

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

Part I: Cover Page

<u>Title of Degree or Certificate Program</u>	<u>Degree Level</u> <i>(Certificate, Associate, Bachelors, Master's, etc.)</i>
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): Jose Cerrato, jcerrato@unm.edu

Date Submitted to College/School/Branch for Review: November 28, 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
<p>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.</p>	<p>Course work - Direct</p>	<p>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</p>	<p>The results of the assessment in CE 371 (Spring 2023) indicate that 88% of students (8/9) were assessed as “2” or better.</p> <p>The results of the assessment in CE 376 indicate that 100% of students (12/12) were assessed as “2” or better.</p>	<p>This outcome was attained</p>	<p>(CE 371, CE 376) None.</p> <p>(AIC exam recommendation from 2021-2022) Reconsider continued use of exam for future assessments; other exams exist including CMAA</p> <p>CE Faculty. Will work on getting results for AIC Exam.</p>

<p>2. An ability to formulate or design a system, process, procedure or program to meet desired needs.</p>	<p>Course work - Direct</p>	<p>(see above)</p>	<p>The results of the assessment in CE 377 (Spring 2023) indicate that 100% of students (10/10) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Fall 2022) indicate that 100% of students (2/2) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Spring 2022) indicate that 100% of students (7/7) were assessed as “2” or better.</p>	<p>This outcome was attained.</p>	<p>None.</p>
<p>3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.</p>	<p>Course work - Direct</p>	<p>(see above)</p>	<p>The results of the assessment in CE 305 (Fall 2022) indicate that 100% of students (14/14) were assessed as “2” or better.</p> <p>The results of the assessment in CE 370 (Fall 2022) indicate that 45% of students (5/11) were assessed as “2” or better.</p>	<p>This outcome was partially attained.</p>	<p>(CE 370) Provide more opportunities for students to practice productivity and cost analysis for heavy equipment usage.</p>

<p>4. An ability to communicate effectively with a range of audiences.</p>	<p>Course work - Direct</p>	<p>(see above)</p>	<p>The results of the assessment in CE 370 (Spring 2023) indicate 91% of students (10/11) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Fall 2022) indicate that 100% of students (2/2) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Spring 2023) indicate that 100% of students (7/7) were assessed as “2” or better.</p>	<p>This outcome was attained.</p>	<p>(CE 370) Add individual technical writing assignment to course. Distribute rubric for evaluating written report.</p> <p>(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.</p> <p>(CE 497L) Instructor should provide detailed feedback on writing assignments.</p> <p>CE Faculty. Encourage a presentation</p>
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					combining storyboard and PowerPoint slides to improve communication of ideas for the project in capstone class. Consider including a poster in other public meetings to improve public presentation skills.
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)	<p>The results of the assessment in CE 350 (Fall 2022) indicate that 55% of students (5/9) were assessed as “2” or better.</p> <p>The results of the assessment in CE 350 (Spring 2023) indicate that 100% of students (2/2) were assessed as “2” or better.</p> <p>The results of the assessment in CE 478 (Fall 2022) indicate that 70% of students (7/10) were assessed as “2” or better.</p>	This outcome was partially attained	<p>(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.</p> <p>(CE 478) None. Assessment scores of 1 resulted from one of the assignments not being submitted by the students.</p>

<p>6. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.</p>	<p>Course work - Direct</p>	<p>(see above)</p>	<p>The results of the assessment in CE 160 (Fall 2022) indicate that 87% of students (7/8) were assessed as “2” or better.</p> <p>The results of the assessment in CE 160 (Spring 2023) indicate that 87% of students (7/8) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Fall 2022) indicate that 100% of students (2/2) were assessed as “2” or better.</p> <p>The results of the assessment in CE 497L (Spring 2023) indicate that 100% of students (7/7) were assessed as “2” or better.</p>	<p>This outcome was attained</p>	<p>(CE 160) None.</p> <p>(CE 497) None.</p> <p>CE Faculty: Consider adding a Team dynamic module at the beginning of CE 160 and capstone classes.</p>

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.	This outcome was attained
2. An ability to formulate or design a system, process, procedure or program to meet desired needs.	This outcome was attained
3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.	This outcome was partially attained
4. An ability to communicate effectively with a range of audiences.	This outcome was attained
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.	This outcome was partially attained
6. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.	This outcome was attained

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 October 4, 2023, 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)
19-20-S1	Continue use of FE exam and AIC exam for assessment purposes (Note: the requirement for these exams has been waived in 2020 due to COVID-19)	New item, no activity to report at this time	Ongoing
20-21-S1	Add a note for students in all undergraduate degree programs that FE (engineering programs) or AIC (construction management program) exams are required for graduation	This replaces suggestion 19-20-S1.	Ongoing
22-23-S1	Undergraduate committee will review the use of using CE 377 to review outcomes 2.		
22-23-S2	UG Committee will consider moving to a three-year assessment cycle instead of a one-year assessment cycle. First Year: Collection Second Year: Analyses Third Year: Implementation	Initially proposed in Undergraduate Committee Meeting. Pending discussion with the faculty.	Ongoing

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 October 4, 2023.

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 October 4, 2023, 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	Ongoing (awaiting UNM Faculty Senate approval)
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.	New item, no activity to report at this time	Ongoing
19-20-C2	All faculty teaching courses in AIC exam topics should review the exam topics each year	New item, no activity to report at this time	Ongoing

19-20-C3	Faculty teaching courses used for assessing ethics should review the AIC exam ethics topic areas each year	New item, no activity to report at this time	Ongoing
22-23-C1	No new recommendations		

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.