

Institutional Effectiveness  
2022-2023

Program: Environmental and Sustainability Studies BS

College and Department: College of Interdisciplinary Studies, School of Environmental Studies

Contact: Steve Sharp

Mission:

The School of Environmental Studies will foster in students the desire to lead purposeful professional lives through the application of scientific principles to environmental issues within the social, political, and economic framework of our society.

Attach Curriculum Map (Educational Programs Only): \*See Appendix 1.

Concentrations and Options: As of Fall 2023, the B.S. degree program in Environmental and Sustainability Studies (ESS) has seven concentrations. These are listed below:

1. Environmental Science
2. Environmental Science - Biology
3. Environmental Science - Chemistry
4. Environmental Leadership, Communication and Policy
5. Environmental Sustainability
6. Environmental Technology
7. Natural Resources

Previously, there were three concentrations. Two of the three concentrations had additional curricular options nested within them as summarized below:

Concentration 1. Environmental Science

Option 1.1. Biology

Option 1.2. Chemistry

Option 1.3. Natural Resources

Concentration 2. Society, Culture and Communication

Option 2.1. Communication and Media

Option 2.2. Social Science and Policy

Option 2.3. Leadership and Environmental Management

Concentration 3. Environmental Technology

## SLO 1: ABILITY TO INTEGRATE KNOWLEDGE

### Define Outcome:

Students will demonstrate the ability to integrate social, economic, biological, chemical, and physical science knowledge to identify, formulate, and solve environmental problems.

### Assessment Methods:

1. *IDEA student evaluation results* : IDEA evaluations are administered for each course in the curriculum. Students can rate their learning progress in key areas such as critical thinking skills using a 5-point scale: 1 - No apparent progress, 2 - Slight progress, 3 - Moderate progress, 4 - Substantial progress, 5 - Exceptional progress.
2. *Rubrics for senior capstone course* The rubric generates a score on a 4-pt scale that can be converted to an index ranging from 0 to 100 that can be tracked from year-to-year to provide a quantitative assessment of program quality as reflected by the quality of student team proposals and projects. Another rubric was developed in 2019 to evaluate the capstone presentation that is given in the second semester (spring semester) of the two-semester capstone sequence  
In order to also evaluate individual research and communication skills, the instructors began in fall 2020 having each student write a literature review and present their findings to the class. In fall 2021, they developed a rubric for evaluating these presentations. Full rubrics can be found in the appendices
3. *Senior exit survey* Each graduating senior will complete a departmental exit survey. The survey has 31 questions to rate the quality of program components from the student's perspective on a scale from 1 to 4, reflecting 1 (poor), 2 (fair), 3 (good) and 4 (excellent).
4. *Major Field Exam* Be82qETQq0.00000912 0 612 792 reW\*ñBT/F2 12 Tf1 0 0 1 249.38 5





Table 2.

3	Statistical Methods	54	45	45
4	General Ecology	66	68	70
5	Chemistry and the Environment	43	39	55

such as interdisciplinary teamwork using a 5-point scale: 1 - No apparent progress, 2 - Slight progress, 3 - Moderate progress, 4 - Substantial progress, 5 - Exceptional progress.

2. A rubric generates a score on a 4-pt scale that can be converted to an index ranging from 0 to 100 that can be tracked from year-to-year to provide a quantitative assessment of program quality as reflected by the quality of student team proposals and projects. Another rubric was developed in 2019 to evaluate the capstone presentation that is given in the second semester (spring semester) of the two-semester capstone sequence. In order to also evaluate individual research and communication skills, the instructors began in fall 2020 having each student write a literature review and present their findings to the class. In fall 2021, they developed a rubric for evaluating these presentations. Full rubrics can be found in the appendices.
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#### Criteria for Success (Thresholds for Assessment Methods):

1. : There are two criteria of success for this indirect measure: 1) Average student perception of the appropriate progress area for each ESS course is at the 3.0 level or higher, indicating students overall felt they made modest progress or better on this objective in each class. 2) The overall average for all courses for this SLO is at 4.0 or more. This would indicate that overall there was a student self-perception of substantial progress on these objectives in ESS courses.
2. Two criteria of success include 1) an overall average score on each rubric at 80% or higher (3.2/4.0 scale), indicating an acceptable level of competence on the criteria measured, and 2) the average student score on each rubric criterion is at 3.0 or greater indicating acceptable performance.
3. The criterion for success on this objective is an average score of 3.0 or greater on this 4.0 scale, indicating graduating seniors felt they had made good to excellent progress on this objective.

