

STUDENT LEARNING ASSESSMENT PROGRAM
SUMMARY FORM AY 2022-2023

Degree and Program Name: Master of Science in Sustainability (Interdisciplinary)

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PART ONE

At the start of the program (SP20) the MS in Sustainability had 5 fulltime students and 2 full time dual degree students (total of 7 fulltime students). Due to COVID, the program had 4 fulltime and 1 dual degree student (total of 5 students) in FA20 and SP21. FA 21 showed an increase to 6 fulltime students and 2 dual degree full time students (8 total), with Second Master’s students increasing to 5 fulltime students and 6 fulltime students remaining for SP 22 (11 students total).

FA 22 showed an increase in enrollment to 9 fulltime students and 10 dual degree students (19 students total). SP 23 continued to increase to 13 fulltime students and 11 dual degree students (24 students total). This increase in students has allowed for better assessment in some core courses, but due to the flexibility of classes allowed research papers, presentations, theses, awards, and internships will also be used to assess ability to meet objectives.

What are the learning objectives?	How, where, and when are they assessed?	What are the expectations?	What are the results?	Committee/ person responsible? How are results shared?
1. Students will demonstrate understanding of principles related to the field of sustainability (CGS goal: depth of content knowledge)	<p>The Sustainability program design was based on studying sustainability with an interdisciplinary focus. The scientific knowledge and skills are addressed by departments, including Geology and Geography, Political Science, and School of Technology.</p> <p>There are six (6) required core courses that all students must take, regardless of which option they are pursuing. Three (3)</p>	<p>Students are expected to understand:</p> <ul style="list-style-type: none"> • The three pillars of sustainability (economic, social and environmental) and the extent of the impacts in which sustainability attempts to balance these areas of concern • How greenhouse gases contribute to global changes • Political policy and its 	<p>7/8 students enrolled in CERE 5100 in Fall 2022 semester met expectations of 80% or higher on HW Assignment 1 (Pillars of Sustainability)</p> <p>17/19 students enrolled in GEO 5200 in Spring 2023 semester met expectations of 80% or higher on Assignment 6 (Copenhagen Consensus Center’s 12</p>	<p>Faculty members are contacted individually by the graduate coordinator for feedback. Information is articulated individual and through the Sustainability Board meetings.</p>

	<p>focus on sustainability content:</p> <ul style="list-style-type: none"> • CERE 5100 Intro to Sustainability • GEO 5200 Human Impact and the Environment • PLS 4763 Environmental Politics and Policy <p>Students are assessed in the above courses in terms of the depth of knowledge of sustainability principles. Either class projects or comprehensive research papers were used to assess the knowledge acquisition of the respective science disciplines by students.</p> <p>Many students voluntarily attend a LEED (Leadership in Energy and Environmental Design) study group in order to prepare for their certification exam. Successful completion of the exam is recorded.</p> <p>At the end of every semester, assessment data will be submitted by faculty teaching the courses that are on regular rotation.</p>	<p>role in minimizing negative impacts to the three pillars of sustainability</p> <p>Students are expected to score an 80% or higher on their assessment in order to meet expectations.</p> <p>Students are expected to pass the LEED certification exam</p>	<p>SDGs)</p> <p>7/7 students enrolled in PLS 4763 in Spring 23 semester met expectations of 80% or higher on midterm exam.</p> <p>In the 22/23 academic year, 6 students passed the GA exam, with 2 of those students going on to complete the AP exam</p>	
<p>2. Students will be able to apply leadership and managerial practices in sustainability (CGS goal: depth of content knowledge)</p>	<p>Students will be assessed in leadership and managerial practices in:</p> <p>TEC 5980: Internship Students are assessed by their site supervisors on their final evaluation survey.</p>	<p>The following Likert statements were used to assess leadership and managerial skills:</p> <ol style="list-style-type: none"> 1. Displays leadership skills 2. Takes initiative 3. Adapts readily to new 	<ol style="list-style-type: none"> 1. 4/8 Strongly Agree; 4/8 Agree (0 did not meet expectations) 2. 5/8 Strongly Agree; 3/8 Agree (0 did not meet expectations) 3. 6/8 Strongly Agree; 2/8 Agree (0 did not meet 	<p>Faculty members are contacted individually by the graduate coordinator for feedback. Information is articulated individual and through the Sustainability Board meetings.</p>

