M 5: ESCI 3351 final exam
ESCI 3351 Oceanography final exam covers human environmental impact issues
Source of Evidence: Writing exam to assure certain proficiency level

Achievement Target:
75% of the students will achieve a grade of 75% or better

Findings (2007-2008) - Achievement Target: Partially Met
58% (13/22) of students achieved a score of 75% or better on the ESCI 3351 Final Exam in Fall 2007. While this does not meet the achievement target, it is a marked improvement over results of Spring 2007 when only 37% (7/19) of students achieved a score of 75% or better on the ESCI 3351 Final Exam.

Findings (2006-2007) - Achievement Target: Not Met
Only 7/19 (37%) achieved a grade of 75% or better on the Spring 2007 ESCI 3351 Midterm. Note there are 2 fewer students took final than took midterm.

Related Action Plans:
Refine ESCI 3351 to better emphasize human impacts
ESCI 3351 course instructor will further refine ESCI 3351 course to better emphasize relationship between oceanography and human impacts. Also, ESCI coordinator will scrutinize all requests to permit students to enroll without stated prerequisites as to students’ other relevant courses taken and grades received.
For more information, see the Action Plan Details section of this report.

Better scrutiny of waivers of course prerequisites
Instructor will better scrutinize student transcripts for science courses taken and grades received before approving any waivers of stated prerequisites.
For more information, see the Action Plan Details section of this report.

O 2: Analyze/interpret variety of env sci data
Analyze and interpret a variety of environmental science data

Related Measures:

M 6: GEOL 3403 Meteorology lab scores
GEOL 3403 Meteorology lab scores
Source of Evidence: Academic Direct Measure

Achievement Target:
80% of students will achieve a lab score of 80% or better

Findings (2007-2008) - Achievement Target: Met
87.5% (14/16) of students earned a total GEOL 3403 lab score of 80% or better in Fall 2007.

Findings (2006-2007) - Achievement Target: Not Met
14/21, ie 67% of Fall 2006 ESCI 3403 students received a raw lab score of at least 80%.

O 3: effective oral and written communication
Communicate environmental science information effectively at the undergraduate level, in oral and written form, with appropriate use of technology

Related Measures:
**M 1: ESCI 3351 Oceanograph student pprs & presentations**

This measure to assess the communication skills of students originally summarized the paper and presentation scores of students in ESCI 4301. Unfortunately that course did not include papers and presentations as intended so instead student performance in similar assignments in ESCI 3351 Oceanography is substituted. The new measure is that 75% of students will earn scores of 80% or above on ESCI 3351 Oceanography student papers.

Source of Evidence: Presentation, either individual or group

**Achievement Target:**
90% of students will have grades of 80% or better on assignment

**Findings (2007-2008) - Achievement Target: Met**
In Fall 2007 a total of 91% (20/22) of students earned scores of 80% or better on term papers.

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**Details for Action Plans Established This Cycle**

**Better scrutiny of waivers of course prerequisites**
Instructor will better scrutinize student transcripts for science courses taken and grades received before approving any waivers of stated prerequisites.

**Priority:** High

**Target Date:** 03/2009
Beginning of Fall 2009 registration period

**Responsible Person/Group:** Course instructor, ESCI coordinator, ESCI Academic Advisor

**Additional Resources Needed:** None

**Budget Amount Requested:** $0

**Better scrutiny when waiving course prerequisites**
Instructor will better scrutinize students’ transcripts including science courses taken and grades received before waiving stated course prerequisites.

**Priority:** High

**Target Date:** 03/2009
Beginning of Fall registration period

**Responsible Person/Group:** Course instructor, ESCI Coordinator, and ESCI Academic Advisor

**Additional Resources Needed:** None

**Budget Amount Requested:** $0

**Better scrutiny when waiving course prerequisites**
Instructor will better scrutinize student transcripts for science courses taken and grades received before waiving stated course prerequisites.

**Priority:** High

**Target Date:** 03/2009
Beginning of Fall 2009 registration

**Responsible Person/Group:** Course instructor, ESCI coordinator, ESCI Academic Advisor

**Additional Resources Needed:** None
Budget Amount Requested: $0

**Better scrutiny when waiving course prerequisites**

Course prerequisites are GEOL 3443, BIOL 3443, CHEM 4443 or permission of instructor. Instructor will scrutinize students' backgrounds (what other past science courses as well as grades in those courses before permitting waiver of those prerequisites so students may take ESCI 4301.

**Priority:** High

**Target Date:** 03/2009
Beginning of Fall 2009 enrollment period

**Responsible Person/Group:** ESCI 4301 instructor, with support from ESCI Academic Advisor and Program Coordinator

**Additional Resources Needed:** None

**Budget Amount Requested:** $0

**ESCI Internship added to ESCI BS major**

ESCI 4301 Midterm exam covers basic regulatory/policy/mgt issues. As of fall 2008, curriculum was modified to require an internship ESCI 4498 of all ESCI majors; the internship includes applications of regulations/policy/mgt issues to real-life situations.

**Priority:** High

**Target Date:** 09/2008
Fall 2008 implementation

**Responsible Person/Group:** ESCI Coordinator / Academic Advisor

**Additional Resources Needed:** None

**Budget Amount Requested:** $0

**Improve students' command of env sci concepts**

Update labs in ESCI 1401, 1402 to better teach environmental science concepts.