Link to 'Tech Tomorrow' Strategic Plan:

1.A Experiential Learning, 1.D High Impact Practices, 2.B Research, Scholar, Intellect, and Creativity, 4.A Sustainable Partnerships

#### Results and Analysis:

IDEA results were analyzed for undergraduate ESS courses taught during 2022-2023. Results from the previous four academic years are also shown for comparison (Table 4). In 2022-2023, average scores for student perception of progress on teamwork, as well oral and written communication were down slightly.





ESS 4002	4.3	5.0	4.6	4.5	3.0
ESS 4100	--	--	--	2.5	3.1

Table 5. Average scores from ESS senior exit survey results for four survey questions related to student learning outcomes.

Survey Question	Associated Learning Outcome	Academic Year
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findings to the class. In fall 2021, they developed a rubric for evaluating these

Table 6. Student-rated progress on IDEA Objectives related to student learning outcomes for ESS courses taught during the most recent four academic years.

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IDEA Objectives

Course

Total Score	18/20	16.7/20
Percent Score	90%	84%

Students overall did well finding a variety of sources for their literature reviews and putting together informative and visually appealing slides. Overall, their oral presentations were good. While down slightly from the previous year, these scores met the criteria for success.

The capstone instructors developed a new rubric for evaluation of the final presentation in ESS 4002 (Team Project Oral Presentation) that was first implemented in the 2018

felt even stronger about their progress in communicating scientific information (3.8/4.0). This was the highest score in the last six years.

Table 9. Average scores from ESS senior exit survey results for four survey questions related to student learning outcomes.

Survey Question	Associated Learning Outcome	Academic Year					
		2017-18 (n=14)	2018-19 (n=9)	2019-20 (n=5)	2020-21 (n=5)	2021-22 (n=5)	2022-23 (n=12)
Use of scientific literature	1. Communication skills	3.6	3.9	3.6	4.0	3.4	3.5
Communicating scientific information	1. Communication skills	3.6	3.7	3.6	3.4	3.2	3.8

SLO2: Students demonstrated their ability to work in teams by the quality of the final presentation in Spring 2023 (94% score). The primary consideration for the upcoming year is to address the lack of teamwork exercises in a number of ESS courses. The consideration should be whether to encourage more teamwork in those courses or to recognize that significant team-

Appendix 1: Curriculum Map, Environmental and Sustainability Studies, B.S.

Course	Title	Student Learning Outcomes		
		Communication Skills (SLO 1)	Teamwork Skills (SLO 2)	Knowledge Integration (SLO 3)
ESS 1020	Connections: Environment and Sustainability			X
ESS 1100	Intro to Environmental Studies	X	X	X
GEOL 1045	Earth Environment, Resources, and Society			X
BIOL 3120/3130	General Ecology			X
ESS 3710/ CHEM 4710	Chemistry and the Environment	X		X
ESS 3000	Introduction to Environmental law	X	X	X
HIST 3900	Environmental History	X		X



## Appendix 2: Capstone Rubric for Individual Literature Review Presentation R23

### Rubric for Individual Literature Review Presentation

Student Name(s)		Final Grade				
English Grammar	Time	Power Point Presentation	Oral Presentation	Literature		
Proper English grammar was used.	Presentation was 8-10	4	Presentation is effective, and all information	Presentation was professional, with smooth	Enough sources are used and des	

## Appendix 3: Capstone Rubric for Team Project Oral Presentation

### Rubric for Team Project Oral Presentation

Student Name(s)		Final Grade						
Content	Organization	Budget	Power Point	Oral Presentation	English	Questions	Profess	
Students presented a		Presentation is effective, and all	Presentation was professional,	Proper English	Students were able to	Students had a professional,	Students addressed each part of	

Appendix 4: Capstone Rubric for Team Project Written Proposal R23



