Discipline	Course Number	Title
Environmental Science	105	ENV 105 05/05/2024-Introduction to Environment and Society
College	Division	Department
	Math, Science and Engineering Tech	Physical Sciences
Faculty Preparer		Smita Malpani
Date of Last Filed Assessment Report		02/11/2021

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

Yes

This course was assessed in July 2020.

2. Briefly describe the results of previous assessment report(s).

Students met the standards of success for the course. There were some issues with poorly worded or unclear assessment questions. In addition, the methodology for measuring standards of success didn't match up exactly with parameters for the standards. A number of students never submitted the research paper for the course- an assignment that would have given them the opportunity to creatively apply approaches learned in the class and explore a new environmental topic.

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

Updated and improved assessment questions. Students must now submit the research paper to pass the class.

II. Assessment Results per Student Learning Outcome

Outcome 1: Recognize and identify introductory environmental science principles and concepts involving the relationships between individuals, societies and the environment.

- Assessment Plan

- o Assessment Tool: Outcome-related common test questions

- o Assessment Date: Fall 2023

- o Course section(s)/other population: All sections

- o Number students to be assessed: All students

- o How the assessment will be scored: Multiple-choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.

- o Standard of success to be used for this assessment: 70% of the students will correctly answer 70% of the outcome-related questions.

- o Who will score and analyze the data: Environmental science faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2023		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
158	143

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

It may be that some students were enrolled in the class but did not complete exams containing assessment questions. This could also be due to students who withdrew from the class.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students were assessed based on exams given in Blackboard.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

For outcomes 1 and 2, the Goals tool in Blackboard tracked specific exam questions against learning outcomes.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
The standard of success was met for Outcome 1. According to the data, 92% (131/143) of students scored 70% or better on assessment questions related to Outcome 1.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

92% of students scored 70% or better on assessment questions, well over the standard of success for number of students scoring 70% or better. Students are clearly learning the concepts and terms being introduced in the class.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

There is one question where students tended to stumble; one on the Prisoner's Dilemma and Collective Action. The lead instructor will communicate the results of this assessment with other ENV 105 instructors to provide more explicit instruction around this topic.

Outcome 2: Analyze and interpret data such as maps, charts, diagrams, readings and graphs using appropriate environmental science principles and concepts.

- Assessment Plan
    - Assessment Tool: Outcome-related common test questions
    - Assessment Date: Fall 2023
    - Course section(s)/other population: All sections
    - Number students to be assessed: All students
    - How the assessment will be scored: Multiple-choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.
    - Standard of success to be used for this assessment: 70% of the students will correctly answer 70% of the outcome-related questions.
    - Who will score and analyze the data: Environmental science faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2023		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
158	143

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

It may be that some students were enrolled in the class but did not complete exams containing assessment questions. This could also be due to students who withdrew from the class.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students were assessed based on exams given in Blackboard.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

For outcomes 1 and 2, the Goals tool in Blackboard tracked specific exam questions against learning outcomes.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The standard of success was met for Outcome 2. According to the data, 86% (123/143) of students scored 70% or better on assessment questions related to Outcome 2.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> 86% of students scored 70% or better on assessment questions, well over the standard of success for number of students scoring 70% or better. Students are clearly learning the concepts and terms being introduced in the class.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> There are two assessment questions where students tended to stumble; one on the maximum sustainable yield and another on the trend in bottled water in poorer countries. The lead instructor will communicate the results of this assessment with other ENV 105 instructors to provide more explicit instruction around this topic.

Outcome 3: Write a research paper based on an environmental topic covered in this course.

- Assessment Plan
    - Assessment Tool: Research paper
    - Assessment Date: Fall 2023
    - Course section(s)/other population: All sections
    - Number students to be assessed: All students
    - How the assessment will be scored: Departmentally-developed rubric
    - Standard of success to be used for this assessment: 70% of students will score 75% or higher.
    - Who will score and analyze the data: Environmental science faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2023		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
158	137

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Not all students completed the research paper due at the end of the semester. This could be due to students who withdrew or did not complete the class, not just those who failed the class.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students were assessed using the scores on their research papers entered in Blackboard.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

All student papers were scored using a departmentally developed rubric. Scores were recorded and sorted to find what percentage of students scored above 75% on the paper.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

