SACS Assessment Report for Master of Engineering Science (MES) Program

Degree: Master of Engineering Science (MES) 2023-2024 Assessment Report		
	Student Learning Outcome #1	Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
PLAN	**Assessment Method(s)**	(1) Thesis (2) Student Survey Assessment rubrics are provided in Appendix A, and student survey problems are shown in Appendix B.
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period, 2 students graduated in the MES program. • Thesis results: 100% proficiency, with an average score of 3.73 for SLO1. • Student survey results: 100% proficiency, with an average score of 3.16 for SLO1. All students were evaluated by a thesis committee consisting of at least three faculty members based on specific outcomes using standardized rubrics found in Appendix A. Assessment instruments are the performance in thesis final report and thesis defense. Additionally, the students were asked to reflect on their abilities for each indicator related to SLO #1 by completing a survey found in Appendix B.

S T U D Y	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO1.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all performance indicators, we do not anticipate major changes. However, to advance the program and meet the demand for improved learning, continuous improvement is essential to increase overall scores for PIs of the SLO. For the next academic year, the following improvement steps are proposed: • Focus on developing challenging research projects that utilize advanced technologies, enhancing students' abilities to identify, formulate, and solve complex engineering problems using principles of engineering, science, and mathematics. • Present the findings to the department faculty and ensure the rigor of all courses. • Develop and offer more courses aligned with current industrial needs and advancements. • Improve the curriculum using more interdisciplinary project-based modules (based on student surveys). • The College of Engineering planed a $1M remodel of Cherry building classrooms to unify technology for improved teaching methods in Spring 2024. Refer to the individual department reports in the Appendix for the results and improvement plans of each department.

		Degree: Master of Engineering Science (MES) 2023-2024 Assessment Report	
		Student Learning Outcome #2	Students will demonstrate an ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.
PLAN		**Assessment Method(s)**	• Thesis • Student Survey Assessment rubrics are provided in Appendix A, and student survey problems are shown in Appendix B.
		Proficiency	Minimum acceptable is 3 out of 4
DO		**Benchmark**	75% of students achieve the proficiency mentioned above
		Results of Assessment	For the reporting period, 2 students graduated in the MES program. • Thesis results: 100% proficiency, with an average score of 3.43 for SLO2. • Student survey results: 100% proficiency, with an average score of 3.16 for SLO2. All students were evaluated by a thesis committee consisting of at least three faculty members, based on specific outcomes using standardized rubrics found in Appendix A. Assessment instruments are the performance in thesis final report and thesis defense. Additionally, the students were asked to reflect on their own abilities on the for each indicator related to SLO #2 by completing a survey found in Appendix B.
S T U D Y		**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO2.

ACT	Improvement Plan for 2024-2025	With passing scores in all performance indicators, we do not anticipate major changes. However, to advance the program and meet the demand for improved learning, continuous improvement is essential to increase overall scores for PIs of the SLO. For the next academic year, the following improvement steps are proposed:

With passing scores in all performance indicators, we do not anticipate major changes. However, to advance the program and meet the demand for improved learning, continuous improvement is essential to increase overall scores for PIs of the SLO. For the next academic year, the following improvement steps are proposed:

- Focus on developing challenging research projects that involve appropriate experimentation and numerical simulations to produce justified solutions.
- Present the findings to the faculty and maintain and ensure the rigor of all courses.
- Develop and offer more courses aligned with the current industrial needs and advancements.
- Provide wide variety of courses using adjuncts.
- Improve the curriculum using more interdisciplinary project-based modules (based on student surveys)
- Provide the students more opportunity to collaborate directly with the industry through site visits and invited talks (based on student surveys).
- The College of Engineering planed a $1M remodel of Cherry building classrooms to unify technology for improved teaching methods in Spring 2024.

