

SUNY-ESF

Department of Environmental Studies

Bachelor of Science (B.S.) in Environmental Studies

Learning Outcome Assessment Report

The Environmental Studies Undergraduate Program Learning Outcome Assessment Report represents a synthesis from a variety of sources: 1. Draft Learning Outcomes Assessment Matrix; 2. Guiding Principals section from ES Handbook; 3. Summer 2008 ES Learning Outcomes Assessment; 4. ESF website for Environmental Studies (program mission and description).

LEARNING OUTCOMES

1. Critical Thinking: demonstrate critical thinking skills in relation to environmental affairs
2. Communication: demonstrate knowledge and application of communication skills and the ability to write effectively in a variety of contexts.
3. Interdisciplinary Synthesis: demonstrate an ability to integrate the many disciplines and fields that intersect with environmental concerns.
4. Ecological Literacy: demonstrate an awareness, knowledge, and appreciation of the intrinsic values of ecological processes and communities.
5. Sustainability: demonstrate an integrative approach to environmental issues with a focus on sustainability.

METHODOLOGIES

1. Portfolio with writing samples collected over students' four years. One writing sample collected each year. It should have evidence of revision, research, and include a reflective statement (senior year) from each student. We will sample from 20% of the class. For each selected course, a representative assignment, exam, or writing sample will be collected. Where possible, the sample will be in electronic format.
2. Student Interviews: We will conduct exit interviews with 20% of the graduating class. Following evaluation of Year 1 interviews, we will begin developing an online survey questionnaire format for use in this process.
3. Review: In addition to internal review, we will utilize external reviewers to assess how well students are learning the five Learning Outcomes as evidenced by the material collected in student portfolios. The reviewers will establish baseline (the percentage of agreement on the assignments that are scored using the rubrics) during a norming session. Thereafter, reviewers will check their percentage of agreement periodically to ascertain if there is consistency in their scoring. Utilizing a four year cycle of implementation, we anticipate recruiting three reviewers for one half-day of work per year.

Learning Outcomes Matrix

The Environmental Studies Student Learning Outcomes Plan is shown in Table 1a. It outlines our assessment measures and processes established to determine the degree to which students have mastered each of our five key learning objectives. Using a four year cycle of assessment implementation, we will collect data (e.g., writing samples, portfolios, exit interviews) that relate to each learning objective from students enrolled in each of the listed courses. Table 1b provides an inventory that aligns student learning outcomes with each selected course listed in Table 1a. As assessment progresses for each course, strength of alignment will also be measured and adjustments made accordingly.

Data Collected

During the development of the final ES Student Learning Outcomes in Fall 2008, an iterative process was utilized to review and refine program goals, curriculum, and student outcomes. This qualitative process resulted in the actions noted below under Actions Taken. Quantitative analysis examined data gathered to meet previous assessment purposes. These past assessment instruments were developed and used to assess other aspects of the ES program (Table 2). Because the key student learning outcomes were finalized and approved at the end of the 2008 semester, data has not been collected that is designed to assess student achievement across these five key student learning outcomes. However, the ES Undergraduate Alumni Survey does provide data related to the third learning outcome *Interdisciplinary Synthesis: demonstrate an ability to integrate the many disciplines and fields that intersect with environmental concerns*. One question in this survey asked respondents if the ES curriculum provided an opportunity to integrate social and natural sciences. Respondents rated the ES Program close to “more that adequately” in its ability to provide this opportunity for students (Table 3).

Actions Taken

Development of the Environmental Studies Student Learning Outcomes began in Spring 2008. An initial rough draft of the ES Student Learning Outcomes was completed in June 2008. In Fall 2008, the Undergraduate Environmental Studies Committee set out to revise and refine the draft version and finalized their key student learning outcomes in November, 2008. This set of key learning outcomes was presented to the entire faculty for approval in December 2008. Following approval of the final version of the ES student learning outcomes, a rubric will be developed for use by the External Reviewers in assessing each learning outcome. Data from these reviews will be collected to illustrate and compare student achievement in meeting target levels over time for each student learning outcome. The ES Undergraduate Committee will make recommendations based on this data.