According to the data, 81.75% (112/137) of students scored above 75%. The standard of success was met. However, a number of students did not submit the research paper despite several intermediate checkpoints and activities to support students in writing the paper. This may be because some students dropped or did not finish the class.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

We have worked hard in ENV 105 for students to understand the very specific requirements of the ENV 105 research paper and provide multiple points of support to students as they develop their paper. The results show that students who do submit the paper are successful. 81.75%% of students score over 75%.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Fewer students completed the research paper than completed exams. Although we have changed course policy such that students cannot pass the class without submitting the paper, many students still do not submit the final draft of the paper. We do have many intermediate checkpoints where students submit required work (topic, sources, outline, rough draft, and library research assignment) to support

students along the way, giving them opportunities to reflect and work on their papers. For many students, writing is simply a daunting task. A few students have told me they'd never written a five-page paper before. In college, a five-page paper is a very reasonable assignment. We can't lower our standards. We'll continue to work as instructors to support our students and address their insecurities around writing.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

More students are completing the research paper now than before. This is likely because we stipulate that students submit the research paper to pass the class. Students are stumbling less on assessment questions. We have made adjustments to the questions and slides after the last assessment.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

Overall, the course seems to be meeting the needs of students well. We've updated the class to reflect new chapters in the books and refreshed course materials. Though some students don't submit the research paper, they are now more likely to complete it than before since it is required to pass the class.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

Once the assessment is reviewed, I will email ENV faculty with the main findings and updates to be made to our teaching to improve student learning even further.

4.
Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Standard of success for outcome 3 will be set at 70%.	To better match the other outcomes, the standard will be 70% rather than 75% as it was previously.	2024
Course Materials (e.g. textbooks,	Will include slides with information on	We saw that students got	2024

handouts, on-line ancillaries)	maximum sustainable yield and bottled water in poorer countries to address students having trouble with these questions.	questions on this material wrong on their exams more than other questions.	

5. Is there anything that you would like to mention that was not already captured?

Because of the new edition of the textbook, we've updated course materials. I will update the Master Syllabus to reflect those changes.

III. Attached Files

Blackboard Data
ENV 105 F23 assessment data

Faculty/Preparer: Smita Malpani **Date:** 06/07/2024
Department Chair: Suzanne Albach **Date:** 06/11/2024
Dean: Tracy Schwab **Date:** 06/12/2024
Assessment Committee Chair: Jessica Hale **Date:** 10/15/2024

Discipline	Course Number	Title
Environmental Science	105	ENV 105 07/28/2020- Introduction to Environment and Society
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Smita Malpani
Date of Last Filed Assessment Report		12/11/2017

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

Yes

2017

2. Briefly describe the results of previous assessment report(s).

Students met the standard of success from both learning outcomes 1, 2 and 3. Issues with submission of the research paper were identified.

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

The previous assessment report recommended breakdown of the assessment by question and outcome. This was done for this assessment report.

The Action Plan also recommended instituting more intermediate checkpoints for paper submission- to allow students to break the task down into more manageable chunks.

II. Assessment Results per Student Learning Outcome

Outcome 1: Recognize and identify introductory environmental science principles and concepts involving the relationships between individuals, societies and the environment.

- Assessment Plan

    o Assessment Tool: Common test questions

- o Assessment Date: Winter 2020

- o Course section(s)/other population: Random selected sample based on 50% of the students in each section offered

- o Number students to be assessed: 50% from each section offered with a minimum of one full section

- o How the assessment will be scored: Multiple choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.

- o Standard of success to be used for this assessment: 75% of the students will correctly answer 75% of the outcome-related questions

- o Who will score and analyze the data: Appropriate environmental science faculty will assess the data

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
149	144

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the assessment test or research paper in all sections were included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All sections of ENV 105 were assessed.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Twelve unique test questions were selected across four exams for the assessment. For each question, we identified the percentage of students who correctly answered each question. All outcome #1 questions were multiple choice. Because I used scantron data, I could only get an item analysis.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
Each question was analyzed and the number and percent of wrong answers was determined. Of the 12 questions 75% of the students correctly answered 9 (75%) of the questions. This demonstrates that the students met the standard of success. Students performed best on questions 22, 23 and 24 on test 4 with 92.8% being the lowest score (scoring 97.9% and 94.8% on the other 2 questions). Since I was using scantrons to collect course data, I was only able to do an item analysis and couldn't track each student's performance across assessment questions. For future course assessment, I have pulled out assessment questions in Blackboard and added an alignment to the course learning outcome. This will allow me to match the data collection to the standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

