Civil Engineering BSCE
Program Mission Statement

Mission Statement (Full Description):
To prepare students for a leadership career in civil engineering by providing technical and professional training that enables graduates to contribute to society through creative, sustainable solutions, research-based education, and implementation of cutting-edge technology.
Courses are taught at Dallas main campus with a few options in Taos and Rwanda.
CEE undergraduate courses are delivered in-person, there are no distance sections.

Does your program offer courses at an off-campus instructional site (not at SMU Dallas campus)?:
Yes

Does your program offer courses through distance education technology (e.g., asynchronous, synchronous, or both)?:
No

During which academic year were students first enrolled in this program?:
Prior to AY2022-2023

Progress:
Complete

ABET-EAC SO#1: Problem Solving

Step 1A: SLO Number:
1

Step 1C: SLO Statement (Full Description):
An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Identify complex engineering problems
b. Formulate complex engineering problems by applying principles of engineering, science, and math
c. Solve complex engineering problems by applying principles of engineering, science, and math

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Commented [SS1]: Suggestions for Improvement
1.**Align with SMU's Institutional Goals**: Connect the mission to SMU's broader values, such as promoting sustainability, fostering innovation, or contributing to community welfare, to reinforce the program's relevance to the university's mission.
2.**Highlight Distinctive Program Features**: Describe unique aspects of the Civil Engineering program, such as fieldwork, research opportunities, or partnerships with industry and government, to make the mission statement more attractive to prospective students and better reflect the program's strengths.
3.**Clarify Commitment to Sustainable Solutions**: Specify how the program addresses sustainability, such as through coursework, research projects, or practical training, to strengthen the mission's focus on this critical area.

Template
The mission of the Civil Engineering program at **Southern Methodist University (SMU)** is to prepare students for leadership careers in civil engineering by providing advanced technical and professional training. The program emphasizes creative and sustainable solutions, research-based education, and the implementation of cutting-edge technology to address societal needs.
In alignment with **SMU's** commitment to **[community impact, sustainability, and innovation]**, the Civil Engineering program offers unique learning experience ...

Commented [SS2]: Include some of the details of the measure and add a time bound component.
Suggested Template
By the end of the term, students will demonstrate the ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. This includes:
- Accurately identifying engineering challenges, such as **[environmental impact, structural integrity, or materials selection]**.
- Formulating effective solutions based on **[engineering principles, scientific theories, and mathematical models]**.
- Solving complex problems with a focus on technical accuracy and practical application.

Student work will be assessed three times during the term (beginning, middle, and end) using the attached rubric. Students are rated as Exemplary (4), Satisfactory (3), Developing (2), or Unsatisfactory (1) on performance indicators:
- **a. Identify** complex engineering problems.
- **b. Formulate** solutions by applying principles of engineering, science, and math.
- **c. Solve** engineering problems using appropriate technical skills.

The assessment utilizes various tools, including **[document analysis, essay exams, projects, and presentations]**. The target is for **80% of students** to ...

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
CEE student outcome assessment is on a two year cycle. This outcome was assessed last year and will be assessed again next year.

Step 4C: Interpretation of Results:
N/A this year.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A this year.

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A this year.

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A this year.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A this year.

Step 6B: Status Update on Previously Identified Action Plan(s):

Progress:
Complete

ABET-EAC SO#2: Design

Step 1A: SLO Number:
2

Step 1C: SLO Statement (Full Description):
An ability to apply the engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

Commented [SS3]: Specify Types of Engineering Problems: Define specific types of problems, such as environmental challenges or structural design issues, to make the SLO more relevant and focused for students.
Establish Performance Benchmarks: Set a target, such as 80% of students achieving a "Satisfactory" or "Exemplary" rating by the end of the term, to provide a measurable basis for evaluating program success.
Add a Time-Bound Component: State that students are expected to demonstrate proficiency by the end of the term to clarify when the outcome should be achieved.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Develop design requirements from the problem statement that meet desired needs
b. Identify relevant, realistic design constraints from the design requirements
c. Produce a solution that satisfies design requirements within relevant, realistic constraints

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
CEE student outcome assessment is on a two year cycle. This outcome was assessed last year and will be assessed again next year.

Step 4C: Interpretation of Results:
N/A this year.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A this year.

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A this year.

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A this year.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A this year.

Step 6B: Status Update on Previously Identified Action Plan(s):

Progress:
Complete

ABET-EAC SO#3: Communications (+WIM)

Step 1A: SLO Number:
3

Step 1C: SLO Statement (Full Description):
An ability to communicate effectively with a range of audiences.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Written: content
b. Written: structure & Mechanics
c. Oral: content
d. Oral: delivery

Rubric attached.

