

Assessment Report Qualitative Feedback Checklist

Please read this form in its entirety; it will answer many of your questions.

Program: _____

Date: _____

Addressing Feedback

How to decode feedback provided:

- **Red Text:** needs to be addressed on your end; items are numbered or starred
- **Orange Highlight:** will be addressed by our team
- **Blue Text:** for future reference
- **Purple Text:** best practice considerations (optional)

Step 1: Outcomes and Methods

This is feedback that needs to be addressed in the first two columns (Outcomes and Methods) of the report. Once submitted via the chart below, the IE team will make these changes in the system.

Instructions: If **red numbered text** feedback was provided for the Outcomes and Methods columns, please **type the corrective actions/changes below in its corresponding number.**

Assessment Report – Outcomes and Methods		
Comment Number	Changes for Outcomes and Methods (Type changes you'd like to make below)	Need Help (X)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Continue to next page for Step 2: Results, Use of Results & Follow-ups.

Please submit this completed form (**one per report**) through [our portal](#).

Step 2: Results, Use of Results for Improvement & Follow-Ups

This is feedback that needs to be addressed in the second two columns (Results and Use of Results) of the report. Once submitted via TracDat, the IE team will review these changes in the system.

Instructions: If **starred red text** feedback was provided for these areas, **please log-in to TracDat to make the necessary corrections to each starred item.**

If you need assistance with TracDat, please [visit our website](#) for video tutorials and guides. If you need further assistance, please [request an appointment](#).

Have you addressed all **starred feedback in the Results, Use of Results and Follow-up/Evidence sections of the report?**

Yes _____

- Thank you for completing all revisions, the IE team will review your changes.

No _____

- Contact reviewer for assistance

Does the assessment report state “data not collected” or “data not available”?

Note: “Data not available” has been entered by IE staff when there were blanks under the RESULTS column.

_____ Yes, and I do **not** have data to report or my data were not collected.

_____ Yes, and I do have data to enter. **(If so, then enter data in related results.)**

_____ No, I do not have “data not collected” or “data not available” in the results column.

Step 3: Future Assessment Plans

Assessment Plan for Next Cycle

Do you have new or modified outcomes and/or methods for the next academic year? (Please check below). This is **not** related to the feedback provided on your redlined report.

Yes _____

- [Find appropriate template on our website](#) and complete new plan
- [Use this form](#) to submit new plan

No _____

- No further action required

Please submit this completed form (one per report) through [our portal](#).

Assessment Report

Program - CEC Biomedical Engineering SLO (BS)

Mission: The mission of the Biomedical Engineering Department is to bridge engineering, science and medicine, to educate and train the next generation of diverse biomedical engineers, to promote a culture of inclusion amongst all biomedical engineers, to conduct research leading to significant discoveries in medical sciences, to develop innovative medical technology, to translate scientific discovery and medical technology to industry or clinical practice and engage with the regional to international community for knowledge dissemination.

Department Affiliation: Biomedical Engineering

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
<p>Knowledge of Mathematics - Graduates will be able to apply knowledge of mathematics including differential equations and statistics, physical and life sciences, and engineering to carry out analysis and design to solve problems at the interface of engineering and biology. Outcome Status: Active Competency Category: Content Knowledge and Skills (including Technology) Outcome Start Date: 06/01/2010 Outcome End Date: 05/31/2030</p>	<p>Rubric - Assessment #1 Direct Measures: The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students in senior design course. Minimum Criteria for Success: 1. Senior Design External Evaluation- Students will achieve 2.5 or better.</p>	<p>Reporting Period: 2021-2022 Criterion Status: B. 90% to 99% Met</p> <p>a. Rubric - Assessment #1 Direct Measures: The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>iResults – 1. Senior Design External Assessment – Avg Score 2.58; 12 teams scored 2.5 or above (N=18) 2. Senior Design Faculty Assessment - Avg Score 3.84; 75 students scored 2.5 or above (N=77) # of Students Reported for Each</p>	<p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (09/27/2022) Student Learning Improvement Category: Not Applicable</p> <p style="text-align: right;">fix format</p> <p>1. This seems to be exactly the same data that were reported for Critical Thinking. You must be able to disaggregate data per outcome. Please clarify or schedule a meeting with our team to address this issue.</p>