Senior Seminar Experience

During the process of the development of the Student Learning Outcomes in 2008, it was determined that a Senior Seminar Experience Course for Environmental Studies students was needed to fully achieve the key student learning outcomes. Consequently, this new course was approved by the Undergraduate Committee (*Appendix*). This course is designed to enable students to reflect on their work as Environmental Studies students and to demonstrate

their level of success in achieving Environmental Studies Student Learning Outcomes. This new course was approved by the ES faculty in December 2008, and the course proposal was approved by the ESF Committee on Instruction in March 2009. A rubric will be developed for use in this course to assess key student learning outcomes. Data will be collected to illustrate and compare student achievement in meeting target levels over time for each student learning outcome. The ES Undergraduate Committee will make recommendations based on this data.

Assessment Implementation Plan

The assessment plan will be implemented in stages using an iterative systematic assessment cycle allowing us to clearly establish that our assessment methods are appropriate for each student learning outcome, to refine our criteria for determining the level of performance that meets standards for success, and to make adjustments in our program addressing issues identified in the findings in a systematic and progressive fashion. Rubrics will be used as part of the evaluation process. A four point rubric scale indicating that the student is Exceeding, Meeting, Approaching, or Not Meeting assessment criteria will be established for each of the five student learning outcomes. Each rubric will set forth learning outcome sub-category classifications and criteria at four rating scale levels:

- 4 points = Exceeding
- 3 points = Meeting
- 2 points = Approaching
- 1 point = Not Meeting

The Writing Program, which is an integral part of Environmental Studies, will serve as our model for development of each rubric for each of the five student learning outcomes. The Writing Program has 19 years of assessment experience in implementing various approaches, evaluating results, and modifying their courses or program when appropriate:

<http://www.esf.edu/writingprogram/assesscampus.htm>

For Year One, EST 132 and CLL 290 will be evaluated to assess how well students are learning Outcome 1: Critical Thinking and Outcome 2: Communication. A faculty consensus approach will be used to establish baseline standards and target levels for Year One. It is likely that Year One target levels for success will be set requiring 70% of students to score 3 and above for each measured learning outcome. Following Year One, target percentages for each learning outcome will be reevaluated as results from each stage of assessment are utilized to calibrate our expectations for success for each of the measured student learning outcomes. Once fully implemented, the anticipated results of the yearly assessment will enable determination of which learning outcome objectives have been achieved and thus make it possible to identify areas that need to be addressed in order to improve learning.