Linked Documents
2023-24 ABET EAC Outcomes 3_5_7_8_9.pdf

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.
The benchmark is evaluated every three years. Prior to 2021, the benchmark was E+S >=60% (based upon a "passing," D, grade). At the program level, this 60% threshold was continuously met. Thus in 2021, it was raised to >=70%. In 2024, the CEE faculty examined the 70% benchmark and decided it was too early to make a change--only one complete 2-yr cycle had been completed. The CEE faculty will re-evaluate in 2027.
The data for PIa and PIb are used to assess Writing in the Major (WIM).

Step 4A: Was the target met for this Measure?:
Met

Step 4B: Results and Findings for this Measure:

The results for each performance indicator are (expressed as % E+S):

a. 86%
b. 91%
c. 87%
d. 94%

WIM is also "met." Writing: Content, PIa = 86%, and Writing: Structure and Mechanics, PIb = 96%.

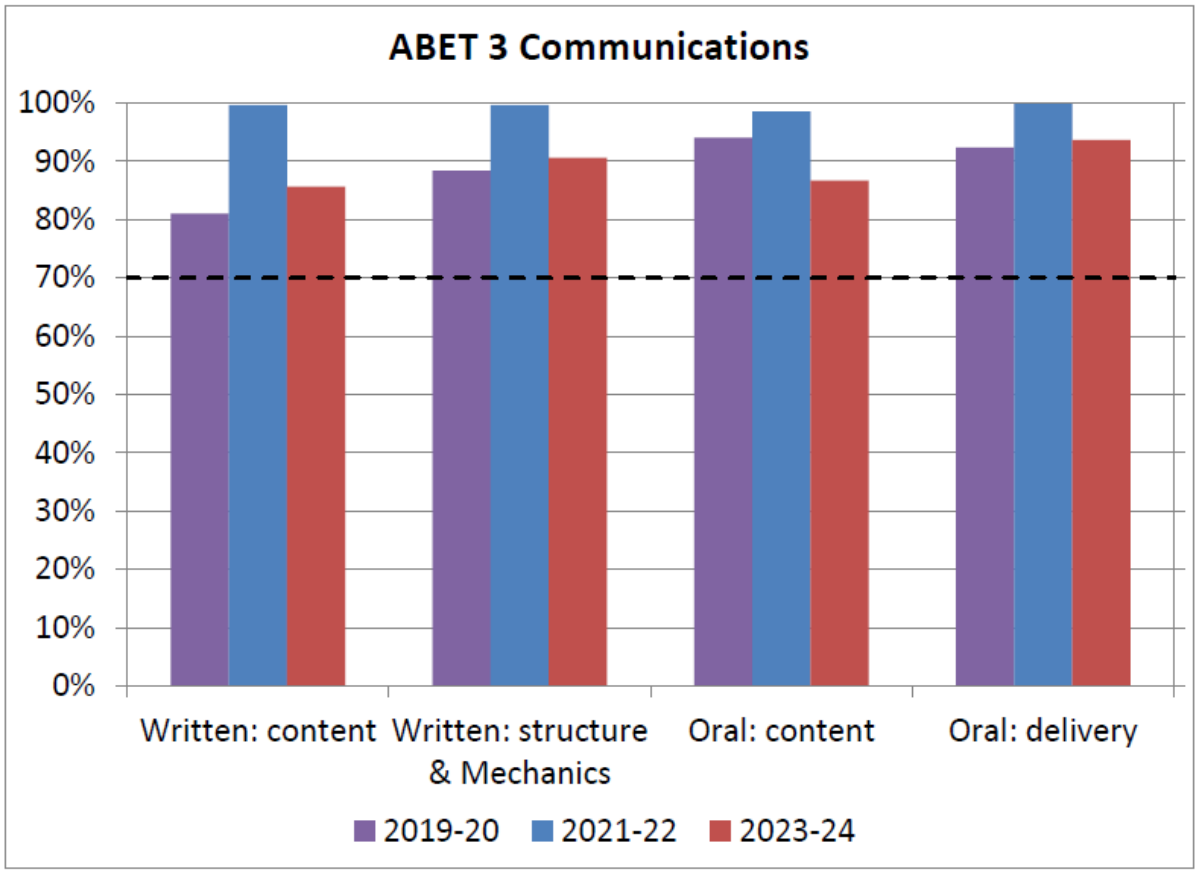
Please see attached "Assessment Data Summary" for summary data and calculations. Assessment instruments (test questions, homework problems, projects, etc.) and example student work (displays) are also attached.

Linked Documents

2023-24 BSCiv ABET 3 instruments.pdf
CEE Civ ABET Assessment Data Summary - 2023-24.pdf
2023-24 BSCiv ABET 3 displays.pdf

Step 4C: Interpretation of Results:

Please see attached "Assessment Data Summary." No improvements are deemed necessary for this outcome. Student achievement is well above the target and has been for the past three assessment cycles.