On the whole, students understood what we were trying to teach them. While the students met the standard of success, an analysis of the individual questions showed that they didn't perform well on questions that were worded unclearly or in reverse of what might be expected. Students seemed to understand concepts of population and ethics. In addition, they were able to apply those concepts well when used later in the semester.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The quizzes and assessments have all been updated this summer for use in the future. We made sure that the questions aligned with the textbooks and course materials and that questions were clear and not intentionally misleading but had good distractors.

Outcome 2: Apply appropriate environmental science principles and concepts to analyze and interpret data such as maps, charts, diagrams, readings and graphs.

- Assessment Plan
    - Assessment Tool: Common test questions
    - Assessment Date: Winter 2020

- o Course section(s)/other population: Random selected sample based on 50% of the students in each section offered

- o Number students to be assessed: 50% from each section offered with a minimum of one full section

- o How the assessment will be scored: Multiple choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.

- o Standard of success to be used for this assessment: 75% of the students will correctly answer 75% of the outcome-related questions

- o Who will score and analyze the data: Appropriate environmental science faculty will assess the data

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
149	144

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the assessment test or research paper in all sections were included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All sections of ENV 105 were assessed.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Twelve different test questions were selected across four exams for the assessment. For each question, we identified the percentage of students who correctly answered each question. All outcome #2 questions were multiple choice. Because I used scantron data, I could only get an item analysis.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
Each question was analyzed and the number and percent of wrong answers was determined. Of the 12 questions 75% of the students correctly answered 11 (91.6%) of the questions. This demonstrates that the students met the standard of success. Students performed best on Test 1, question #4 (97.2%) and Test 4, question #15 (99%).   Since I was using scantrons to collect course data, I was only able to do an item analysis and couldn't track each student's performance across assessment questions. For future course assessment, I have pulled out assessment questions in Blackboard and added an alignment to the course learning outcome. This will allow me to match the data collection to the standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

On the whole, students understood what we were trying to teach them. On the whole, questions seemed to be clearly worded and students were able to appropriately interpret data. In addition, they were able to apply those concepts well when used later in the semester.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The quizzes and assessments have all been updated this summer for use in the future. We made sure that the questions aligned with the textbooks and course materials and that questions were clear and not intentionally misleading but had good distractors.

Outcome 3: Write a research paper based on an environmental topic covered in this course.

- Assessment Plan
    - o Assessment Tool: Research paper
    - o Assessment Date: Winter 2020
    - o Course section(s)/other population: Random selected sample based on 50% of the students in each section offered

- o Number students to be assessed: 50% from each section offered with a minimum of one full section

- o How the assessment will be scored: Essay will be scored using a departmentally-developed rubric

- o Standard of success to be used for this assessment: 75% of students will score a 2.5 (between acceptable and good) or above on a rubric scale of not acceptable (1), acceptable (2), good (3), and exemplary (4)

- o Who will score and analyze the data: Appropriate environmental science faculty will assess the data

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
149	125

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

The assessment looked at number of students who submitted the research paper. Of 146 students, 125 submitted the research paper.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in all sections of ENV 105 (DL and in person, as well as at extension center sites) were assessed.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To study the standard of success for outcome 3, we looked at the research paper scores for every student in every ENV 105 section. The scores are based on a common rubric to measure how well students apply concepts learned in the course to environmental issues.

It may be that the way papers are now graded is different from the way they are graded in the past. Currently, papers are graded out of 100 points, so it is possible

to receive 70%. To collect scores, I went into to ENV 105 Blackboard sites to count how many students were above or below the standard of success. For the future, I added an alignment to research paper submissions for assessment. When reviewing the Master Syllabus, I will update the standard of success to reflect how we currently grade research papers.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>

The results of the assessment demonstrate that 103 students (88.3% of students) met the standard of success for Outcome 3. However, of 146 students assessed, 21 students (or 14.4% of students never submitted a research paper).