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	<p>2. Senior Design Faculty Assessment- Students will achieve 2.5 or better.</p> <p>Method Status: Active</p> <p>Course Assessed: BME 4908</p> <p>Attach Follow-up Evidence or Related Documents (PDF FILES ONLY):</p> <p>SeniorEvaluation_Current-Spring2020.pdf</p>	<p>Excellent (46) Very Good (29) Good (1) Fair (1) Poor (0) (09/27/2022)</p> <hr/> <p>Reporting Period: 2020-2021</p> <p>Criterion Status: C. 80% to 89% Met</p> <p>Senior Design External Assessment –Avg Score 2.96; 66.29% of students scored > 2.5/4</p> <p>Senior Design Faculty Assessment - Avg Score 3.83; 73 students scored 2.5 or above (N=77)</p> <p># of Students Reported for Each</p> <p>Excellent (47) Very Good (22) Good (4) Fair (0) Poor (0)</p> <p>Analysis: The faculty assessment for the Knowledge of Mathematics was well above the 80% threshold. The External Assessment exam for mathematics was done during the Spring semester only. The results were below the minimum criteria of 80% The examiners received an executive summary before the presentation and had the opportunity to evaluate the device master record and design history file. The presentations were recorded by the team and the judges watched the video recordings. The faculty will meet in the Undergraduate Curriculum Committee at the end of this semester to discuss changing the inclusion of the External Evaluation as a Direct Measure for assessment of the mathematics outcome as it seems to better fit with only the oral communication student learning outcomes. From the faculty assessment 69 out of 77 students performed Excellent or Very Good on the Faculty Assessment direct measure. The faculty will discuss whether other direct measures could be assessed that would better reflect the mathematics outcome. In March 2020, when FIU mandated that all face to face and hybrid</p>	<p>Use of Results for Improvement:</p> <p>The faculty will meet in the Undergraduate Curriculum Committee to discuss changing the inclusion of the External Evaluation as a Direct Measure for assessment of the mathematics outcome as it seems to better fit with only the oral communication student learning outcomes. (11/10/2021)</p> <p>Student Learning Improvement Category: Information Dissemination</p> <p>Follow-Up: The BME Undergraduate Curriculum Committee met on 4/13/22 and decided to drop the External Evaluation from the Critical Thinking outcome and just keep the Faculty Evaluation and the BME Labs 1 and 2 assessments. (09/27/2022)</p> <p>*Follow-Up: Did the faculty decide on if this will be done for the content knowledge outcome? Were there any decisions the faculty made that impacted this outcome, content knowledge.</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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courses be converted to online courses in order to stem the growing pandemic of COVID 19, both events were brought fully on-line using the Zoom platform. That change necessitated an upgrade in the SDP online platform to allow for online oral and poster presentations submissions and online evaluations my judges and project sponsors. The feedback was positive, university COVID policies regarding teaching and events persisted, thus the new format was continued through spring 2021. There were no substantive changes to the course content. This semester, with the return to face-to-face teaching, presentations will be given live, but the online practices implemented due to COVID such as prior recording of presentations will be kept in place. Judging of projects will take on a hybrid format. Judges have the option to judge live remotely or be present for face-to-face presentations. There are two major events which comprise the final examinations for FIU BME Senior Design Project students. The first is the BME Senior Design Expo and Competition, which is comprised of oral presentations by each senior design project group, followed immediately by an oral examination/interrogation by industry experts who lend the real-world perspective and provide feedback in accordance with specified course learning outcomes. The second examination takes place in the form of a face-to-face poster competition which is adjudged by Ph.D. students in BME as well as industry personnel.