Though not strictly program assessment, CEE also tracks student achievement in individual courses. Two courses missed the benchmark for this SO:

- CEE 2361: PI c: 69% and PI d: 69%.
- CEE 4381: PI a: 56%, b: 56%, and c: 56%.

Step 5A: Use of Results for Seeking Improvement (Action Plan):

Though the target was met at the program level (combined data across multiple courses), CEE also tracks student achievement in each assessed course. The following corrective actions were initiated:

- CQI Memo (attached) was sent to Dr. Levin Deputy as his CEE 2361 course missed the 70% E+S benchmark for SO 3, PIs b and c. The detailed action plan is in the linked document: better instruct students on oral presentation and written report expectations. Assessment loop is closed.

- CQI Memo (attached) was sent to Dr. Patty Taylor as her CEE 4381 course missed the 70% E+S benchmark for SO 3, PIs a, b, and c. The detailed action plan is in the linked document: Plan to add/modify lectures to address this deficiency. Assessment loop is closed.

Linked Documents
CQI Corrective Action Memo_ 1242 CEE 4381_ABET-EAC SO 3.pdf
CQI Corrective Action Memo_ 1242 CEE 2361_ABET-EAC SO 3.pdf

Step 5B: Type of Action:
Additional emphasis or time on content,Redesign of activities or assignments

Step 5C: Dialogue Participants (check all that apply):
Administrator,Faculty

Step 5D: Evidence of Dialogue:
Annual results, compiled in July, are discussed at the CEE faculty retreat the following year. These AY2023-24 assessment results are scheduled to be discussed at the December 2024 department retreat.
The AY2022-23 assessment results were postponed at the December 2023 retreat as numerous initiatives from the new Lyle Dean took precedence. Subsequently, the May retreat was cancelled--again due to faculty being busy with the new Lyle Dean's initiatives plus some scheduling conflicts. The discussion of these results are now scheduled for the first department meeting of AY2024-25, on August 21, 2024. The minutes from AY2023-24 department meetings and the December 2023 retreat are linked here. As well, the slides for the planned 21-Aug meeting (2022-23 assessment results) are also linked.

Linked Documents
CEE Dept Mtg Minutes 2023-24.pdf
CEE Dept Retreat Minutes 20231206.pdf
CQI presentation to CEE 2023.pptx

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
There were no open assessment loops for this student outcome from AY 2021-22 (prior cycle). The 2021-22 CQI presentation to the faculty is presented as evidence.

Linked Documents
CQI presentation to CEE 2022.pptx

Step 6B: Status Update on Previously Identified Action Plan(s):
Not applicable for this cycle (explain in Step 6A)

Progress:
Complete

ABET-EAC SO#4: Professional & Ethical Responsibility

Step 1A: SLO Number:
4

Step 1C: SLO Statement (Full Description):
An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Knowledge of the code of ethics in the discipline
b. Recognize the ethical and professional responsibilities in an engineering situation
c. Make judgments informed by ethical and professional responsibilities

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
CEE student outcome assessment is on a two year cycle. This outcome was assessed last year and will be assessed again next year.

Step 4C: Interpretation of Results:
N/A this year.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A this year.

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A this year.

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A this year.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A this year.

Step 6B: Status Update on Previously Identified Action Plan(s):

Progress:
Complete

ABET-EAC SO#5: Teams

Step 1A: SLO Number:

5

Step 1C: SLO Statement (Full Description):
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.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Team Function
b. Collaborative and Inclusive Environment
c. Goals, Tasks, and Objectives

Rubric attached.

Linked Documents
2023-24 ABET EAC Outcomes 3_5_7_8_9.pdf

Step 2B: Type of Measure (check all that apply):
Capstone project,Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.
The benchmark is evaluated every three years. Prior to 2021, the benchmark was E+S >=60% (based upon a "passing," D, grade). At the program level, this 60% threshold was continuously met. Thus in 2021, it was raised to >=70%. In 2024, the CEE faculty examined the 70% benchmark and decided it was too early to make a change--only one complete 2-yr cycle had been completed. The CEE faculty will re-evaluate in 2027.