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students who submitted research papers generally did very well with the assignment and applying concepts from the course. This is heartening because the research paper involves higher level thinking as outlined in Bloom's taxonomy.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Although the students that did submit research papers met the standard of success, many students didn't submit the assignment at all. Writing is a difficult skill for many students. Although we have implemented intermediate checkpoints (topic, outline, rough draft) for the paper, many students don't even submit the preliminary assignments leading up to the paper. It may be that many students have simply done the calculation that they can pass the class without writing the paper, and do not wish to take on writing.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

Per the previous assessment report action plan, the current assessment report broke down analysis by question. That was helpful in identifying questions that were worded unclearly, or unduly confusing.

The previous assessment report also recommended that there be a series of intermediate checkpoints leading up to submission of the final research paper. Some of these checkpoints have been helpful, they help students understand how best to structure their paper and clarify expectations. The papers that are submitted are, on the whole, very good.

Unfortunately, a large number of students (14.4%) never submit a paper at all. Many of them never complete the preliminary steps to turn in the paper (topic, outline, rough draft). It seems that many do the calculation that they will do okay in the class even without turning in the paper. At most, it knocks a student down one letter grade.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

Overall, ENV 105 is meeting the learning needs of students quite well. Students seem to enjoy the class and understand concepts being presented, despite some of them being complex. In our classes, we can see this in the discussions in the class and online- students having "aha" moments.

I did not realize that such a large percentage of students were not turning in their research papers. I knew there were maybe 1 or two in every section, but there was one section in which 8 (!) students out of 21 never turned in a paper.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

As a discipline, we regularly communicate by email on new scientific findings and course challenges. Once this assessment earns the approval of the committee, I will email out points from the assessment and action plan to be discussed with fellow ENV instructors.

4.
Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Previously for assessments, students had often seen assessment questions on a quiz before seeing them on an assessment. To get a more	We want to be sure we are assessing students' learning, not memorization of quiz answers.	2021

	accurate picture of students' learning, we plan to take assessment questions off of quizzes to be sure the students only see them once on exams.		
Assessment Tool	I will be working with CiTL to implement the Goals Tool in BlackBoard in order to collect and analyze the assessment data in a format that will allow me to verify that 75% of the students score 75% or higher on the outcome-related questions. This will simplify the process and improve our analysis.	The way I currently collect the data does not provide that level of detail. The scantrons only provide an item analysis, not the ability to identify the individual student's scores on each question.	2021
Course Assignments	I am debating this change and would like the chance to discuss with my ENV team: I am considering a requirement to mandate that students submit a research paper as a condition of passing the class.	I can see both pros and cons to this measure- which seems a bit extreme on the face of things. On the one hand, the paper is a really constructive way for students to synthesize their learning and apply it creatively. It forces them to think originally and critically. On the other hand, the paper is one of	2021

| | | many assignments in the class. If it causes a lot of stress and anxiety, a mandate to submit a paper may get in the way of the enjoying and interacting with the material in other ways. A mandate like that could also disadvantage ELL students, students with certain learning disabilities, or other students who have lacked access to strong academic writing instruction. Ultimately, it's not a writing class, it's an environmental science class. The paper is a means to an end, not an end in itself.

So, this is something that requires a good deal of thought and discussion before adopting. If we do, we will not do it lightly. | |

5. Is there anything that you would like to mention that was not already captured?

According to the publisher, we anticipate that an updated edition of the textbook will be issued in 2022. This will be 8 years after the current edition was first published (in 2014). Many environmental science topics have changed, but we have continually updated teaching to reflect real world changes and developments.

III. Attached Files

Faculty/Preparer: Smita Malpani **Date:** 10/22/2020
Department Chair: Suzanne Albach **Date:** 10/26/2020
Dean: Victor Vega **Date:** 11/17/2020
Assessment Committee Chair: Shawn Deron **Date:** 02/10/2021

Discipline	Course Number	Title
Environmental Science	105	ENV 105 09/26/2017- Introduction to Environment and Society
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Suzanne Albach
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Recognize and identify introductory principles and concepts involving the relationships between individuals, societies and the environment.