(11/03/2021)

Attach Follow-up Evidence or Related Documents (PDF FILES ONLY):

[BME-UG-CommitteeMeeting-Agenda-Minutes-13Apr22.docx](#)

Reporting Period: 2019-2020

Criterion Status: C. 80% to 89% Met

1. Senior Design External Evaluation - Avg Score 3.27 ; 69 students scored 2.5 or above (N=77)
2. Senior Design Faculty Assessment - Avg Score 3.09; 22

Use of Results for Improvement:

This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020)

Student Learning Improvement

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	<p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: Students will score 2.5 or above. Method Status: Active Course Assessed: BME 4050L Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): Lab Rubric BME.pdf</p>	<p>students scored 2.5 or above (N=26, available data) (10/15/2020)</p> <p>Reporting Period: 2021-2022 Criterion Status: C. 80% to 89% Met</p> <p>Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>i. Results – 1. BME Lab Evaluation - Avg Score 3.45; 143 students scored 2.5 or above (N=168) (09/27/2022)</p> <p>Reporting Period: 2020-2021 Criterion Status: C. 80% to 89% Met BME Lab Evaluation - Avg Score 3.66; 179 students scored 2.5 or above (N=186)</p> <p>Analysis: The students scored very well on this direct measure with 96% scoring above 2.5, well above the threshold of 80%. This agrees with the faculty evaluation of Senior Design as to student performance on the Knowledge of Mathematics student learning outcome. These two direct measures indicate students are meeting the desired outcomes. (11/03/2021)</p>	<p>Category: Not Applicable</p> <p>This is...</p>
			<p>UoR: Please refer to improvement actions discussed in Assessment #1</p>

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	<p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.</p> <p>Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied. Sampling: Graduating students. Minimum Criteria for Success: Students will rate their satisfaction with the knowledge of mathematics the program provided them with as 3 or above. Method Status: ARCHIVED</p>	<p>Reporting Period: 2019-2020 Criterion Status: B. 90% to 99% Met Avg Score 3.6; 144 students scored 2.5 or above (N=160) (10/15/2020)</p>	<p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020) Student Learning Improvement Category: Not Applicable</p>
<p>Critical Thinking - Graduates will be able to design a system, component, or process to meet desired needs, including systems that involve the interaction between living and non-living materials, within realistic constraints such as economic,</p>	<p>Rubric - Assessment #1 Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by</p>	<p>Reporting Period: 2021-2022 Criterion Status: B. 90% to 99% Met Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled</p>	<p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (09/27/2022) Student Learning Improvement Category: Not Applicable</p>

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
<p>environmental, social, political, ethical, health and safety, manufacturability, and sustainability. Outcome Status: Active Competency Category: Critical Thinking Outcome Start Date: 06/01/2010 Outcome End Date: 05/31/2030</p> <p>1. Outcome: We are shifting toward naming the outcomes based on the content of the outcome rather than the competency category since that is already listed. Would you consider renaming this outcome to "Systems Design"?</p>	<p>the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to critical thinking.</p> <p>The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students in Senior Design course. Minimum Criteria for Success: 1. Senior Design External Evaluation - Students will achieve 2.5 or better. 2. Senior Design Faculty Assessment- Students will achieve 2.5 or better. Method Status: Active Course Assessed: BME4908 Attach Follow-up Evidence or Related Documents (PDF FILES ONLY):</p>	<p>out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to critical thinking.</p> <p>The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Results –</p> <ol style="list-style-type: none"> Senior Design External Assessment – Avg Score 2.58; 12 teams scored 2.5 or above (N=18) Senior Design Faculty Assessment - Avg Score 3.84; 75 students scored 2.5 or above (N=77) # of Students Reported for Each Excellent (46) Very Good (29) Good (1) Fair (1) Poor (0) (09/27/2022) <hr/> <p>Reporting Period: 2020-2021 Criterion Status: C. 80% to 89% Met Senior Design External Assessment – Avg Score 2.72; 12 teams scored 2.5 or above (N=20)</p> <p>Senior Design Faculty Assessment - Avg Score 3.83; 73 students scored 2.5 or above (N=77) # of Students Reported for Each Excellent (47)</p>	<p>2. This seems to be exactly the same data that were reported for Content Knowledge. You must be able to disaggregate data per outcome. Please clarify or schedule a meeting with our team to address this issue.</p> <p>Use of Results for Improvement: The faculty in the undergraduate committee have been meeting throughout the semester to revamp the program direct measures to better reflect the course structure, evaluation methods and who has the best</p>