Step 4A: Was the target met for this Measure?:
Met

Step 4B: Results and Findings for this Measure:
The results for each performance indicator are (expressed as % E+S):

a. 100%
b. 98%

c. 100%

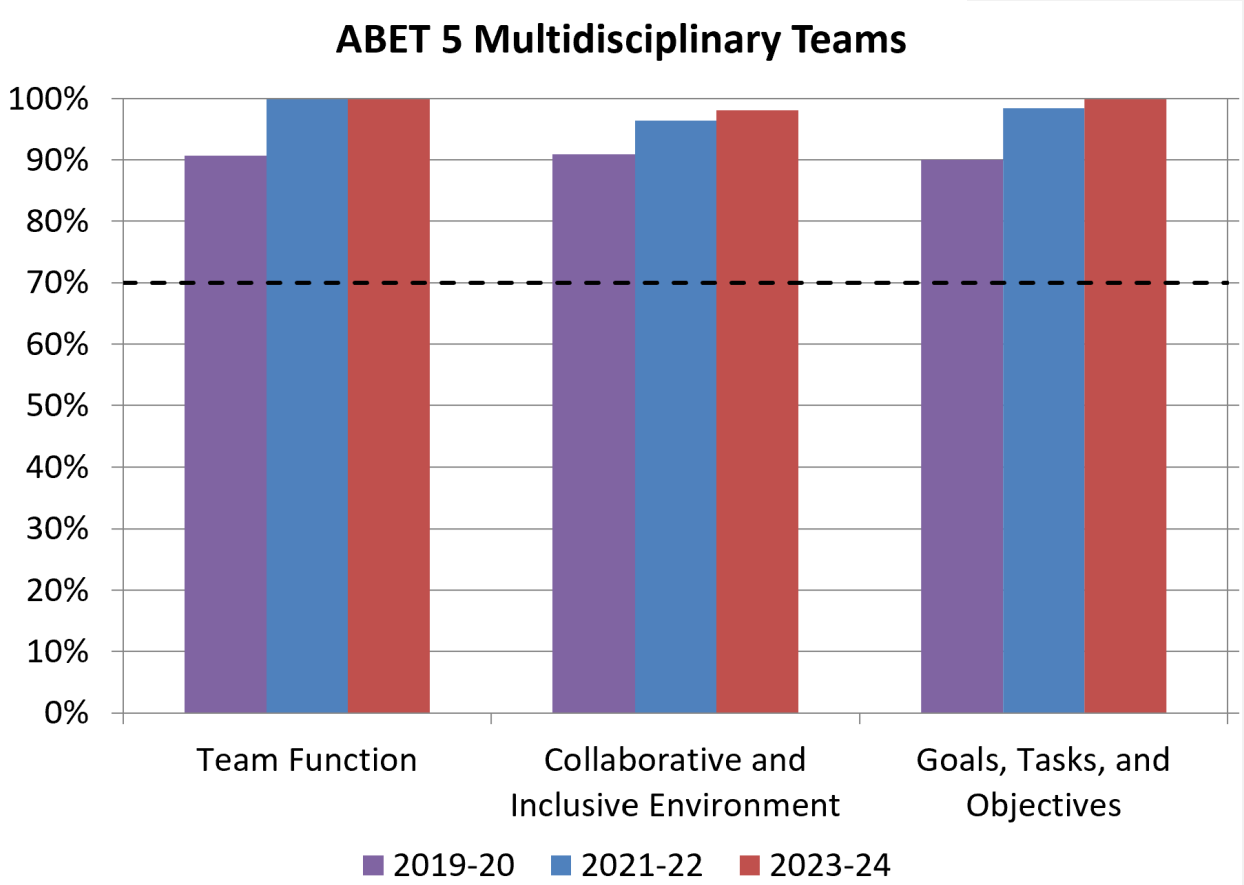
Please see attached "Assessment Data Summary" for summary data and calculations. Assessment instruments (test questions, homework problems, projects, etc.) and example student work (displays) are also attached.

Linked Documents

2023-24 BSCiv ABET 5 displays.pdf
2023-24 BSCiv ABET 5 instruments.pdf
CEE Civ ABET Assessment Data Summary - 2023-24.pdf

Step 4C: Interpretation of Results:

Please see attached "Assessment Data Summary." No improvements are deemed necessary for this outcome. Student achievement is well above the target and has been for the past three assessment cycles.



Though not strictly program assessment, CEE also tracks student achievement in individual courses. This year, no individual CEE courses missed the 70% benchmark.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A.

Step 5B: Type of Action:

Step 5C: Dialogue Participants (check all that apply):
Faculty

Step 5D: Evidence of Dialogue:

Annual results, compiled in July, are discussed at the CEE faculty retreat the following year. These AY2023-24 assessment results are scheduled to be discussed at the December 2024 department retreat.
The AY2022-23 assessment results were postponed at the December 2023 retreat as numerous initiatives from the new Lyle Dean took precedence. Subsequently, the May retreat was cancelled--again due to faculty being busy with the new Lyle Dean's initiatives plus some scheduling conflicts. The discussion of these results are now scheduled for the first department meeting of AY2024-25, on August 21, 2024. The minutes from AY2023-24 department meetings and the December 2023 retreat are linked here. As well, the slides for the planned 21-Aug meeting (2022-23 assessment results) are also linked.

