School of Engineering
Annual Program Report of Assessment of Student Learning Outcomes

Part I: Cover Page

Title of Degree or Certificate Program	**Degree Level** *(Certificate, Associate, Bachelors, Master's, etc.)*
Construction Management	Bachelors

Name of Academic Department: Civil, Construction & Environmental Engineering

Name of College/School/Branch: School of Engineering

Academic Year/Assessment Period: 2021-2022

Submitted By (include email address): Susan Bogus Halter, sbogus@unm.edu

Date Submitted to College/School/Branch for Review: January 25, 2023

Date Reviewed by College Assessment and Review Committee (CARC) or the equivalent:

State whether ALL of the program's student learning outcomes (SLOs) are targeted/assessed/measured within one year, two years, OR three years:

Each SLO is assessed annually

If the program's SLO's are targeted/assessed/measured within two years or three years, please state whether this assessment record focuses on SLOs from the first year, second year, or third year:

N/A

Part II: Assessment Report

What Student Learning Outcomes were assessed during this reporting period? List in the table below.

For each SLO, indicate in the table how the SLO was assessed, briefly indicate what results were obtained, what analysis of the data indicated with regard to student learning, and what recommendations have been made regarding the program curriculum.

Student Learning Outcome		**Assessment Measures incl. Measure Type (Direct or Indirect)**	**Performance Benchmark**	**Results**	**Analysis**	**Recommendations for Improvement/ Changes from Instructors**
1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.		Course work - Direct	All course-related assessments use a three-scale rubric as follows: 3 (Exemplary), 2 (Satisfactory), 1 (Unsatisfactory). Target levels for outcomes attainment have been established as 75% of students assessed as 2 or better	The results of the assessment in CE 371 indicate that 87% of students (13/15) were assessed as "2" or better. The results of the assessment in CE 376 indicate that 94% of students (15/16) were assessed as "2" or better. The AIC Level 1 Exam results indicate that UNM students passed the exam at a similar rate (within 5%) as the national average in Fall 2021 and below (more than 5% below) in Spring 2022.	This outcome was partially attained	(AIC exam) Reconsider continued use of exam for future assessments; other exams exist including CMAA

2. An ability to formulate or design a system, process, procedure or program to meet desired needs.		Course work - Direct	(see above)	The results of the assessment in CE 377 indicate that 82% of students (9/11) were assessed as "2" or better. The results of the assessment in CE 497L (Fall 2021) indicate that 100% of students (6/6) were assessed as "2" or better. The results of the assessment in CE 497L (Spring 2022) indicate that 100% of students (7/7) were assessed as "2" or better.	This outcome was attained.	None.
3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.		Course work - Direct	(see above)	The results of the assessment in CE 305 indicate that 100% of students (4/4) were assessed as "2" or better. The results of the assessment in CE 370 indicate that 100% of students (8/8) were assessed as "2" or better.	This outcome was attained.	

4. An ability to communicate effectively with a range of audiences.		Course work - Direct	(see above)	The results of the assessment in CE 370 indicate 100% of students (8/8) were assessed as “2” or better. The results of the assessment in CE 497L (Fall 2021) indicate that 100% of students (7/7 were assessed as “2” or better. The results of the assessment in CE 497L (Spring 2022) indicate that 100% of students (6/6) were assessed as “2” or better.	This outcome was attained	(CE 370) Add individual technical writing assignment to course. Distribute rubric for evaluating written report. (CE 497L) One crucial aspect to consider for this class is to improve the communication between industry mentors, students, and the instructor. One way of doing this is to engage the mentors in activities during the semester, such as seminars, panel discussions, and brainstorming sessions. I provided extensive feedback to students about writing and presentation skills, and it was clear to me that they improved in each deliverable. (CE 497L) Instructor should provide detailed feedback on writing assignments.

5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.		Course work - Direct	(see above)	The results of the assessment in CE 350 (Fall 2021) indicate that 100% of students (4/4) were assessed as “2” or better. The results of the assessment in CE 350 (Spring 2022) indicate that 60% of students (3/5) were assessed as “2” or better. The results of the assessment in CE 478 indicate that 73% of students (8/11) were assessed as “2” or better. The results of the AIC Level 1 Exam indicate that 50% (Fall 2021) and 56% (Spring 2022) of UNM students were evaluated as proficient (indicated by “not weak” in the results).	This outcome was partially attained	(CE 350) Specifically tie ethical and professional behavior to considering the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. Add objective assessment(s). (CE 478) Give a homework assignment specifically addressing the global, economic, and societal impacts of technical and/or scientific solutions and their ethical impacts. Add objective assessment tool(s).

6. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.		Course work - Direct	(see above)	The results of the assessment in CE 160 (Fall 2021) indicate that 67% of students (2/3) were assessed as “2” or better. The results of the assessment in CE 160 (Spring 2022) indicate that 90% of students (6/9) were assessed as “2” or better. The results of the assessment in CE 497L (Fall 2021) indicate that 100% of students (7/7) were assessed as “2” or better. The results of the assessment in CE 497L (Spring 2022) indicate that 83% of students (5/6) were assessed as “2” or better.	This outcome was partially attained	(CE 160) The sample size is small for this assessment – only nine students in the construction management program. Of the three students who received the unsatisfactory grade, two of them did not show any effort for the group project throughout the process and may give up the course in the middle of the semester.

Indicate where your assessment plan and the full set of assessment data from this year for this program can be accessed.

The assessment plan and data are currently stored on the Civil Engineering Department server.

Based on the results and analysis provided for the student learning outcome(s) listed in the table above, for EACH student learning outcome, please state if the outcome was met, partially met, or not met. Briefly explain why:

Student Learning Outcome		**Results**
1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.		Outcome partially met
2. An ability to formulate or design a system, process, procedure or program to meet desired needs.		Outcome met
3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.		Outcome met
4. An ability to communicate effectively with a range of audiences.		Outcome met
5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.		Outcome partially met
6. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.		Outcome partially met

Based on this year's assessment, what suggestions do you have for changes to the assessment process or the SLOs for your program?

The following table tracks progress on suggestions made in previous years as well as those identified based on this year's assessment. CCEE faculty met on December 7, 2022, to agree on the status of these suggestions and to identify new suggestions.
(Note: Item ID in the following table indicates the academic year that the original suggestion was made)

Item ID	**Suggestion**	**Summary of Activity**	**Status**
18-19-S1	Faculty teaching courses with outcomes assessment responsibilities should review the outcome(s) and design assessment tool(s) before the course begins	Courses identified for assessments are presented to faculty at the start of each academic year	Ongoing (faculty agreed that this should stay on list)

18-19-S2	Provide regular reminders to faculty about assessment responsibilities (e.g., annual retreat in fall semester; monthly faculty meetings)	Accreditation update is scheduled into the annual retreat and each monthly faculty meeting	Ongoing (faculty agreed that this should stay on list)
21-22-S1	Notify students during advising and add a note on advising curriculum sheets for all undergraduate degree programs that FE (engineering programs) or AIC (construction management program) exams are required for graduation	New item. This replaces suggestion 20-21-S1.	
21-22-S2	Undergraduate committee should review timing of assessments (annually vs. every 3 years), considering whether students are meeting the outcomes. Suggest this be done Fall 2023.	New item	

Describe any changes to the assessment plan or the SLOs that are in progress based on this year's or previous year's assessment.

None

List what groups (committees, faculty meetings, department leadership, etc.) within your program reviewed the assessment results either from the current year, or from previous years, during the current academic year.

Civil Engineering Faculty: 2021-2022 assessment results reviewed by faculty and recommendations discussed and approved December 7, 2022

Describe any curricular or course changes that are currently in progress based either on this year's assessment, or on previous year's assessment results.

The following table tracks progress on curricular and course changes identified in previous years as well as those identified based on this year's assessment. CCEE faculty met on December 7, 2022, to agree on the status of these suggestions and to identify new suggestions. (Note: Item ID in the following table indicates the academic year that the planned change was identified)

Item ID	Change	Summary of Activity	Status
18-19-C1	We are in the process of revising the BSCM curriculum based on several factors, including UNM's changes to the General Education Curriculum requirements, the State of New Mexico's move to a common course numbering system, and the program's shift from ACCE accreditation to ABET-ANSAC accreditation.	Curriculum revision has been submitted for UNM review and approval; awaiting approval from Faculty Senate	Completed (remove in next year's report)
18-19-C4	To strengthen compliance with Outcome 4, ask Advisory Board members and other industry professional for a variety of professional writing examples that we can share with students; inform students of writing assistance available at CAPS (item moved from previous table to this table because it relates to course changes)	Faculty are saving examples from CE 499/497 reports to share with future students; examples have also been saved from CE 160 and students can relate well to these student examples; still need to pursue examples from industry; several classes (CE 160, CE 350, etc) are providing information on CAPS	Ongoing (faculty agreed that these efforts should continue)
19-20-C1	Due to COVID-19, faculty have had to move to virtual instruction. Faculty should continuously work to improve their online instruction techniques.	UNM maintains online faculty support resources	Completed (remove in next year's report)
19-20-C2	All faculty teaching courses in AIC exam topics should review the exam topics each year	Faculty agree that this should be an ongoing effort	Ongoing (faculty agreed that these efforts should continue)
19-20-C3	Faculty teaching courses used for assessing ethics should review the AIC exam ethics topic areas each year	Faculty agree that this should be an ongoing effort	Ongoing (faculty agreed that these efforts should continue)

21-22-C1	Schedule a faculty meeting in spring semester to discuss AIC exam effectiveness for assessment and possible alternatives	New item	
21-22-C2	Undergraduate committee should lead effort to review course prerequisites and program restrictions	New item	

Describe your plans for assessment of student learning during the upcoming academic year.

Continue to collect data from courses using current SLOs and AIC exam results.