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	SeniorEvaluation_Current-Spring2020.pdf	<p>Very Good (22) Good (4) Fair (0) Poor (0)</p> <p>Analysis: The faculty assessment for Critical Thinking (89% scored Excellent or Very Good) Senior Design Faculty Assessment had approximately 94% (73/77 students) scoring above 2.5, which was well above the 80% threshold while the External Assessment had only 60% of the teams exceeding the 2.5 threshold. The External Assessment was performed by industry representatives who only saw a brief presentation by the teams, and they did not individually score the students. The examiners received an executive summary before the presentation. The faculty will meet in the Undergraduate Curriculum Committee to discuss changing the inclusion of the External Evaluation as a Direct Measure for the Critical Thinking outcome as it seems to better fit with only the oral communication student learning outcomes. The faculty will discuss whether other direct measures could be assessed that would better reflect the Critical Thinking outcome. (11/03/2021)</p> <p>Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): SACS Student Learning Outcomes Approved by UG Committee 4-13-22 (1).docx</p> <p>*Evidence: Please provide evidence of the collaboration with the tutoring program offered by the Center for Diversity and Student Success (e.g., meeting minutes, email communication, etc.).</p>	<p>perspective to evaluate the teams. Since the faculty evaluators assigned to each team are not involved in teaching the course but typically meet with the students every 1 -2 weeks throughout the semester as opposed to hearing only a brief 10 minute presentation and looking at the Design History File and the Device Master Record. It was felt that the External Evaluation should be dropped as a primary outcome measure. The final vote on this is pending at the end of the Spring Semester of 2022. This should help to consolidate the data collection process to better reflect student performance as the faculty will serve as a sort of "external" evaluator for the team who are typically guided by the course instructor and meetings with industry professionals. Also, we will coordinate with the tutoring program offered by the Center for Diversity and Student Success to better understand the failing student population and tutoring needs. (04/05/2022)</p> <p>Student Learning Improvement Category: Improvement of Assessment, University Resources</p> <p>Follow-Up: In Fall 2021 the tutoring program offered by the Center for Diversity and Student Success at FIU's College of Engineering and Computing assessed the numbers of F's (fails), DRs (drop), and INCs</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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(incompletes) with the students who came to tutoring (that was initiated for key courses across all engineering departments since Fall 2018). They found that none of the students that attended tutoring more than once failed, and they also tracked the number of sessions and courses for which tutoring was offered. The typical BSBME core courses that were part of tutoring program were BME 3632 (Transport), BME 2740 (Modeling and Simulations), BME 4100 (Biomaterials), BME 3721 (Data Evaluation and Principles), EGM 3503 (Applied Mechanics), and EEL 3110 (Circuits).
(04/06/2022)

Use of Results for Improvement:
The faculty will meet in the Undergraduate Curriculum Committee to discuss changing the inclusion of the External Evaluation as a Direct Measure for the Critical Thinking outcome as it seems to better fit with only the oral communication student learning outcomes. The faculty will discuss whether other direct measures could be assessed that would better reflect the Critical Thinking outcome. (11/10/2021)

Follow-Up: The faculty met in the Undergraduate Curriculum committee and decided to remove the external evaluation from the critical thinking student learning outcome and instead use only the

*Follow-up: Please provide when the new assessment plan that does not include the external evaluation will be implemented.

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p>	<p>Reporting Period: 2019-2020 Criterion Status: C. 80% to 89% Met 1. Senior Design External Evaluation - Avg Score 3.16; 69 students scored 2.5 or above (N=77) 2. Senior Design Faculty Assessment - Avg Score 3.47; 24 students scored 2.5 or above (N=24, available data) (10/15/2020)</p> <p>Reporting Period: 2021-2022 Criterion Status: C. 80% to 89% Met Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p>	<p>faculty evaluation and the laboratory measures. The faculty evaluation questions will be evaluated to make sure they reflect the critical thinking outcome and possible other measures such as Industry sponsor survey could be used to get another measure, but this may be difficult since not all senior design projects are able to obtain industry sponsors. (10/14/2022)</p> <p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020) Student Learning Improvement Category: Not Applicable</p>