TABLE 1a. ES UNDERGRADUATE LEARNING OUTCOMES ASSESSMENT MATRIX

Student Learning Outcomes: What students should be able to do AFTER completing the ES program.	Where Addressed: Courses that ensure that all students have the opportunity to learn this.	Assessment: How we will assess how well students are learning this.	Data Collection Plan: How often and when we expect to begin collecting this data.	Data Collected: Information collected to date.	Actions Taken: Actions taken as a result of this Assessment
1) Critical Thinking: demonstrate critical thinking skills in relation to environmental affairs	EST 132, EFB 120 EST 245, CLL 290 EST 321, EST 361 EST 494	<i>Over next 4 years:</i> Portfolio Interview Internal review External review (four year cycle)	<i>1/year over 4 year cycle:</i> Yr 1: EST 132, CLL 290 Yr 2: EFB 120, EST 245, Yr 3:EST 321, EST 361 Yr 4: EST 494	Review of ES curriculum	Approved EST 494 Senior Seminar in Environmental Studies
2) Communication: demonstrate knowledge and application of communication skills and the ability to write effectively in a variety of contexts.	EST 132, EFB 120 EST 245, CLL 290 EST 321, EST 361 EST 494	<i>Over next 4 years</i> Portfolio Interview Internal review External review (four year cycle)	<i>1/year over 4 year cycle:</i> Yr 1: EST 132, CLL 290 Yr 2: EFB 120, EST 245, Yr 3:EST 321, EST 361 Yr 4: EST 494	Review of ES curriculum	Approved EST 494 Senior Seminar in Environmental Studies
3) Interdisciplinary Synthesis: demonstrate an ability to integrate the many disciplines and fields that intersect with environmental concerns.	EST 132, EFB 120 EST 245, CLL 290 EST 321, EST 361 EST 494	<i>Over next 4 years</i> Portfolio Interview Internal review External review (four year cycle)	<i>1/year over 4 year cycle:</i> Yr 1: EST 132, CLL 290 Yr 2: EFB 120, EST 245, Yr 3:EST 321, EST 361 Yr 4: EST 494	Review of ES curriculum; Undergraduate Alumni Survey	Approved EST 494 Senior Seminar in Environmental Studies
4) Ecological Literacy: demonstrate an awareness, knowledge, and appreciation of the intrinsic values of ecological processes and communities.	EST 132, EFB 120 EST 245, CLL 290 EST 321, EST 361 EST 494	<i>Over next 4 years</i> Portfolio Interview Internal review External review (four year cycle)	<i>1/year over 4 year cycle:</i> Yr 1: EST 132, CLL 290 Yr 2: EFB 120, EST 245, Yr 3:EST 321, EST 361 Yr 4: EST 494	Review of ES curriculum	Approved EST 494 Senior Seminar in Environmental Studies
5) Sustainability: demonstrate an integrative approach to environmental issues with a focus on sustainability.	EST 132, EFB 120 EST 245, CLL 290 EST 321, EST 361 EST 494	<i>Over next 4 years</i> Portfolio Interview Internal review External review (four year cycle)	<i>1/year over 4 year cycle:</i> Yr 1: EST 132, CLL 290 Yr 2: EFB 120, EST 245, Yr 3:EST 321, EST 361 Yr 4: EST 494	Review of ES curriculum	Approved EST 494 Senior Seminar in Environmental Studies

TABLE 1b. ES UNDERGRADUATE LEARNING OUTCOMES CURRICULUM MATRIX

	Undergraduate Curriculum Matrix for Student Learning Outcomes				
	Learning Outcome #1	Learning Outcome #2	Learning Outcome #3	Learning Outcome #4	Learning Outcome #5
Course	Critical Thinking	Communication	Interdisciplinary Synthesis	Ecological Literacy	Sustainability
CLL 290	✓	✓	✓	✓	✓
EFB 120	✓	✓	✓	✓	✓
EST 132	✓	✓	✓	✓	✓
EST 245	✓	✓	✓	✓	✓
EST 321	✓	✓	✓	✓	✓
EST 361	✓	✓	✓	✓	✓
EST 495	✓	✓	✓	✓	✓

TABLE 2. ENVIRONMENTAL STUDIES ASSESSMENT INSTRUMENTS

Instrument	Evidence Collected by	Data Analysis Format	Disseminated	Purpose
ES Undergraduate Alumni Survey	Environmental Studies	Student ratings	ES faculty meeting	External review; Revision of ES undergraduate curriculum
ES Online Undergraduate Survey	Environmental Studies	Student ratings	ES faculty meeting	Revision of ES Undergraduate Handbook
ES External Review	Environmental Studies		ES faculty, ESF administration	Revision of ES Program and curriculum

TABLE 3. ES ALUMNI SURVEY RESULTS

3a) Respondent ratings of experiences, skills, or tools received through their academic program in relation to its importance to their career or personal development

Question wording: Please rate EACH of the following experiences/skills/tools in your academic program for its importance to your career and personal development. (1 = Not Important; 2 = Somewhat Important; 3 = Important; 4 = Very Important). Note: a higher score indicates a more favorable rating.

- Importance to Career Development:**

Environmental Studies Option Area	Social Sci/Policy courses	Natural Science courses	Math courses	Computer courses	Writing courses	Option courses	Advising	Presentations	Group Work	Case Studies	Student Clubs	Internships
Information & Technology	2.48	3.36	2.92	3.21	3.48	3.36	2.92	3.36	3.16	2.63	2.17	3.50
Land Use Planning	2.91	3.37	2.57	3.55	3.40	3.44	2.80	3.63	3.47	3.29	2.21	3.59
Biological Science Applications	2.70	3.52	2.58	3.34	3.52	3.29	2.80	3.39	3.19	2.81	2.48	3.43
Policy and Management	3.02	3.18	2.56	3.31	3.47	3.27	2.55	3.32	3.05	2.75	2.38	3.17
Communication & Culture	3.00	3.50	3.00	3.00	3.50	4.00	3.00	3.00	3.00	3.50	1.00	4.00
Combined Total	2.85	3.33	2.62	3.34	3.46	3.32	2.71	3.40	3.18	2.87	2.33	3.38