Linked Documents
CEE Dept Mtg Minutes 2023-24.pdf
CQI presentation to CEE 2023.pptx
CEE Dept Retreat Minutes 20231206.pdf

Step 5E: Type of other Improvements (check all that apply):

Step 5F: Other Improvements (Full Description):
N/A.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
There were no open assessment loops for this student outcome from AY 2021-22 (prior cycle). The 2021-22 CQI presentation to the faculty is presented as evidence.

Linked Documents
CQI presentation to CEE 2022.pptx

Step 6B: Status Update on Previously Identified Action Plan(s):
Not applicable for this cycle (explain in Step 6A)

Progress:
Complete

ABET-EAC SO#6: Experiments & Data

Step 1A: SLO Number:
6

Step 1C: SLO Statement (Full Description):
An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Develop experiments
b. Conduct experiments
c. Analyze and interpret data
d. Draw conclusions using engineering judgments

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
CEE student outcome assessment is on a two year cycle. This outcome was assessed last year and will be assessed again next year.

Step 4C: Interpretation of Results:
N/A this year.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A this year.

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A this year.

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A this year.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A this year.

Step 6B: Status Update on Previously Identified Action Plan(s):

Progress:
Complete

ABET-EAC SO#7: Independent Learning

Step 1A: SLO Number:
7

Step 1C: SLO Statement (Full Description):
An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Acquisition of new knowledge
b. Application of new knowledge

Rubric attached.

Linked Documents
2023-24 ABET EAC Outcomes 3_5_7_8_9.pdf

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.
The benchmark is evaluated every three years. Prior to 2021, the benchmark was E+S >=60% (based upon a "passing," D, grade). At the program level, this 60% threshold was continuously met. Thus in 2021, it was raised to >=70%. In 2024, the CEE faculty examined the 70% benchmark and decided it was too early to make a change--only one complete 2-yr cycle had been completed. The CEE faculty will re-evaluate in 2027.

Step 4A: Was the target met for this Measure?:
Met

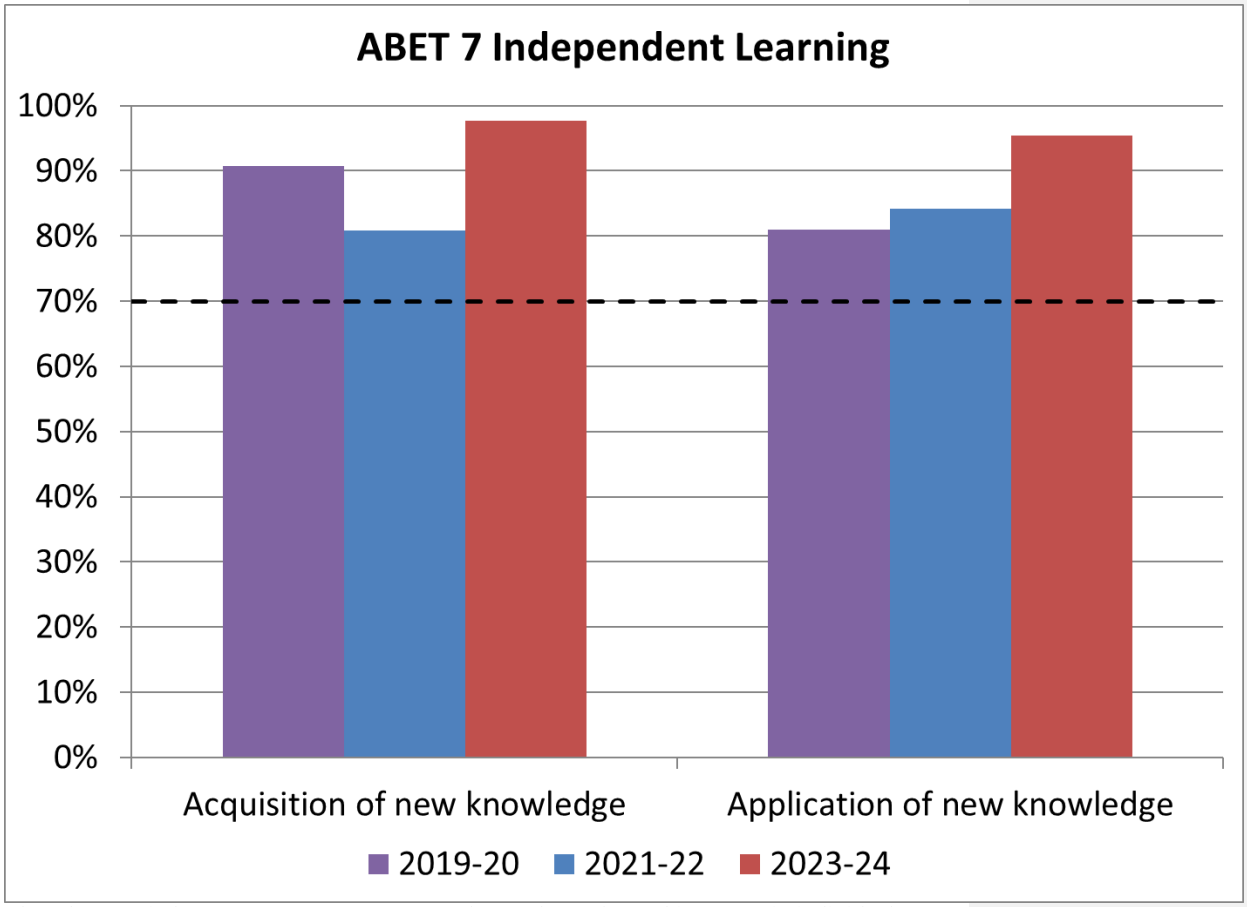
Step 4B: Results and Findings for this Measure:
The results for each performance indicator are (expressed as % E+S):