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	<p>Scale used (see attached for scale description): (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor Sampling: Biomedical Engineering BS Students. Minimum Criteria for Success: Students will score 2.5 or above. Method Status: Active Course Assessed: BME 4051L Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): Lab Rubric BME.pdf</p> <p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.</p> <p>Student Exit Surveys are completed by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were</p>	<p>Results – 1. BME Lab Evaluation - Avg Score 3.45; 143 students scored 2.5 or above (N=168) (09/27/2022)</p> <hr/> <p>Reporting Period: 2020-2021 Criterion Status: C. 80% to 89% Met BME Lab Evaluation - Avg Score 3.66; 179 students scored 2.5 or above (N=186)</p> <p>Analysis: Students performed very well on the Laboratory Evaluation with 96% scoring 2.5 or better, exceeding the minimum standard of 80%. This again agrees from the data obtained from the Faculty assessment of Senior Design for the Critical Thinking student learning outcome. These two direct measures indicate students are meeting the desired outcomes. (11/03/2021)</p> <hr/> <p>Reporting Period: 2019-2020 Criterion Status: C. 80% to 89% Met Avg Score 3.6; 139 students scored 2.5 or above (N=160) (10/15/2020)</p>	<p>UoR: Please refer to improvement actions discussed in Assessment #1</p> <hr/> <p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020) Student Learning Improvement Category: Not Applicable</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.
Sampling: Graduating students.
Minimum Criteria for Success: Students will rate their satisfaction with the critical thinking skills the program provided them with as 3 or above.
Method Status: ARCHIVED

Communicate Effectively in BME - Written - Graduates will be able to communicate effectively through written assignments/reports (scientific writing) in the field of Biomedical Engineering.
Outcome Status: Active
Competency Category: Communication (Oral or Written)
Outcome Start Date: 06/01/2019
Outcome End Date: 05/31/2030
Sub-competency: Written

Rubric - Graduates are assessed on their ability to convey a deep understanding of the experimental process and report results scientifically. They are also assessed on their ability to communicate why certain phenomenon are observed and make statements about future protocols to explore. Graduates are also assessed by external judges on their technical writing skills to assemble Design History Files (DHF) and Device Master Records (DMR) describing their innovative research in senior design.

Scientific Laboratory Reports: graded 1-4
DHF and DMR subsections of the Senior Design Faculty Evaluations: graded 1-5

For written communication in BME labs (graded 1-4) the metric is:
4.0 - 3.6 Expert
3.6 - 3.2 Proficient

Reporting Period: 2021-2022
Criterion Status: C. 80% to 89% Met

a. **Rubric -**
Graduates are assessed on their ability to convey a deep understanding of the experimental process and report results scientifically. They are also assessed on their ability to communicate why certain phenomenon are observed and make statements about future protocols to explore. Graduates are also assessed by external judges on their technical writing skills to assemble Design History Files (DHF) and Device Master Records (DMR) describing their innovative research in senior design.

Scientific Laboratory Reports: graded 1-4
DHF and DMR subsections of the Senior Design Faculty Evaluations: graded 1-5

For written communication in BME labs (graded 1-4) the metric is:
4.0 - 3.6 Expert
3.6 - 3.2 Proficient
3.1 - 2.8 Apprentice
2.7 - 2.4 Novice
<2.4 Poor

For written communication in Senior (BME4908) graded 1-5

Use of Results for Improvement:
This is the first year of a two-year cycle of data collection. No Use of Results required. (09/27/2022)
Student Learning Improvement Category: Not Applicable