Results: On average, respondents ranked *writing courses*, *presentations*, and *internships* highest in importance to their career development

- Importance to Personal Development:**

Environmental Studies Option Area	Social Sci/Policy courses	Natural Science courses	Math courses	Computer courses	Writing courses	Option courses	Advising	Presentations	Group Work	Case Studies	Student Clubs	Internships
Information & Technology	2.92	3.31	2.60	3.00	3.50	3.19	2.88	3.46	3.27	2.32	2.63	3.50
Land Use Planning	2.91	3.30	2.38	3.28	3.37	3.32	2.71	3.56	3.30	2.76	2.60	3.38
Biological Science Applications	2.92	3.41	2.44	3.08	3.48	3.34	2.79	3.40	3.18	2.60	2.85	3.29
Policy and Management	3.08	3.18	2.42	3.26	3.31	3.22	2.55	3.15	2.99	2.75	2.72	3.26
Communication & Culture	3.00	2.50	3.00	3.00	4.00	4.00	3.00	4.00	3.00	2.50	2.00	4.00
Combined Total	2.98	3.28	2.44	3.16	3.40	3.28	2.70	3.35	3.13	2.65	2.71	3.33

Results: On average, respondents ranked *writing courses*, *presentations*, and *internships* highest in importance to their personal development

3b) Respondent ratings of job preparation, educational quality, curriculum and senior synthesis integration

For each question, the Option Area providing the strongest rating is highlighted in italics. Note: a lower score indicates a more favorable rating:

Environmental Studies Option Area	a. How well ES educational experiences prepared you for job	b. How related current position is to ES degree	c. Overall quality of education received from ES	d. ES curriculum provided opportunity to integrate Social & Natural Sciences	e. Senior synthesis provided opportunity to integrate coursework with "real world" issues
Information & Technology	3.14	2.82	1.61	2.29	2.70
Land Use Planning	2.65	2.05	1.56	2.28	2.46
Biological Science Applications	3.03	2.30	1.58	2.14	2.39
Policy and Management	3.34	2.54	1.71	2.34	2.48
Communication & Culture	3.50	2.50	2.00	2.00	3.50
Combined Total	3.11	2.41	1.64	2.27	2.48

Results: On average, respondents were most favorable about the overall quality of their education. Respondents within the Land Use Planning Option Area were most satisfied with how well ES prepared them for their current position, the relationship of their degree with their current position, and with the overall quality of education they received.

Question wording:

a. How well did your undergraduate educational experiences prepare you for your most recent or current position?

(1= Exceptionally well, 2= More than adequately, 3 = Adequately, 4 = Less than adequately, 5 = Very Poorly, 6 = Not at all)

b. How closely related is your most recent or current position to your degree in Environmental Studies?

(1 = Highly related, 2 = Moderately related, 3 = Slightly related, 4 = Not at all related)

c. Overall, how well would you rate the quality of education you received from Environmental Studies?

(1 = Excellent, 2 = Good, 3 = Average, 4 = Poor, 5 = Very Poor)

d. Overall, how well did the Environmental Studies curriculum provide the opportunity for you to integrate knowledge and research from the social and natural sciences?

(1 = Exceptionally well, 2 = More than adequately, 3 = Adequately, 4 = Less than adequately, 5 = Very poorly, 6 = Not at all)

e. How well did your Senior Synthesis provide the opportunity for you to integrate your coursework with “real world” problems and research issues?