a. 98%
b. 95%

Please see attached "Assessment Data Summary" for summary data and calculations. Assessment instruments (test questions, homework problems, projects, etc.) and example student work (displays) are also attached.

Linked Documents
2023-24 BSCiv ABET 7 instruments.pdf
CEE Civ ABET Assessment Data Summary - 2023-24.pdf
2023-24 BSCiv ABET 7 displays.pdf

Step 4C: Interpretation of Results:
Please see attached "Assessment Data Summary." No improvements are deemed necessary for this outcome. Student achievement is well above the target and has been for the past three assessment cycles.



Though not strictly program assessment, CEE also tracks student achievement in individual courses. This year, no individual CEE courses missed the 70% benchmark.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A.

Step 5B: Type of Action:

Step 5C: Dialogue Participants (check all that apply):
Faculty

Step 5D: Evidence of Dialogue:

Annual results, compiled in July, are discussed at the CEE faculty retreat the following year. These AY2023-24 assessment results are scheduled to be discussed at the December 2024 department retreat.
The AY2022-23 assessment results were postponed at the December 2023 retreat as numerous initiatives from the new Lyle Dean took precedence. Subsequently, the May retreat was cancelled--again due to faculty being busy with the new Lyle Dean's initiatives plus some scheduling conflicts. The discussion of these results are now scheduled for the first department meeting of AY2024-25, on August 21, 2024. The minutes from AY2023-24 department meetings and the December 2023 retreat are linked here. As well, the slides for the planned 21-Aug meeting (2022-23 assessment results) are also linked.

Linked Documents
CEE Dept Mtg Minutes 2023-24.pdf
CQI presentation to CEE 2023.pptx
CEE Dept Retreat Minutes 20231206.pdf

Step 5E: Type of other Improvements (check all that apply):

Step 5F: Other Improvements (Full Description):
N/A.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
There were no open assessment loops for this student outcome from AY 2021-22 (prior cycle). The 2021-22 CQI presentation to the faculty is presented as evidence.

Linked Documents
CQI presentation to CEE 2022.pptx

Step 6B: Status Update on Previously Identified Action Plan(s):
Not applicable for this cycle (explain in Step 6A)

Progress:
Complete

ABET-EAC SO#8: Professional Practice & Stakeholders

Step 1A: SLO Number:
8

Step 1C: SLO Statement (Full Description):

An understanding of professional practice issues and an understanding of the roles and responsibilities of public institutions and private organizations pertaining to public policy and regulations.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Understands engineering professional practice issues
b. Understands roles and responsibilities of public institutions and private organizations pertaining to public policy and regulations

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
Student Outcomes 1-7 are given to the program by the ABET-EAC general criteria. Due to the lengthy ABET-EAC program criteria for both civil engineering and environmental engineering, the CEE faculty chose to show compliance (in part) with the creation of our own student outcomes 8 and 9. At the last ABET-EAC reaccreditation visit, the PEVs for both programs expressed concerns that accounting for these curricular program criteria by using additional student outcomes may cause more work than is necessary for the faculty. They also stated that most programs around the country choose to address the CivE and EnvE program criteria (curriculum) by a description in the Self-Study Report (SSR). The CEE faculty agreed this is a better approach and voted to discontinue student outcomes 8 and 9 at our faculty retreat in December 2023. The proposal that was voted on at the retreat is linked, Remove ABET SLOs 8 and 9.pptx.

Linked Documents

Remove ABET SLOs 8 and 9.pptx

Step 4C: Interpretation of Results:
N/A

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A, this SO is being removed.