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
	<p>3.1 - 2.8 Apprentice 2.7 - 2.4 Novice <2.4 Poor</p> <p>For written communication in Senior (BME4908) graded 1-5 the metric is: 5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor</p> <p>Sampling: BME students in Senior Design and Senior Laboratory classes with passing grades were sampled since these are capstone courses with all outcomes having high importance.</p> <p>Minimum Criteria for Success: 1. BME4050/4051L: 80% of students will score at least achieve = 2.5 out of 4 2. BME4908: Students will score at least 4 out of 5</p> <p>Method Status: Active Course Assessed: BME4908, BME4050/4051L Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): SeniorEvaluation_Rubric_Student.pdf Lab Rubric BME.pdf</p>	<p>the metric is: 5 Excellent 4 Very Good 3 Good 2 Fair 1 Poor</p> <p>Results –</p> <ol style="list-style-type: none"> BME Lab Evaluation - Avg Score 3.45; 143 students scored 2.5 or above (N=168) Senior Design Faculty Assessment - Written - Avg Score 4.89; 18 teams scored 3.125 or above (N=18) <p># of Teams Reported for Each Excellent (11) Very Good (7) Good (0) Fair (0) Poor (0) (09/27/2022)</p> <hr/> <p>Reporting Period: 2020-2021 Criterion Status: C. 80% to 89% Met BME Lab Evaluation - Avg Score 3.66; 179 students scored 2.5 or above (N=186)</p> <p>Senior Design Faculty Assessment - Written - Avg Score 4.88; 18 teams scored 3.125 or above (N=18)</p> <p># of Teams Reported for Each Excellent (12) Very Good (6) Good (0) Fair (0) Poor (0)</p> <p>Analysis: 96% of students exceeded 2.5 for the Lab Evaluation while 100% of teams scored above 3.125 on the Faculty Assessment. Both of these measures confirm students are meeting the desired outcomes so no changes will be made at this time. The faculty will continue to monitor Senior Design team's performance in upcoming</p>	<p>Use of Results for Improvement: BME Senior Design-1 Course Assessment Each BME student is required to complete Senior-1 (BME 4800+ BME 4880 or BME 4800C since Fall 2019) prior to Senior-2. The Student Learning Outcomes for Written and Oral presentation are assessed by the course instructor. The BME Undergraduate Curriculum Committee will meet at the end of the Spring Semester 2022 to evaluate including Senior 1 as well as Senior 2 in both the oral and written communication outcomes. The Senior Design-1 Instructor uses the Senior Design-1's Course Assessment tool to assess the</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
		<p>semesters. Both of these measures confirm students are meeting the desired outcomes. (11/03/2021)</p> <p>Attach Follow-up Evidence or Related Documents (PDF FILES ONLY):</p> <p>SACS Student Learning Outcomes Approved by UG Committee 4-13-22 (1).docx</p>	<p>quality of the initial phase of their senior-design project's design and assign a grade. Each item on the assessment tool is assigned a grade of Outstanding, Very Good, Good, Acceptable and Unacceptable that is then converted to a quantitative score from 4-0. The students/teams are assessed based on the evaluations done by the course instructor (Quizzes, Mid-Term Exam, In-class Activities/Presentations, Final Exam, Project Proposal Presentation to the department faculty, Peer Review, and/or a Written Proposal). The oral and written communication skills outcome will be proposed to be assessed using the Instructor evaluation form examining various aspects of the Project Proposal Presentation and the Written Proposal, respectively. (04/05/2022)</p> <p>Student Learning Improvement Category: Improvement of Assessment</p> <p>Use of Results for Improvement: The faculty will continue to monitor Senior Design team's performance in upcoming semesters. (11/03/2021)</p> <p>Follow-Up: The students continue to meet the stated minimum criteria for both the lab and faculty evaluation. The faculty decided in the undergraduate curriculum committee to drop the</p>

*Follow-up: Please provide when the new assessment plan that does not include the external evaluation will be implemented.

