

Civil and Environmental Engineering

Annual Program Report Template

Year:	2022 (Submitted March 2023)
Program:	Bachelor of Science in Civil Engineering
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Summary of Continuous Improvement Efforts since Last Report

Provide a brief description of how assessment results have been used for program improvement. Point to a specific example of how an assessment provided the program with data it could use for improvement and what that improvement was, if possible, also show evidence of the improvement. You may look at data from the two previous academic years to support this case.

Respond here:

SLO: Students must have an ability to recognize ethical responsibilities in engineering situations and make informed judgments, which much consider the impact of engineering solutions n global, economic, environmental, and social contexts.

Assessment: The desired level of performance was measured in aggregate using assessments from two courses and the Fundamentals of Engineering (FE) exam results. The outcome was met over an aggregated set of criteria (70% of the students will achieve at least 3.0/4.0). However, the performance of students on e sub-indicator performances (CVEN 4110 and CVEN 4313 class assessments) was noted to be lower than the 70% target.

Improvement: . A new case-study was added in CE 4111 (Professional Seminar) to help students further analyze ethical and professional responsibilities and explore these issues more carefully in Fall 2022.

Program Highlights Since Last Report

Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course deletions).

Respond here:

An overall assessment of our degree plan and course offers were undertaken in Fall 2022. The following changes were made:

CVEN 3311: Introduction to Environmental Engineering –

- Added 2 in class demonstrations to further clarify concepts of concentrations in various environmental media.
Added 2 laboratories to explain reaction kinetics in a batch reactor and interphase mass-transfer in a river (plug flow reactor).
- Students were introduced to low cost sensors for environmental monitoring including temperature, salinity, and volatile organic compounds.

CVEN 53xx Courses:

- The practice of using 5000 level (graduate) courses as senior level electives as limited only to those students who are admitted into the 4+1 degree program or have a senior standing with a GPA of 3.0 or higher effective Fall 2023.

CVEN 4375: GIS and Geospatial Analysis for Civil Engineering Applications

- A new undergraduate elective in GIS was developed and will be offered in Fall 2023. The course has received approvals at the college and UUCB committees and awaiting final approval from the Board of Regents.

Table 1. Assessment Results and Analyses for Current Cycle.

STAGE 1: PLAN				STAGE 2: DO		STAGE 3: STUDY
Departmental Student Learning Goal	Program Student Learning Outcome	Assessment	Assessment Method/Location	Benchmark Expectations	Data Results	Actions/Goals Based on Data Results* What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes?
Understand the role of engineering ethics in civil engineering and able to make informed and ethically consistent judgments.	1.1 An ability to Recognize ethical responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal context (ABET Outcome 4)	Direct and Indirect	Indirect: Graduating Students will be given an exit survey to gauge their self efficacy related to the student outcome. Direct: Assignments and projects in CVEN 4111 Professional Seminar; CVEN 4312: Senior Design; Pass Rate on Fundamentals of Engineering Seminar.	70% of the students will achieve a 3.0/4.0 or higher	100% of the students self-reported a score above 3.0 (avg 4.73 and 4.3) The target threshold was met in aggregate. The performance on 3 sub-assessments were met at 68%; 64% and 100%	A new and relevant case study was added to the course for the students to analyze ethical and professional responsibilities. The new case study will allow the students to explore these issues more carefully which should lead to improved performance assessed
Recognize the professional responsibilities of civil engineers	1.2 an ability to recognize professional responsibilities in engineering situations and make informed		Indirect Evidence: Graduating Students will be given an exit survey to gauge their self	70% of the students will achieve a 3.0/4.0 or higher	The target threshold was met. 100% of the students self-reported a score higher than 3.0.	No improvements were deemed necessary at this stage based on the results of the evaluation.

	judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.		<p>efficacy related to the student outcome.</p> <p>Direct Evidence: Assignments and Projects in CVEN 4313 Senior Design II course</p>		The target threshold was met. 100% of the students had scores above 3 (average 3.46)	
Ability to work collaboratively and in groups to accomplish required engineering tasks	1.3 an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	Direct and Indirect	<p>Indirect: Graduating Students will be given an exit survey to gauge their self efficacy related to the student outcome.</p> <p>Direct: Project based assignments in CVEN 1201 and CVEN 4110</p>	The desired level of performance for Outcome 7 in a collective assessment is that 75% of students in the program will achieve 3.0/4.0 or higher.	<p>The student learning outcome was met with 100% of the students self-reporting scores of 3.0 or higher.</p> <p>Student performance was met in aggregate over two courses. CVEN 4110 had exceedances of 82% and 68% and CVEN 1201 had exceedances of 100% and 86%</p>	No improvements were deemed necessary at this stage.

Table 2. Continuous Improvement Results Since Last Report

Stage 4: ACT		
Actions/Goals Based on Data Results <i>*Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.</i>	Status <i>C=Complete P=Progressing N=No Action Taken</i>	Discussion of Status <i>If C, describe efforts that led to accomplishment of actions/goals. If P, provide update on progress made toward accomplishing actions/goals and what tasks remain If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.</i>
Develop and add a new case-study to CVEN 4110 Professional Seminar Course (Goal 1 from BS Civil Engineering Report 2021-2022)	C	The case-study has been developed and implemented in Fall 2023
Adding inclass demonstrations to CVEN 3311 Introduction to Environmental Engineering (new goal reflecting new faculty addition)	C	Several inclass demonstrations were added to improve student's understanding of basic concepts.
Addition of 2 laboratoies 1) Reaction Kinetics in a batch reactor and 2) Interphase mass transfer in a plugflow reactor (new goal reflecting new faculty addition)	P	Preliminary setups have been completed. Low cost sensors were used to measure concentrations. HEF funds will be used to upgrade the labs through procurement of a UV-VIS spectrophotometer.
Demonstration of low cost sensors for environmental monitoring (new goal reflecting new faculty addition)	C	Added several demonstrations of low cost sensors for measurement of environmental variables.
Limit 5000 level graduate courses to students in 4+1 GPA or meeting graduate school admission requirements	P	This policy has been approved at the department and is progressing through required committees to make the change effective.
CVEN 4375 GIS and Geospatial Analysis in Civil Engineering Applications	P	New course has been developed for being offered as a elective. Awaiting final approval from the Board of Regents.