Refer to the individual department reports in the Appendix for the results and improvement plans of each department.
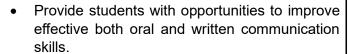
Degree: Master of Engineering Science (MES) 2023-2024 Assessment Report		
	Student Learning Outcome #3	Students will demonstrate an ability to use modern engineering tools to produce engineering analysis in a systematic manner.
PLAN	**Assessment Method(s)**	• Thesis • Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period, 2 students graduated in the MES program. • Thesis results: 100% proficiency, with an average score of 3.68 for SLO3. • Student survey results: 100% proficiency, with an average score of 3.50 for SLO3. All students were evaluated by a thesis committee consisting of at least three faculty members, based on specific outcomes using standardized rubrics found in Appendix A. Assessment instruments are the performance in thesis final report and thesis defense. Additionally, the students were asked to reflect on their own abilities on the for each indicator related to SLO #2 by completing a survey found in Appendix B.
STUDY	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO3.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO3, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain

		continuous improvement to increase the overall scores for PIs and for SLO. For the next academic year, the following improvement steps are proposed: • Focus on developing challenging research projects that require to use modern engineering tools to produce engineering analysis in a systematic manner. • Present the findings to the department faculty and ensure the rigor of all courses. • Develop and offer more courses aligned with current industrial needs and advancements. • Improve the curriculum using more interdisciplinary project-based modules (based on student surveys). • The College of Engineering planed a $1M remodel of Cherry building classrooms to unify technology for improved teaching methods in Spring 2024. Refer to the individual department reports in the Appendix for the results and improvement plans of each department.

		Degree: Master of Engineering Science (MES) 2023-2024 Assessment Report	
	Student Learning Outcome #4	Students will demonstrate an ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.	
PLAN	**Assessment Method(s)**	(1) Thesis Report (2) Final Thesis Defense	
	Proficiency	Minimum acceptable is 3 out of 4	
DO	**Benchmark**	75% of students achieve the proficiency mentioned above	
	Results of Assessment	For the reporting period, 2 students graduated in the MES program. All students were evaluated by a thesis committee consisting of at least three faculty members, based on specific outcomes using standardized rubrics found in Appendix A. Assessment instruments are the performance in thesis final report and thesis defense. The assessment score for SLO4 is 100% proficiency, with an average score of 3.54.	
STUDY	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level.	
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO4, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain continuous improvement to increase the overall scores for PIs and for SLO. For the next academic year, the following improvement steps are proposed: • Present the findings to the department faculty and maintain and ensure the rigor of all courses. • Develop and offer more courses aligned with the current industrial needs and advancements.	

| | | • Provide students with opportunities to improve effective both oral and written communication skills.
• Develop opportunities to students to present their work both internally and externally.

Refer to the individual department reports in the Appendix for the results and improvement plans of each department. |

Appendix A
Faculty Evaluation Rubrics

Performance Indicators and Rubrics for Outcome #1:

An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Performance Indicator	Excellent 4	Good 3	Satisfactory 2	Unsatisfactory 1
(a) Identify complex engineering problems by applying proper engineering, science, and mathematical principles.	Identify and fully describe complex engineering problems using correct specifications, design variables, and proper constraints.	Identify and describe complex engineering problems but may have missing specifications, design variables, and proper constraints	Partially identify and describe complex engineering problems missing some specifications/design variables/proper constraints	Cannot Identify and describe complex engineering problems using specifications, design variables, and proper constraints
(b) Formulate the complex engineering problem by applying proper engineering, science, and mathematical principles.	Formulate the complex problem *mathematically by application of* engineering and science theories and principles without mistakes.	Formulate the problems *mathematically by application of* engineering and science theories and principles with minor mistakes.	Model the problems *mathematically by application of* engineering and science theories and principles with mistakes and errors.	Cannot formulate the problem *mathematically by application of* engineering and science theories and principles
(c) Solve the problem by applying proper engineering, science, and mathematical principles.	Effectively apply the engineering problem solving procedure: mathematical modeling, solution method, interpretation of results	Essentially apply the engineering problem solving procedure: mathematical modeling, solution method, interpretation of results	Reasonably apply the engineering problem solving procedure: mathematical modeling, solution method, interpretation of results	Cannot follow correctly the engineering problem solving procedures at all.

Performance Indicators and Rubrics for Outcome #2:

An ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.