Step 6B: Status Update on Previously Identified Action Plan(s):
Not applicable for this cycle (explain in Step 6A)

Progress:
Complete

ABET-EAC SO#9: Business Basics & Leadership

Step 1A: SLO Number:
9

Step 1C: SLO Statement (Full Description):
An understanding of basic concepts in project management, business, and leadership.

Step 2A: Measure:
Student work is assessed three times during the term (near the beginning, middle, and end) using the attached rubric. Each student is rated 4 Exemplary, 3 Satisfactory, 2 Developing, or 1 Unsatisfactory for the following Performance Indicators:

a. Understands concepts of project management
b. Understands basic business concepts
c. Understands leadership principles and concepts

Rubric, assessment instruments (test questions, homework problems, projects, etc.), and example student work (displays) attached.

Step 2B: Type of Measure (check all that apply):
Document analysis ,Essay exam,Objective Quiz or Exam ,Presentation ,Reflection,Written paper/project

Step 2C: Is Measure direct or indirect?:
Direct

Step 3A: Target for Measure:
All student assessment data from the assessed courses are combined. The sum of exemplary plus satisfactory is divided by the total (expressed as a percentage). The CEE benchmark for E+S percentage for a performance indicator is 70% or greater.

Step 4A: Was the target met for this Measure?:
No data collected/reported this cycle (provided explanation in Step 4B)

Step 4B: Results and Findings for this Measure:
Student Outcomes 1-7 are given to the program by the ABET-EAC general criteria. Due to the lengthy ABET-EAC program criteria for both civil engineering and environmental engineering, the CEE faculty chose to show compliance (in part) with the creation of our own student outcomes 8 and 9. At the last ABET-EAC reaccreditation visit, the PEVs for both programs expressed concerns that accounting for these curricular program criteria by using additional student outcomes may cause more work than is necessary for the faculty. They also stated that most programs around the country choose to address the CivE and EnvE program criteria (curriculum) by a description in the Self-Study Report (SSR). The CEE faculty agreed this is a better approach and voted to discontinue student outcomes 8 and 9 at our faculty retreat in December 2023. The proposal that was voted on at the retreat is linked, Remove ABET SLOs 8 and 9.pptx.

Linked Documents
Remove ABET SLOs 8 and 9.pptx

Step 4C: Interpretation of Results:
N/A

Step 5A: Use of Results for Seeking Improvement (Action Plan):
N/A

Step 5B: Type of Action:
Other

Step 5C: Dialogue Participants (check all that apply):
Other

Step 5D: Evidence of Dialogue:
N/A

Step 5E: Type of other Improvements (check all that apply):
Other

Step 5F: Other Improvements (Full Description):
N/A

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
N/A, this SO is being removed.

Step 6B: Status Update on Previously Identified Action Plan(s):
Not applicable for this cycle (explain in Step 6A)

Progress:
Complete

Program Outcome BSCE

Step 1A: PG Number:
1

Step 1C: PG Statement (Full Description):
Prepare students as professionals to practice or pursue advanced degrees in civil engineering.

Step 2A: Measure:

Program outcomes are longer term (5 year) goals. CEE measures:

1. % passing the Fundamentals of Engineering (FE) exam (professionals to practice)
2. % attending graduate school (advanced degrees)

Step 2B: Is Measure direct or indirect?:
Indirect

Step 3A: Target for Measure:

1. CEE receives two institutional reports from NCEES (Fall and Summer) showing how many current and past SMU graduates took the FE Exam and how many passed. Each year, the % passing is calculated (# exams passed/# exams taken). Then, the last five years of annual % passing are averaged. This is compared against the goal of 70 % or better.
2. CEE surveys our senior students in the second semester of senior design (senior exit surveys). On the survey, we ask the students what their future plans are. One option is graduate school. Each year, the % attending graduate school is calculated (# choosing graduate school/# of students completing the survey). Then, the last five years of annual % attending graduate school are averaged. This is compared against the goal of 20 % or better.

Step 4A: Was the target met for this Measure?:
Partially Met

Step 4B: Results and Findings for this Measure:

1. The five year rolling average % passing FE exam is 60%, goal not met. Please see attached "program assessment" for calculations. NEEDS IMPROVEMENT
2. The five year rolling average % attending graduate school is 37%, goal met. Please see attached "program assessment" for calculations. No improvement necessary.