(1 = Exceptionally well, 2 = More than adequately, 3 = Adequately, 4 = Less than adequately, 5 = Very poorly, 6 = Not at all)

APPENDIX

ESF COURSE PROPOSAL FORM

New course **OR**

Changes in existing course (check all that apply):

prefix number credits title description pre-requisite(s)

co-requisite(s) shared resources course format content semester offered

This course meets the General Education standards in the following knowledge and skills area (check all that apply):

American history basic communication humanities

mathematics natural sciences other world civilizations

social sciences the arts western civilization

CATALOG DESCRIPTION

EST 494 Sr. Seminar in Environmental Studies [1 credit hour]

Two hour seminar every two weeks. For all seniors in Environmental Studies. Students will prepare portfolios and give capstone presentations on their senior synthesis project and develop career goals and plans. Spring]

Credits will not be granted for and (both undergraduate and graduate versions of the same course).

Prerequisite(s):

Co-requisite(s):

Instructor:

Course format: Every other week this course will involve 2 hours of in-class activities including portfolio preparation, resume preparation, discussion, student presentations and small-group interactions on relevant topics. Guest lecturers will highlight career opportunities and other ways of applying knowledge and skills developed in the option..

2 hours classroom instruction every other week [lecture, seminar, quiz, discussion or recitation]

OBJECTIVES:

After completing this course the student should be able to:

- Assemble, organize and reflect on their work as Environmental Studies students
- Describe the senior projects of fellow students.
- Prepare and present portfolio of student work that demonstrates level of success in achieving learning outcomes for environmental studies at ESF.
- Access information on relevant career opportunities,
- Apply ES concepts to a range of environmental problems.
- Prepare a professional resume..

MAJOR CONCEPTS OR METHODOLOGIES:

- Portfolio of relevant products reflecting key learning outcomes as determined by the environmental policy faculty.
- Resume writing
- Presentation of senior synthesis
- Sustainable development
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RELATION TO CURRICULUM OR TO OTHER ESF OR SYRACUSE UNIVERSITY

COURSES: This course will be required for all Environmental Studies majors during their senior year

SHARED RESOURCES COURSES: What additional content and evaluation are required of the graduate-level offering?

INSTITUTIONAL RESOURCES REQUIRED (INSTITUTIONAL IMPACT – itemize in each sub-category):

Anticipated Enrollment: 25-50_per semester

Technology and classroom resources: Standard classroom space with chalk or dry erase board, computer projection system, overhead projector and screen.

Computing resources: Standard access for word processing and internet searches.

Library resources: Students visit the library for a class on using the library resources. No special resources required.

Transportation requirements: none

Forest Properties or Field Practicum Facilities required: None

HEALTH AND SAFETY CONSIDERATIONS:

<u>Conditions or situations present in association with the course?</u>	<u>YES</u>	<u>NO</u>
1. Will substances with any of the following properties be used during instruction: flammability, toxicity, corrosivity, reactivity, registered pesticide, legally controlled, or other characteristics with the potential to cause harm or injury?		
2. Will any physical hazards be present during instruction? (e.g., machines that need safety guards; razor blades or syringes; compressed gases, etc.).		
3. Will any biological hazards be present during instruction? (e.g., handling animals (rabies or hantavirus); cultures or stocks of infectious agents (fungal spores, viruses, bacteria, etc.).		
4. Will any radiation hazards be present during instruction? (e.g., radioisotopes, X-rays, ultraviolet rays, lasers, etc.).		
5. Will any electrical equipment that, due to its design, location, or method of use, pose any threat to safety during instruction? (Give considerable thought to electrical use outdoors, or any potentially wet location.).		
6. Will there be any personal safety issues related to the class? (e.g., due to time of day or location, at the end of any organized class exercise, will students be in danger of physical assault, etc.).		
7. Will any students be driving official State or research sponsored land or water vehicles during any class or instructional exercise?		

<p>8. Will any type of personal protective equipment be necessary during class exercises? (e.g., hard-hats, eye/face protection, hearing protection, hand/foot protection, lab coat, visibility clothing, etc.)</p>		
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If the answer was "Yes" to any of the **HEALTH AND SAFETY** questions, please explain:

This is an on-campus course with few unusual health or safety considerations. Students may be a required field trip to local waterway or other environmentally significant site Travel will be by campus bus and students will be informed of and required to cooperate with all travel and field trip safety rules.

COURSE HISTORY: New course.