Performance Indicator	Excellent 4	Good 3	Satisfactory 2	Unsatisfactory 1
(a) Identify the needs, approaches and steps for experimental study or numerical simulation	The objectives of the experiment or numerical simulation are clearly specified. The approaches to conduct the experiment or simulation are of the best choices and the procedures are concise.	The objectives of the experiment or numerical simulation are specified. The approaches to conduct the experiment or simulation are of the good choices with good procedures.	The objectives of the experiment or numerical simulation are outlined. The approaches to conduct the experiment or simulation are feasible and the procedures are reasonably described.	The objectives of the experiment or numerical simulation are not clearly identified. Key components are missing in the approaches and/or the procedures.
(b) Obtain data from experimental test or numerical simulation following the steps or numerical simulation	Follow the procedure step by step when the experiment or simulation are carried out, and the data are clean and reproducible.	The step-by-step procedure is followed, and the data are good enough to be reproduced	Carry out the experiment or simulation without missing the critical steps and the data are useful and somewhat reproducible.	Have one or more major deficiencies in the experimental procedure or numerical simulation method and the data are not obtained or questionable.
(c) Organize and analyze the data with tables, figures, regression, and modeling	Data are labeled and presented clearly in graphs, charts, and tables. The calculations in data processing are correct.	Data are labeled and presented in graphs, charts, and tables. The calculations in data processing are done correctly or with minor mistakes.	Data is labeled and presented in graphs, charts, and tables with minor flaws. There is no major mistake in data processing.	Some data are missing, and the graphs, charts, or tables are missing or presented in a wrong way.

Performance Indicators and Rubrics for Outcome #3:

An ability to use modern engineering tools to produce engineering analysis in a systematic manner.

Performance Indicator	Excellent 4	Good 3	Satisfactory 2	Unsatisfactory 1
(a) Ability of using modern engineering tools	Clearly demonstrated ability to use modern engineering tools	Demonstrated some ability to use modern engineering tools	Demonstrated minimal ability to use modern engineering tools	Does not demonstrate ability to use modern engineering tools
(b) Quality of analysis	Clearly demonstrates ability to show results of engineering analysis in a high-quality fashion	Demonstrates ability to show results of engineering analysis in generally good quality	Demonstrates minimal ability to show results of engineering analysis, quality compromised	Does not demonstrate ability to show results of engineering analysis in an acceptable quality

Performance Indicators and Rubrics for Outcome #4:

An ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.

Performance Indicator	Excellent 4	Good 3	Satisfactory 2	Unsatisfactory 1
(a) Thesis significance	Clear definition of thesis topic and the thesis results can be published in peer-reviewed platforms	Clear definition of thesis topic and the thesis results can be organized in a presentable form to the committee	Somewhat unclear definition of thesis topic but with justified contributions	No definition of thesis topic
(b) Organization of thesis	Organizational scheme is logical and complete and makes report especially pleasurable to read.	Organizational scheme shows planning and logical order.	Organizational scheme is not apparent and detract from readability.	Thesis is not organized and difficult to read.
(c) Thesis presentation & delivery	Presentation is clear, organized, professional and use visual displays well.	Presentation is somewhat lacking in one of the following: clarity, organization, professionalism, or use of visual displays.	Presentation is weak in two or three of the critical areas: clarity, organization, professionalism, and visual displays.	Presentation is weak in all of the following areas: clarity, organization, professionalism, and visual displays.
(d) Question & answer - impromptu skills	Answers reflect understanding of thesis context. Responses are fluent, spontaneous, sincere, and confident.	Answers demonstrate knowledge and understanding of the thesis.	Answers do not convey necessary information. Responses are strained.	Answers to questions show lack of understanding of the thesis. Responses are strained and awkward.