Linked Documents
1244 SACS program assessment 2023-24.pdf

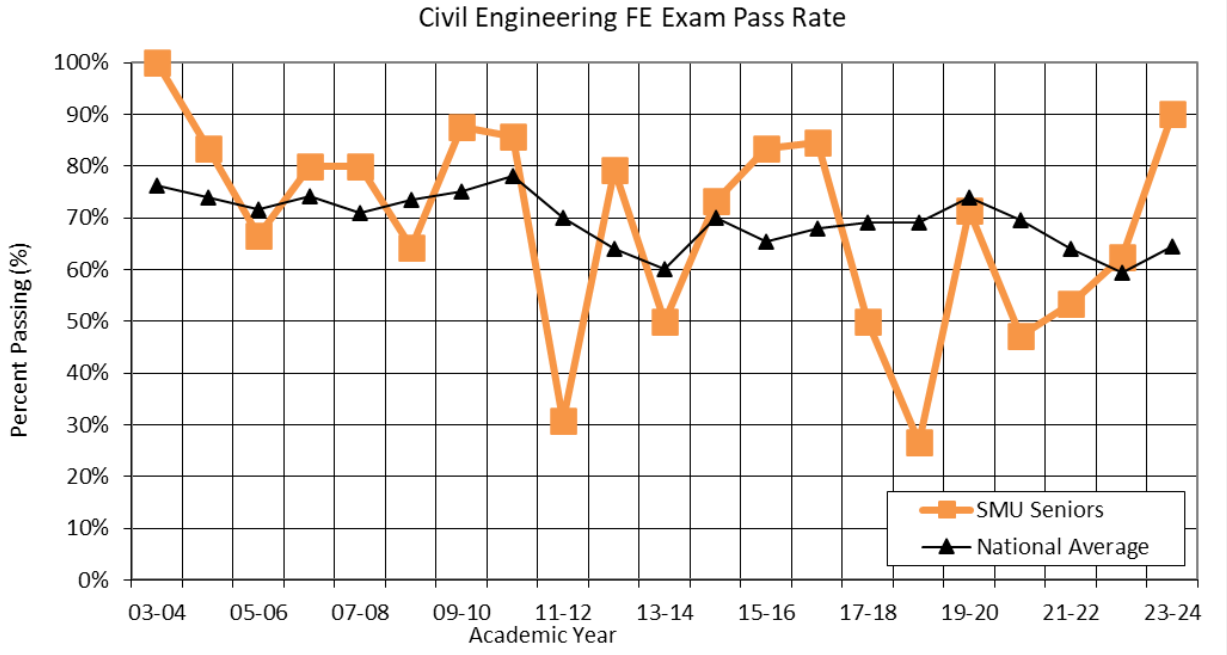
Step 4C: Interpretation of Results:
The last five years of annual % passing FE exam are: 71%, 47%, 53%, 63%, and 90% (this year). The CEE faculty must continue to make improvements to better the pass rate, though the pass rate is rising and the current year is well above the 70% target. However, the 5-yr rolling average remains below target because of the previous 3 years.

Step 5A: Use of Results for Seeking Improvement (Action Plan):
The CEE faculty have been working to improve these results, starting in 2015-2016. Here is a brief history:

1. CEE eliminated waivers for taking the exam in Senior Design (some of our better students weren't taking it).
2. CEE worked with the Hart Center for Engineering Leadership (HCEL) to develop an exam prep course. CEE graduate students were recruited to staff various topics in the prep sessions. Student participation was voluntary.
3. CEE Assessment Coordinator conducted an in-depth analysis of which topics CEE students performed worst on the exam. The 2017-18 curriculum was modified to add topics, e.g., engineering economics in CEE 3307 (new course). The first graduates under the new curriculum were in 2020-21.
4. The HCEL prep sessions were augmented with a purchase of an online test prep course and practice exams.
5. The CEE faculty decided to take-over the test prep in 2022-23.

Regarding the latest, item #5, the CEE faculty modified the curriculum to reinstate a 3 hour, Fall, Senior Design course, 4180 became 4380. This gave the CEE faculty time to run prep sessions in Senior Design during the Fall semester. Drs. Kate Smits and Brett Story (along with 4380 instructor, Dr. Patty Taylor) ran the prep sessions in Fall 2023. The results are very encouraging. **The FE Exam pass rate jumped to 90% this year** (63% last year without faculty-run prep in Senior Design).

Our FE Exam pass rates (all time) are presented below. Again, the steady, upward trend over the past 4 years is encouraging and the exceedance of our goal this past year is very good.



Step 5B: Dialogue Participants (check all that apply):
Faculty

Step 5C: Evidence of Dialogue:
Annual results, compiled in July, are discussed at the CEE faculty retreat the following year. These AY2023-24 assessment results are scheduled to be discussed at the December 2024 department retreat.

Step 5D: Type of other Improvements (check all that apply):
Other

Step 5E: Other Improvements (Full Description):
N/A.

Step 6A: Status Update on Action(s) Identified in the Previous Assessment Cycle (Full Description):
See 5A above. This has been ongoing.

Step 6B: Status Update on Previously Identified Action Plan(s):
In progress

Progress:
Complete