Outcomes	Assessment Method	Results & Analysis	Use of Results for Improvement
<p>Communicate Effectively in BME - Oral - Graduates will be able to communicate effectively to their peers orally in the field of Biomedical Engineering.</p> <p>Outcome Status: Active</p> <p>Competency Category: Communication (Oral or Written)</p> <p>Outcome Start Date: 06/01/2019</p> <p>Outcome End Date: 05/31/2030</p> <p>Sub-competency: Oral</p>	<p>Rubric - Graduates are assessed by external judges in their ability to communicate their senior design projects through live presentations, followed by a Q & A. This includes the graduates ability to define the gap in knowledge, the social and/or environmental impacts, and the scientific details of their innovation(s).</p> <p>15-20 minute oral group presentations graded by a score sheet filled out by the faculty mentor: graded 1-10</p> <p>Sampling: All senior design students assigned in groups were sampled since this class assessed oral communication skills to peers/community with most emphasis.</p> <p>Minimum Criteria for Success: BME4908: Students will score at least an 8 out of 10</p> <p>Method Status: Active</p> <p>Course Assessed: BME4908</p> <p>Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): SeniorEvaluation_Rubric_Student.pdf</p>	<p>Reporting Period: 2021-2022</p> <p>Criterion Status: E. 60% to 69% Met</p> <p>Rubric - Graduates are assessed by external judges in their ability to communicate their senior design projects through live presentations, followed by a Q & A. This includes the graduate’s ability to define the gap in knowledge, the social and/or environmental impacts, and the scientific details of their innovation(s).</p> <p>15-20 minute oral group presentations graded by a score sheet filled out by the faculty mentor: graded 1-10</p> <p>i. Results –</p> <p>1. Senior Design External Assessment – Oral - Avg Score 2.58; 12 teams scored 2.5 or above (N=18 teams consisting of 77 students) Score mapped to 4.0 scale to make comparing criteria similar across assessments. (09/27/2022)</p> <hr/> <p>Reporting Period: 2020-2021</p> <p>Criterion Status: C. 80% to 89% Met</p> <p>Senior Design External Assessment – Oral - Avg Score 2.72; 12 teams scored 2.5 or above (N=20) Score mapped to 4.0 scale to make comparing criteria similar across assessments.</p> <p>Analysis: Individual students were not assessed by the external evaluators, but rather the teams. Only 60% of</p>	<p>external evaluation for written communication since the external evaluators only have minimum interaction with the students and are in a better position to evaluate the oral communication skills of the students. (10/17/2022)</p> <p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (09/27/2022)</p> <p>Student Learning Improvement Category: Not Applicable</p> <hr/> <p>Use of Results for Improvement: The faculty will meet in the Undergraduate Curriculum Committee to discuss this finding and look for additional measures that may be assessed in the program to evaluate effective oral communication. The first semester of senior design also has</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
		<p>teams scored above 2.5. The faculty will meet in the Undergraduate Curriculum Committee to discuss this finding and look for additional measures that may be assessed in the program to evaluate effective oral communication. The first semester of senior design also has a group presentation where the faculty assess student presentations of their proposed senior design projects. The committee will evaluate whether to include this rubric to see if it shows a similar result as obtained by the external evaluators. Scoring individual students on the form will also be discussed as opposed to the group as a whole. (11/03/2021)</p> <p>Attach Follow-up Evidence or Related Documents (PDF FILES ONLY): SACS Student Learning Outcomes Approved by UG Committee 4-13-22 (1).docx</p> <p>*Follow-up: Please provide when the new assessment plan that does not include the external evaluation will be implemented.</p>	<p>a group presentation where the faculty assess student presentations of their proposed senior design projects. The committee will evaluate whether to include this rubric to see if it shows a similar result as obtained by the external evaluators. Scoring individual students on the form will also be discussed as opposed to the group as a whole. (11/10/2021)</p> <p>Student Learning Improvement Category: Improvement of Assessment</p> <p>Follow-Up: The Undergraduate Curriculum committee met and made the Senior Design External Evaluation the sole measure for the oral presentation student learning outcome since the external examiners all hear the student group presentations. Each group is evaluated for their presentation skills and their ability to clearly convey information about their respective projects. The scoring of individual students in the presentation was not felt to be feasible, so the group scores were retained. We will continue to reassess other potential assessment methods to evaluate the students' oral presentation skills, but the external evaluation was the best measure that came to mind. (10/14/2022)</p> <p>Follow-Up: BME Senior Design-1 Course Assessment</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
			<p>Each BME student is required to complete Senior-1 (BME 4800+ BME 4880 or BME 4800C since Fall 2019) prior to Senior-2. The Student Learning Outcomes for Written and Oral presentation are assessed by the course instructor. The BME Undergraduate Curriculum Committee will meet at the end of the Spring Semester 2022 to evaluate including Senior 1 as well as Senior 2 in both the oral and written communication outcomes.</p> <p>The Senior Design-1 Instructor uses the Senior Design-1's Course Assessment tool to assess the quality of the initial phase of their senior-design project's design and assign a grade. Each item on the assessment tool is assigned a grade of Outstanding, Very Good, Good, Acceptable and Unacceptable that is then converted to a quantitative score from 4-0. The students/teams are assessed based on the evaluations done by the course instructor (Quizzes, Mid-Term Exam, In-class Activities/Presentations, Final Exam, Project Proposal Presentation to the department faculty, Peer Review, and/or a Written Proposal). The oral and written communication skills outcome will be proposed to be assessed using the Instructor evaluation form examining various aspects of the Project Proposal Presentation and the Written</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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Proposal, respectively.
(04/05/2022)