Appendix B
Student Surveys

Outcome 1: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Survey Questions:

1. **Problem Identification (1a):** How confident are you in your ability to identify complex engineering problems within a given scenario?
   - Very Confident
   - Confident
   - Not Very Confident
   - Not Confident at All
2. **Problem Formulation (1b)**: How confident are you in your ability to identify complex engineering problems within a given scenario?
   - Very Comfortable
   - Comfortable
   - Uncomfortable
   - Very Uncomfortable
3. **Problem Solving (1c):** How well do you think you can solve complex engineering problems using the principles of engineering, science, and mathematics?
   - Very Well
   - Well
   - Poorly
   - Very Poorly
4. **Application of Principles:** To what degree do you believe you apply engineering, science, and mathematical principles effectively when solving complex problems?
   - To a Great Degree
   - To a Moderate Degree
   - Rarely
   - Never
5. **Suggestions for Improvement:** Do you have any suggestions for how the curriculum or teaching methods could be improved to enhance your ability to identify, formulate, and solve complex engineering problems?

Outcome 2: An ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.

Survey Questions:

1. **Experimental or Numerical Simulation Skills (2a):** How confident are you in your ability to develop and conduct experiments or numerical simulations in the field of engineering?
   - Very Confident
   - Confident
   - Not Very Confident
   - Not Confident at All
2. **Data Analysis Skills (2b):** How confident are you in your ability to analyze data collected from experiments or simulations?
   - Very Confident
   - Confident
   - Not Very Confident
   - Not Confident at All
3. **Interpretation of Data (2c):** To what extent do you feel comfortable interpreting the results of data analysis in the context of engineering problems?
   - Very Comfortable
   - Comfortable
   - Uncomfortable
   - Very Uncomfortable
4. **Application of Engineering Judgment:** How well do you believe you can apply engineering judgment to draw meaningful conclusions from experimental or simulation data??
   - Very Well
   - Well
   - Poorly
   - Very Poorly
5. **Suggestions for Improvement:** Do you have any suggestions for how the curriculum or teaching methods could be improved to enhance your ability to develop experiments or numerical simulations, analyze data, and apply engineering judgment?

Outcome 3: An ability to use modern engineering tools to produce engineering analysis in a systematic manner.

Survey Questions:

1. **Proficiency with Modern Engineering Tools and Software (3a):** How proficient do you consider yourself in using modern engineering tools and software for analysis?
   - Very Proficient
   - Proficient
   - Somewhat Proficient
   - Not Proficient

2. **Application of Tools (3b):** To what extent have you applied modern engineering tools to conduct systematic engineering analyses in your coursework or projects?
   - Extensively
   - Moderately
   - Minimally
   - Not at All

3. **Suggestions for Improvement:** Do you have any suggestions for how the curriculum or teaching methods could be improved to enhance your ability to use modern engineering tools for systematic engineering analysis?

Appendix C
Individual Department Reports

SACS Assessment Plan for Master of Engineering Science (MES) Program – Chemical Engineering

<table>
<tr>
<td colspan="3">Degree: Master of Engineering Science (MES) – Chemical Engineering
2023-2024 Assessment Plan</td>
</tr>
<tr>
<td rowspan="3">PLAN</td>
<td>Student Learning Outcome #1</td>
<td>Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.</td>
</tr>
<tr>
<td>Assessment Method(s)</td>
<td>(3) Thesis
(4) Student Survey</td>
</tr>
<tr>
<td>Proficiency</td>
<td>Minimum acceptable is 3 out of 4</td>
</tr>
<tr>
<td rowspan="2">DO</td>
<td>Benchmark</td>
<td>75% of students achieve the proficiency mentioned above</td>
</tr>
<tr>
<td>Results of Assessment</td>
<td>There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed.</td>
</tr>
<tr>
<td>STUDY</td>
<td>Analysis of Results</td>
<td>There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.</td>
</tr>
<tr>
<td>ACT</td>
<td>Improvement Plan for 2024-2025</td>
<td>We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and modernization of current courses and challenging research projects that utilize advanced technologies and improve students' abilities to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.</td>
</tr>
</table>

Degree: Master of Engineering Science (MES) – Chemical Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #2	Students will demonstrate an ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.
PLAN	**Assessment Method(s)**	(1) Thesis (2) Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed.
STUDY	**Analysis of Results**	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and providing unique and challenges research projects to effectively evaluate and improve students' abilities to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.