- Assessment Plan

    o Assessment Tool: Departmental Exams

    o Assessment Date: Fall 2016

    o Course section(s)/other population: Random selected sample based on 50% of the students in each section offered.

    o Number students to be assessed: 50% from each section offered.

    o How the assessment will be scored: Multiple choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.

    o Standard of success to be used for this assessment: Students will score an overall average score of 72.5% or better on each assessment question.

    o Who will score and analyze the data: Appropriate environmental science faculty will assess the data.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2017	2017

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed

131	114

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Seventeen students were excluded from this assessment for various reasons, including withdrawal and failure to complete the semester (stopped attending).

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

Six sections were included, which represents all four sections that ran in Winter 2017 and the two sections that ran during Spring/Summer 2017. The Winter 2017 sections included 15-week, full-term sections that ran late-morning until early evening. The Spring/Summer 2017 sections were shortened-terms, running 10 and 12 weeks, with the former running in the evening and the latter running in the late morning.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

The current master syllabus for this course states that we will use 50% of the students from each section offered over these two terms, with students scoring an overall average score of 72.5% or better on the departmental exam. Multiple-choice questions were assessed using an answer key and short answer and essay questions were scored using departmentally-developed rubrics. Again, all students that finished the semester were included, and all questions from the department exam were included in this assessment.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>

Our data shows that these students achieved an overall average score of 85.8% on Assessment (Exam) One, 88.3% on Assessment (Exam) Two, 91.4% on Assessment (Exam) Three, and 90.3% on Assessment (Exam) Four. Students from the Winter 2017 sections scored an average of 86.5%, 88.1%, 91.8%, and 89.3% on the four exams, respectively. Students from the Summer 2017 shorter-term sections scored an average of 84.3%, 88.8%, 90.6%, and 92.2% on the four exams, respectively. There was no appreciable difference noticed between times of classes or length of term.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students did very well overall on the exams and the data shows that students scored an overall average of 85.8% on Exam 1, 88.3% on Exam 2, 91.4% on Exam 3, and 90.3% on Exam 4. Regardless of the length of the course, the semester, or even times of day, we found consistent results that showed students were meeting our standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

While we did meet our standard of success, it would be helpful to obtain and compare data on which specific questions students struggled with. Identifying any common areas would allow us to see where instruction can be further emphasized to improve the overall success rate for that material.

Outcome 2: Apply appropriate principles and concepts to analyze and interpret data such as maps, charts, diagrams, readings and graphs.

- Assessment Plan

    o Assessment Tool: Departmental Exams

    o Assessment Date: Fall 2016

    o Course section(s)/other population: Random selected sample based on 50% of the students in each section offered.

    o Number students to be assessed: 50% from each section offered.

    o How the assessment will be scored: Multiple choice questions will be scored using the answer key. Essay and short answer questions will be scored using a departmentally-developed rubric.

    o Standard of success to be used for this assessment: Students will score an overall average score of 72.5% or better on each assessment question.

    o Who will score and analyze the data: Appropriate environmental science faculty will assess the data.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2017	2017

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
131	114

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Seventeen students were excluded from this assessment for various reasons, including withdrawal and failure to complete the semester (stopped attending).

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

Six sections were included, which represents all four sections that ran in Winter 2017 and the two sections that ran during Spring/Summer 2017. The Winter 2017 sections included 15-week, full-term sections that ran late-morning until early evening. The Spring/Summer 2017 sections were shortened-terms, running 10 and 12 weeks, with the former running in the evening and the latter running in the late morning.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

The current master syllabus for this course states that we will use 50% of the students from each section offered over these two terms, with students scoring an overall average score of 72.5% or better on the departmental exam. Multiple-choice questions were assessed using an answer key and short answer and essay questions were scored using departmentally-developed rubrics. Again, all students that finished the semester were included, and all questions from the department exam were included in this assessment.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