	At the end of every semester, assessment data will be submitted by faculty teaching the courses that are regular rotation.	<p>situations and responsibilities</p> <p>4. Ability to respond to problems well</p> <p>Students are expected to score a 1 or 2 (Agree or Strongly Agree) to meet expectations.</p>	<p>expectations)</p> <p>4. 6/8 Strongly Agree; 2/8 Agree (0 did not meet expectations)</p>	
3. Students will be able to apply critical thinking and problem solving skills in the areas of sustainability. (CGS goal: Effective critical thinking and problem solving)	<p>CERE 5100 gives students opportunities to connect what they learned in classroom to real-world applications. This is one of the best ways to promote and test students' problem solving skills. The final paper in this course has them address a specific issue and analyze how to address it with recommendations for solutions</p> <p>In terms of critical thinking and problem solving skills, students will be assessed in the following venue: CERE 5100 Final Research Paper</p> <p>At the end of the semester, assessment data will be submitted by faculty when the course is offered.</p>	Students are expected to score an 80% or higher on their final paper in order to meet expectations.	6/8 students enrolled in CERE 5100 in Fall 2022 met expectations of 80% or higher on their Final Paper	Faculty members are contacted individually by the graduate coordinator for feedback. Information is articulated individual and through the Sustainability Board meetings.
4. Students will be able to conduct intellectual research related to sustainability. (CGS goal: Advanced scholarship through research or creative activity)	<p>Students will understand the appropriate procedures for conducting research in either:</p> <ul style="list-style-type: none"> • TEC 5143 Research in Technology OR • PLS 5054 Applied Research Methods in 	<p>At the end of the program, students must demonstrate their ability to conduct meaningful research, related to sustainability.</p> <p>As students have the option to take three different research</p>	<p>2 students completed a thesis and 4 students completed a research project for course credit. (See bottom of report for details)</p> <p>3 students presented at</p>	Faculty members are contacted individually by the graduate coordinator for feedback. Information is articulated individual and through the Sustainability Board meetings.

	<p>Public Policy OR</p> <ul style="list-style-type: none"> • CMN Communication Research Methods <p>Students are assessed in the above courses in terms of the depth of science knowledge. Either class projects or comprehensive research papers were used to assess the knowledge acquisition of the respective leadership or management principles by students.</p> <p>At the end of every semester, assessment data will be submitted by faculty teaching the courses that are regular rotation.</p> <p>Optional: CERE 5953 Sustainability Research (Students must conduct independent research, write a research paper and defend results to a committee of at least 3 Graduate Faculty members, similar to a thesis)</p> <p>While not required, students are strongly encouraged to apply for research funding, present research at conferences, and publish in journal articles. Totals will be kept of these extracurricular research activities.</p>	<p>methods classes, with a wide variety of instructors, it is difficult to assess the varying assignments. Therefore, an overview of research presentations and awards is provided.</p>	<p>national conferences (See bottom of report for details)</p> <p>Research Awards (2023):</p> <ul style="list-style-type: none"> • 3 Williams Travel Grants • 2 Graduate School Research and Creative Activity Award • 1 King-Mertz Research and Creative Activity Award of Excellence, LCBT • 1 Master's Thesis Award of Excellence, LCBT 	
<p>5. Students will develop effective oral and written communication skill (CGS</p>	<p>1. Students will be assessed in the following required course: CMN/ENG 5260 Science and</p>	<p>Students possess effective oral and written communication skills, related to sustainability.</p>	<p>CMN/ENG was not held due to staffing, but will be offered Spring 2024.</p>	<p>The results are also shared and discussed during the regular</p>