Degree: Master of Engineering Science (MES) – Chemical Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #3	Students will demonstrate an ability to use modern engineering tools to produce engineering analysis in a systematic manner.
PLAN	**Assessment Method(s)**	• Thesis • Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed.
S T U D Y	**Analysis of Results**	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and modernization of current courses and challenging research projects that utilize advanced technologies and modern tools to expose students to cutting-edge methods to improve their ability to produce engineering analysis in a systematic manner.

Degree: Master of Engineering Science (MES) – Chemical Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #4	Students will demonstrate an ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.
PLAN	**Assessment Method(s)**	(3) Thesis Report (4) Final Thesis Defense
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed.
S T U D Y	**Analysis of Results**	There were no students that graduated with an MES in Chemical Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing student opportunities to present internally and externally. Additionally, we will continue to ensure that effect communication (both oral and written) are a critical pillar to successful completion of a master's thesis.

SACS Assessment Plan for Master of Engineering Science (MES) Program – Civil Engineering

Degree: Master of Engineering Science (MES) – Civil Engineering 2023-2024 Assessment Plan		
PLAN	**Student Learning Outcome #1**	Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
	Assessment Method(s)	(5) Thesis (6) Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period, 2 students graduated in the Civil Engineering MES program. Average comprehensive score for SLO 1 is **3.73** (Appendix A_ Assessment rubric) Average student survey score for SLO 1 is **3.16** (Appendix B_ Student Survey) All students were evaluated 2 times in each indicator, by committee of a minimum two faculty members. Assessment instruments are the performance in comprehensive exam. Additionally, the students were asked to reflect on their own abilities on the for each indicator related to SLO #1 by completing a survey found in Appendix B.

S T U D Y	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO1.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO1, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain continuous improvement to increase the overall scores for PIs and for SLO. For the next academic year, the following improvement steps are proposed: • Present the findings to the department faculty and maintain and ensure the rigor of all courses. • Develop and offer more courses aligned with the current industrial needs and advancements. • Provide wide variety of courses using adjuncts. • Improve the curriculum using more interdisciplinary project-based modules (based on student surveys) • Will focus on developing challenging research projects that utilize advanced technologies and improve students' abilities to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Degree: Master of Engineering Science (MES) – Civil Engineering		
2023-2024 Assessment Plan		
	Student Learning Outcome #2	Students will demonstrate an ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.
PLAN	**Assessment Method(s)**	• Thesis • Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period 2 students graduated in the Civil Engineering MES program. Average comprehensive score for SLO 2 is **3.43** (Appendix A_ Assessment rubric) Average student survey score for SLO 2 is **3.16** (Appendix B_ Student Survey) All students were evaluated 3 times in each indicator, by committee of a minimum three faculty members. Assessment instruments are the performance in thesis final report and thesis defense. Additionally, the students were asked to reflect on their own abilities on the for each indicator related to SLO #2 by completing a survey found in Appendix B.
S T U D Y	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO2.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO2, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain

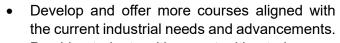| | | continuous improvement to increase the overall scores for PIs and for SLO. For the next academic year, the following improvement steps are proposed:

• Present the findings to the department faculty and maintain and ensure the rigor of all courses.
• Develop and offer more courses aligned with the current industrial needs and advancements.
• Provide wide variety of courses using adjuncts.
• Improve the curriculum using more interdisciplinary project-based modules (based on student surveys)
• Will focus on developing challenging research projects that utilize advanced technologies and modern tools to expose students to cutting-edge methods to improve their ability to produce engineering analysis in a systematic manner.
• Provide the students more opportunity to collaborate directly with the industry through site visits and invited talks (based on student surveys). |

Degree: Master of Engineering Science (MES) – Civil Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #3	Students will demonstrate an ability to use modern engineering tools to produce engineering analysis in a systematic manner.
PLAN	**Assessment Method(s)**	• Thesis • Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period 2 students graduated in the Civil Engineering MES program. Average comprehensive score for SLO 3 is **3.68** (Appendix A_ Assessment rubric) Average student survey score for SLO 3 is **3.50** (Appendix B_ Student Survey) All students were evaluated 3 times in each indicator, by committee of a minimum three faculty members. Assessment instruments are the performance in thesis final report and thesis defense. Additionally, the students were asked to reflect on their own abilities on the for each indicator related to SLO #1 by completing a survey found in Appendix B.
S T U D Y	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction for SLO3.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO3, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain continuous improvement to increase the overall scores

for PIs and for SLO. For the next academic year, the following improvement steps are proposed:

- Present the findings to the department faculty and maintain and ensure the rigor of all courses.
- Develop and offer more courses aligned with the current industrial needs and advancements.
- Provide wide variety of courses using adjuncts.
- Improve the curriculum using more interdisciplinary project-based modules (based on student surveys)
- Introduce modern engineering tools and software into the curriculum
- Will focus on developing challenging research projects that utilize advanced technologies and modern tools to expose students to cutting-edge methods to improve their ability to produce engineering analysis in a systematic manner.

Degree: Master of Engineering Science (MES) – Civil Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #4	Students will demonstrate an ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.
PLAN	**Assessment Method(s)**	(5) Thesis Report (6) Final Thesis Defense
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	For the reporting period 2 students graduated in the Civil Engineering MES program. Average comprehensive score for SLO 4 is **3.54** (Appendix A_ Assessment rubric) All students were evaluated 3 times in each indicator, by committee of a minimum three faculty members. Assessment instruments are the performance in thesis final report and thesis defense.
S T U D Y	**Analysis of Results**	100% of the students achieved the proficiency mentioned above. Both students scored well above the minimum acceptable proficiency level. The student reflected favorably to the self-assessment in the survey. Overall, the students expressed satisfaction.
ACT	**Improvement Plan for 2024-2025**	With passing scores in all three PI categories for SLO3, we don't anticipate major changes. However, to keep with the advancement in the industry and demand for improved learning, it is important the program maintain continuous improvement to increase the overall scores for PIs and for SLO. For the next academic year, the following improvement steps are proposed: • Present the findings to the department faculty and maintain and ensure the rigor of all courses.

		- Develop and offer more courses aligned with the current industrial needs and advancements. - Provide students with opportunities to improve effective both oral and written communication skills. - Develop opportunities to students to present their work both internally and externally.

SACS Assessment Plan for Master of Engineering Science (MES) Program - Electrical Engineering

Degree: Master of Engineering Science (MES) 2023-2024 Assessment Plan		
	Student Learning Outcome #1	Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
PLAN	**Assessment Method(s)**	(7) Thesis (8) Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	None.
STUDY	**Analysis of Results**	None. There was no MES in Electrical Engineering this year.
ACT	**Improvement Plan for 2024-2025**	No actions are required. General actions were implemented/proposed to further improve the program as described at the end.

		Degree: Master of Engineering Science (MES) 2023-2024 Assessment Plan	
	Student Learning Outcome #2	Students will demonstrate an ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.	
PLAN	**Assessment Method(s)**	(3) Thesis (4) Student Survey	
	Proficiency	Minimum acceptable is 3 out of 4	
DO	**Benchmark**	75% of students achieve the proficiency mentioned above	
	Results of Assessment	None.	
STUDY	**Analysis of Results**	None. There was no MES in Electrical Engineering this year.	
ACT	**Improvement Plan for 2024-2025**	No actions are required. General actions were implemented/proposed to further improve the program as described at the end.	

		Degree: Master of Engineering Science (MES) 2023-2024 Assessment Plan	
	Student Learning Outcome #3	Students will demonstrate an ability to use modern engineering tools to produce engineering analysis in a systematic manner.	
PLAN	**Assessment Method(s)**	• Thesis • Student Survey	
	Proficiency	Minimum acceptable is 3 out of 4	
DO	**Benchmark**	75% of students achieve the proficiency mentioned above	
	Results of Assessment	None.	
STUDY	**Analysis of Results**	None. There was no MES in Electrical Engineering this year.	
ACT	**Improvement Plan for 2024-2025**	No actions are required. General actions were implemented/proposed to further improve the program as described at the end.	