Our data shows that these students achieved an overall average score of 85.8% on Assessment (Exam) One, 88.3% on Assessment (Exam) Two, 91.4% on Assessment (Exam) Three, and 90.3% on Assessment (Exam) Four. Students taking the Winter 2017 sections scored an average of 86.5%, 88.1%, 91.8%, and 89.3% on the four exams, respectively. Students taking the Summer 2017 shorter-term sections scores an average of 84.3%, 88.8%, 90.6%, and 92.2% on the four

exams, respectively. There was no appreciable difference noticed between times of classes or length of term.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students did very well overall on the exams and the data shows that students scored an overall average of 85.8% on Exam 1, 88.3% on Exam 2, 91.4% on Exam 3, and 90.3% on Exam 4. Regardless of the length of the course, the semester, or even times of day, we found consistent results that showed students were meeting our standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

While we did meet our standard of success, it would be helpful to obtain and compare data on which specific questions students struggled with. Identifying any common areas would allow us to see where instruction can be further emphasized to improve the overall success rate for that material.

While the exam results are one method, another useful means to ensure students are meeting our standard of success for this outcome would be to include data from the activities completed in this course. When we look at this data (see attached), we find that students overall scored an average of 98.3% on Activity One, 83.2% on Activity Two, 84.9% on Activity Three, 88.3% on Activity Four, 88.4% on Activity Five, 88.8% on Activity Six, 79.3% on Activity Seven, 71.5% on Activity Eight, 82.6% on Activity 9, 81.7% in Activity 10, 92.3% in Activity 11, and 92.3% in Activity 12. The percentages do include zeroes, for students that did not complete the assignments. Of the 114 students assessed, 2 missed Activity One, 11 missed Activity Two, 12 missed Activity Three, 8 missed Activity Four, 10 missed Activity Five, 8 missed Activity Six, 16 missed Activity Seven, 28 missed Activity Eight, 13 missed Activity Nine, 17 missed Activity Ten, 7 missed Activity 11, and 9 missed Activity 12.

Activities are sometimes completed in class, and sometimes completed for homework. The purpose of the activities is to provide students with a chance to apply appropriate principles and concepts to analyze and interpret data in the course. So, the completion of these activities is important to helping the students learn the concepts covered in class. Across the sections assessed, we found that an average of 10.2% of assignments were not completed, overall. Comparing semesters, we found that winter sections had a 9.7% non-completion rate and summer sections had a 11.4% non-completion rate. Because the percents of non-completion are very close, we do not believe that the length of term is a huge factor. Instead, more analysis should be done on the individual assignments to see why certain assignments, like Activity 8 (see attached) had such a high non-

completion rate compared to other assignments. This could be due to the fact that students needed to attach images, or perhaps they were not fully understanding the assignment. It could be due to the time of the semester (mid-terms). Instructors should be aware of this, and other assignments that have shown low completion rates, to try to improve the completion rate.

Outcome 3: Write a research paper based on an environmental topic covered in this course.

- Assessment Plan

  - Assessment Tool: Research Paper

  - Assessment Date: Fall 2016

  - Course section(s)/other population: Random selected sample based on 50% of the students in each section offered.

  - Number students to be assessed: 50% from each section offered.

  - How the assessment will be scored: Essay will be scored using a departmentally-developed rubric.

  - Standard of success to be used for this assessment: 75% of students will score a 2.5 (between acceptable and good) or above on a rubric scale of not acceptable (1), acceptable (2), good (3), and exemplary (4).

  - Who will score and analyze the data: Appropriate environmental science faculty will assess the data.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2017	2017

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
131	114

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Seventeen students were excluded from this assessment for various reasons, including non-attendance, withdrawal, or not completing the items included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

Six sections were included, which represents all four sections that ran in Winter 2017 and the two sections that ran during Spring/Summer 2017. The Winter 2017 sections included 15-week, full-term sections that ran late-morning until early evening. The Spring/Summer 2017 sections were shortened-terms, running 10 and 12 weeks, with the former running in the evening and the latter running in the late morning.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

The current master syllabus for this course states that we will use 50% of the students from each section offered over these two terms, with 75% of students scoring a 2.5 (between acceptable and good) or above on a rubric scale of not acceptable (1), acceptable (2), good (3), and exemplary (4). Because individual rubrics were not saved after they were returned to the students, assessing the research papers as defined in the master syllabus was not possible. Instead, we looked at the overall average percentage earned on these papers over the six sections. To compare, we calculated that achieving at least 2.5 points out of 4 points equates to 62.5%, so we looked at course data (see attached document) to determine the individual course averages, the term averages, and the overall average for all sections within these two terms, and for all students assessed.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>