**Priority:** High

**Target Date:** 09/2009
Start of fall 2009 semester.

**Responsible Person/Group:** ESCI 1401, 1402 instructors.

**Refine ESCI 3351 to better emphasize human impacts**

ESCI 3351 course instructor will further refine ESCI 3351 course to better emphasize relationship between oceanography and human impacts. Also, ESCI coordinator will scrutinize all requests to permit students to enroll without stated prerequisites as to students' other relevant courses taken and grades received.

**Priority:** High

**Target Date:** 09/2009
Next semester course is offered

**Responsible Person/Group:** ESCI 3351 instructor, ESCI Coordinator, ESCI Academic Advisor

**Additional Resources Needed:** None

**Budget Amount Requested:** $0

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Annual Reports
Executive Summary
A new ESCI-BS curriculum was first implemented in 2007-08 which proved attractive to many majors, and better met their educational and career needs. Number of declared majors stayed essentially flat, but the number of student credit hours generated increased significantly. Additional faculty joined the program, diversifying the program faculty research expertise. Also faculty from Harte Research Institute have been well engaged in the program. However, many faculty were stretched thin between multiple programs and could not devote adequate effort to support ESCI program needs. No additional resources are requested for the next year to meet program goals but within the next few years a new faculty position may be required. As a result of several goals which were not met, the following actions are planned:
(1) etter scrutiny of student transcripts prior to waiving course prerequisites for individual courses to ensure students take courses in the proper sequence and are well prepared when attempting courses; also (2) added emphasis on human impacts in ESCI 3351 (Oceanography)

Public/Community Service
ESCI is a multidisciplinary program, and the accomplishments of other program faculty are documented through other programs, departments and centers/institutes. ESCI faculty (those not documented by other academic units) participated in 4 local/regional/national training events and drills, and faculty members also participated in student recruitment events, outreach talks at community events, participation in regional ocean science bowls, etc.

Document:
ESCI Program Scholarly and Service Activities 2007-08

Anticipated Challenges
The development of the new CMSS PhD program increasingly focused faculty attention away from the ESCI BS program. Also, the separation of the Life Sciences department from the Department of Physical and Environmental Sciences (in which the ESCI BS program is administratively housed) and increasing demand of LSCI faculty to support programs in that department reduced LSCI faculty support for committee and other service needs of the ESCI BS program.

Closing the Loop / Planned Actions
As a result of several goals which were not met, the following actions are planned:
-Better scrutiny of student transcripts (science courses taken as well as grades received) prior to waiving course prerequisites for individual courses. This will ensure students take courses in the proper sequence and are well prepared when attempting courses.
-Added emphasis on human impacts in ESCI 3351 (Oceanography)

Summary of Requested Resources
No new resources are requested at this time, but a new faculty line will probably be needed within several years to help support this program.

Administrative Unit Accomplishments
In terms of majors the ESCI-BS program stayed essentially flat. A total of 86 majors were enrolled in Fall07, nearly the same as Fall06 (90 majors). Student headcount hours grew, however. Lower level SCH increased from 744 SCH (F06) to 896 SCH (F07) and upper-level SCH from 158 (F06) to 181 (F07). No new ESCI faculty lines were added, but some new hires or current faculty in other programs supplemented the ESCI Program faculty support by joining the "Core" or "Auxiliary" ESCI Program faculty body and participating in ESCI program decision-making, service, and other needs. These included Jim Gibeaut (HRI-PENS), Riccardo Mozzachiodi (BIOL),
Cherie McCollough (BIOL) and Dave Yoskowitz (College of Business -ECON).

**Teaching Results / Accomplishments**
A new curriculum was offered beginning in 2007-08. However this was required only of new (freshman and transfer) students. Thus although the new curriculum required several upper level courses these were not offered in 2007-08. The new curriculum proved attractive and some current students changed to the new degree plan but their numbers did not warrant offering those new courses just yet; instead these courses were waived on these students; degree plans. Many faculty of the program were distracted by the launching of the new Coastal & Marine Systems Science Ph.D. program and were teaching PhD level courses associated with that new program, rather than diversifying ESCI-BS program offerings in this fiscal year. In 2007-08 it was too early to assess the impact of the new curriculum on program enrollment, but student comments were positive.

**Research/Scholar Activity Accomplishment**
ESCI is a multidisciplinary program, and the accomplishments of other program faculty are documented through other programs, departments and centers/institutes. In 2007-08 the ESCI faculty (those not documented elsewhere through other academic units) including Robert Benson, David Jensen, Ian MacDonald, Alberto Mestas-Nunez, and Philippe Tissot, together authored/co-authored 6 articles in refereed publications, 2 reports, 10 international conference presentations/proceedings/abstracts, 9 national conference presentations/proceedings/abstracts, and 4 local presentations. They also authored 4 other international and 3 local/regional publications/abstracts. Together they were funded for 8 grants from NSF, NOAA, Texas General Land Office, Texas Research Development Fund, and other sources totalling over $760,000.

**Document:**
ESCI Program Scholarly and Service Activities 2007-08