Degree: Master of Engineering Science (MES) 2023-2024 Assessment Plan		
	Student Learning Outcome #4	Students will demonstrate an ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.
PLAN	**Assessment Method(s)**	(7) Thesis Report (8) Final Thesis Defense
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	None.
STUDY	**Analysis of Results**	None. There was no MES in Electrical Engineering this year.
ACT	**Improvement Plan for 2024-2025**	No actions are required. General actions were implemented/proposed to further improve the program as described at the end.

General Actions for Improvement for the Overall Program:

- In October 2023, a proposal was submitted to the Texas Higher Education Coordinating Board to establish a new Bachelor of Science Degree in Computer Engineering program in the Department of Electrical Engineering, and consequently change the name of the Department to "Department of Electrical and Computer Engineering." These requests were approved on December 20, 2023, to be effective January 1, 2024. We have ME/MES and DE in Engineering with an emphasis in Computer Engineering. We expect that having undergraduate program will also benefit the graduate program by increasing the enrollment, and also having new faculty with degrees and research expertise Computer Engineering. Therefore, we propose to have more MES thesis and DE dissertation projects started for 2024-2025.

- Multiple graduate students requested that more courses related to the subjects of computer engineering, the emerging AI and Machine Learning. With one or two new faculty in Computer Engineering program are being hired in the ECE department, we expect to offer some new graduate-level courses in the computer engineering for 2024-2025, especially related to AI and machine learning available. By this, more choices in graduate courses are available for the students to make them more prepared for the job market.

- In Spring 2024, the college of engineering planned significant remodeling of all classrooms in Cherry building with an approximate budget close about $1M. The purpose is to unify the technology used in the classrooms to allow for the best teaching method for on-campus and online students and make it easy for the faculty to move from one classroom to another. Taking this opportunity, we plan to further enhance the ECE classrooms by purchasing more advanced equipment such as larger touch screens, wireless microphones, presentation remote clickers.

SACS Assessment Plan for Master of Engineering Science (MES) Program – Industrial Engineering

Degree: Master of Engineering Science (MES) – Industrial Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #1	Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
PLAN	**Assessment Method(s)**	(1) Thesis (2) Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed.
STUDY	**Analysis of Results**	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and modernization of current courses and challenging research projects that utilize advanced technologies and improve students' abilities to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Degree: Master of Engineering Science (MES) – Industrial Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #2	Students will demonstrate an ability to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.
PLAN	**Assessment Method(s)**	(1) Thesis (2) Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed.
STUDY	**Analysis of Results**	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and providing unique and challenges research projects to effectively evaluate and improve students' abilities to develop and conduct appropriate experimentation or numerical simulation, analyze and interpret data, and use engineering judgment to draw conclusions and produce solutions appropriately.

Degree: Master of Engineering Science (MES) – Industrial Engineering 2023-2024 Assessment Plan		
PLAN	**Student Learning Outcome #3**	Students will demonstrate an ability to use modern engineering tools to produce engineering analysis in a systematic manner.
	Assessment Method(s)	• Thesis • Student Survey
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed.
S T U D Y	**Analysis of Results**	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing course offerings and modernization of current courses and challenging research projects that utilize advanced technologies and modern tools to expose students to cutting-edge methods to improve their ability to produce engineering analysis in a systematic manner.

Degree: Master of Engineering Science (MES) – Industrial Engineering 2023-2024 Assessment Plan		
	Student Learning Outcome #4	Students will demonstrate an ability to complete a master thesis and effectively communicate the thesis work with a range of audiences.
PLAN	**Assessment Method(s)**	(1) Thesis Report (2) Final Thesis Defense
	Proficiency	Minimum acceptable is 3 out of 4
DO	**Benchmark**	75% of students achieve the proficiency mentioned above
	Results of Assessment	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed.
STUDY	**Analysis of Results**	There were no students that graduated with an MES in Industrial Engineering during Spring 2024. Therefore, there were no assessment performed. The developed method will be used moving forward.
ACT	**Improvement Plan for 2024-2025**	We have been and will continuously analyze the program to identify areas for improvement. As there are no student assessments, improvements for 2024-2025 will focus on increasing student opportunities to present internally and externally. Additionally, we will continue to ensure that effect communication (both oral and written) are a critical pillar to successful completion of a master's thesis.