The overall average on the research paper assignment for all sections (see attached document) was 77.5%. And, I also looked at semester averages (see attached document) and found the average score for Winter 2018 was 78% and the average score for Spring/Summer 2018 was 76.7%. So, there was no appreciable difference between terms, or courses with different lengths. We also looked at individual sections, with averages across the six sections as 75.2%, 66.6%, 80.6%, 89.4%, 72.1%, and 81.4%. It is worth noting that these averages include zeroes, where six students of the 114 total assessed students did not complete the research paper. Removing these zeroes brings the overall average to 81.9%. In either measure, we found the students met this measure of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students did very well overall on the research paper assignment and the data shows that students scored an overall average of 77.5%, showing that students were meeting our standard of success. In comparing the longer terms of the winter semester to the shorter terms of the summer semester, our data showed the winter term students obtained an overall average of 78%, while the shorter-term students in the summer sections scored an overall average of 76.7%.

It is worth pointing out that these numbers are skewed lower because there were six students that did not complete the research paper assignment. When we take those zeroes out, we find an overall average of 81.9%, with a winter semester average of 81.1%, and a summer semester average of 83.6%.

Even with the zeroes in place, we still found the data showing that we met this standard of success, but removing those zeroes gives us a better look at the success rate for those students that completed the paper.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

We actually have done quite a bit since the course was introduced to improve student success on the research paper assignment, and the success rates are supporting these efforts. For example, we have added several "check points" to keep students on track. Students are required to submit their research paper topic as a first step, then the course concepts covered and outline as a second step, and then a draft paper, all by specified dates. In addition, we have included sample copies of the research paper, guidelines to research paper writing, and posted information for use of the WCC Writing Center. All of these efforts have significantly increased our student success rates on this outcome.

To continue to improve upon this success rate, it would be helpful to keep copies of the graded rubrics to compare strengths and weaknesses within this paper. Identifying the specific weaknesses in this way can help us to find more resources and methods to improve any areas where we find students falling short.

II. Course Summary and Action Plans Based on Assessment Results

1. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

Overall, we are very happy that students are meeting all of the course objectives and outcomes. The assessment process really shows us that more information is needed on specific areas, such as looking more closely at the rubric data for the research papers, as well as taking another look at assignments with low

completion rates. In doing so, we can ascertain where more instruction may be needed, or where directions on these assignments can be improved.

2. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The summary report with data has already been sent to all the faculty teaching this course.

3.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Outcome two should be changed to be measured by both the departmental exams as well as using data from the course assignments.	The assignments are an integral part of applying the concepts learned in class and should be analyzed as they directly relate to the ultimate success of this outcome, as measured by the departmental exams.	2018
Assessment Tool	Rather than viewing the overall averages for exams, an item analysis of the common test questions will be utilized for the next assessment report.	By looking at individual common exam questions, we will be better able to identify specific areas of weakness or exam questions that might benefit from being revised.	2019
Assessment Tool	For the next assessment, instructors will be required to keep copies of individual rubrics for the research paper (Outcome 3).	By analyzing the individual student rubrics, we can better identify and address any areas of weakness, rather than relying on overall averages to determine the success of this outcome.	2019

Course Assignments	Directions for assignments with lower participation rates will be analyzed to determine if improving the language will help improve completion rates. In addition, the assignments showing lower participation rates will be given more time for in-class review of that assignment to allow students to have a better understanding of the directions.	It is our hope that these modifications will help increase the completion rate for all assignments, since we believe that these assignments play an integral role in understanding and applying the course material and objectives.	2018

4. Is there anything that you would like to mention that was not already captured?

> Big thanks go out to Robert Powell and Steven Barone, part-time instructors that taught the sections assessed in this report, for their help in obtaining the data for this report!

III. Attached Files

Course Data
Research Paper Rubric
Sample Activity
Sample Assessment (Exam) Questions
Activity 8

Faculty/Preparer:	Suzanne Albach	**Date:**	09/28/2017
Department Chair:	Kathleen Butcher	**Date:**	10/05/2017
Dean:	Kristin Good	**Date:**	10/11/2017
Assessment Committee Chair:	Michelle Garey	**Date:**	11/28/2017