<p>goal: effective oral and written communication)</p>	<p>Technical Communication</p> <p>Written communication is assessed through the final project, the culminating assignment for the semester.</p> <p>Oral communication is assessed through presentation of the final project.</p> <p>At the end of semester when the course is offered, assessment data will be submitted by the faculty team teaching the course.</p>	<p>Students are expected to score an 80% or higher on their assessment in order to meet expectations.</p>		<p>Sustainability board meeting every semester.</p> <p>Based upon the assessment feedback, faculty members are contacted individually based on feedback from students in their exit interview and recommendations for adjusting their way of instruction is provided the content can be readily understood by students with non-science background.</p>
<p>6. Students will be able to apply concepts of ethical and professional responsibility through the awareness of codes of ethics in sustainability, respect and value for diversity and inclusion, and commitment to respectful and responsible discourse (CGS goal: Ethical and professional responsibility)</p>	<p>CERE 5100 will include an essay question on the midterm to determine how well a student can apply the principles of ethical practices in the sustainability field.</p> <p>CERE 5100 will have 3 discussion questions in which students must respond to a student they disagree with and respectfully provide an alternative stance on the subject.</p>	<p>Students are expected to score an 80% or higher on both assessments in order to meet expectations.</p>	<p>7/8 students enrolled in CERE 5100 in Fall 2022 semester met expectations of 80% or higher on midterm essay question</p> <p>7/8 students enrolled in CERE 5100 in Fall 2022 semester met expectations of 80% or higher on discussion questions</p>	<p>Faculty members are contacted individually by the graduate coordinator for feedback. Information is articulated individual and through the Sustainability Board meetings.</p>

PART TWO

Describe your program's assessment accomplishments since your last report was submitted. Discuss ways in which you have responded to the CASA Director's comments on last year's report or simply describe what assessment work was initiated, continued, or completed.

In previous years we had difficulty with reporting assessment data due to the low number of students in the program. Our assessment tactics have changed to look holistically at the program and the impact our students are having outside of the classroom, as they are taking courses in different program areas depending on their focus. This has required more organization in regards to compiling data from conference presentations, internships, and community projects.

PART THREE

*Summarize changes and improvements in **curriculum, instruction, and learning** that have resulted from the implementation of your assessment program. How have you used the data? What have you learned? In light of what you have learned through your assessment efforts this year and in past years, what are your plans for the future?*

In previous years we had a low number of students in the program, which limited our ability to offer classes and extracurricular opportunities. This also made it difficult to assess their advancement, as they were scattered among classes. In recent years, application numbers increased and now we typically have over 100 applications in the fall semester. With this, the yield is also continuing to increase. This is allowing us to offer more electives to students, as we are better able to fill the seats. However, the issue is now becoming that some of our elective courses that are primarily targeted to students in other majors are difficult to get into for all students who want to take the course. In our annual Sustainability Board meeting, we have been addressing this concern by holding some seats for Sustainability students and trying to offer more courses in the summer.

Additional Information:

Thesis and Research Projects

Year	Thesis	Research Project
2023	▶ Joel Holison; Assessing the knowledge on sustainability and barriers to daily sustainable practices among faculty and students in	▶ Eric Ogbe: Improving the energy efficiency performance of the Physical Science Building at Eastern Illinois University

Higher Education. The case of Eastern Illinois University		
2022	▶ Martin Osei: Development of phase change thermal storage medium: Cooking with more power and versatility	▶ Isra Abo Iqsaysa: Individual household electricity load forecasting using historical smart meter data with neural networks
		▶ Arwa Ibrahim: The economic and social determinance of electrification rate: Empirical evidence from Sudan
		▶ Shaibu Ibrahim: Improving voltage stability in solar photovoltaic (PV) grid integration

Conference Presentations

Ann and Jack Graves Foundation Conference: Sustainability as a Solution to Global Challenges, Dallas, Texas, March 2023

- Taher Garamanli
 - Presentation- *Renewable Electricity and Political Affiliation in the United States: Are They Related?*

Association of Technology, Management, and Applied Engineering (ATMAE), Louisville, Kentucky, November 2022

- Isra Abo Iqsaysa
 - Poster- *Load Forecasting to Improve Energy Efficiency*
- Eric Ogbe
 - Poster- *Optical Fiber Technology for Versatile LED-Based Illumination*