Communicate Effectively in BME -
Graduates will be able to communicate effectively in the field of Biomedical Engineering.
Outcome Status: ARCHIVED
Competency Category: Communication (Oral or Written)
Outcome Start Date: 06/01/2010
Outcome End Date: 05/31/2020
Sub-competency: Oral

Rubric - Assessment #1
Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to communicating effectively

Scale used:
(4) Excellent
(3) Very Good
(2) Good
(1) Fair
(0) Poor

The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success:
Senior Design External Evaluation -

Reporting Period: 2019-2020
Criterion Status: C. 80% to 89% Met
1. Senior Design External Evaluation - Avg Score 3.42; 77 students scored 2.5 or above (N=77)
2. Senior Design Faculty Assessment - Avg Score 3.73; 22 students scored 2.5 or above (N=26, available data) (10/15/2020)

Use of Results for Improvement:
This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020)
Student Learning Improvement Category: Not Applicable

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Students will achieve 2.5 or above. Senior Design Faculty Assessment - Students will achieve 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: Students will score 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <hr/> <p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.</p> <p>Student Exit Surveys are completed</p>	<p>Reporting Period: 2019-2020 Criterion Status: C. 80% to 89% Met Avg Score 3.39; 150 students scored 2.5 or above (N=154) (10/15/2020)</p>	<p>Use of Results for Improvement: This is the first year of a two-year cycle of data collection. No Use of Results required. (10/15/2020) Student Learning Improvement Category: Not Applicable</p>

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.
Sampling: Graduating students.
Minimum Criteria for Success: Students will rate their satisfaction with how the program prepared them to communicate effectively in the field as 3 or above.
Method Status: ARCHIVED

Content Knowledge -Ability of design to meet desired needs - Graduates will be able to design a system, component, or process to meet desired needs, including systems that involve the interaction between living and non-living materials
Outcome Status: ARCHIVED
Competency Category: Content Knowledge and Skills (including Technology)
Outcome Start Date: 06/01/2010
Outcome End Date: 05/31/2015

Rubric - Assessment #1
Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to their ability to design to meet desired needs.

The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.

Scale used:

- (4) Excellent
- (3) Very Good
- (2) Good
- (1) Fair
- (0) Poor

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success: 1.

Senior Design External Evaluation - Students will achieve > 2.5 or better.

2. Senior Design Faculty Assessment- Students will achieve > 2.5 or better.

Method Status: ARCHIVED

Rubric - Assessment #2

Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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Scale used:
 (4) Excellent
 (3) Very Good
 (2) Good
 (1) Fair
 (0) Poor
Sampling: Biomedical Engineering BS Students.
Minimum Criteria for Success: Students will score 2.5 or above.
Method Status: ARCHIVED
Survey (Describe in Detail Below) - Assessment #3
 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program?s Outcomes.

Student Exit Surveys are completed by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.
Sampling: Graduating students.
Minimum Criteria for Success: Students will rate their satisfaction with the critical thinking skills the program provided them with as 3 or

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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above.

Method Status: ARCHIVED

Critical Thinking - Engineering

Solutions - Graduates will be able to identify, formulate and adapt engineering solutions to unmet biological needs.

Outcome Status: ARCHIVED

Competency Category: Critical Thinking

Outcome Start Date: 06/01/2010

Outcome End Date: 05/31/2015

Rubric - Assessment #1

Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to engineering solutions. The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.

Scale used:

- (4) Excellent
- (3) Very Good
- (2) Good
- (1) Fair
- (0) Poor

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success:

Senior Design External Evaluation - Students will achieve 2.5 or above.

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Senior Design Faculty Assessment - Students will achieve 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Form assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation is ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used: (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: Students will score 2.5 or above.</p> <p>Method Status: ARCHIVED</p>		
	<p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior</p>		

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.

Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.

Sampling: Graduating students.

Minimum Criteria for Success:

Students will rate their satisfaction with how the program prepared them to formulate and adapt engineering solutions as 3 or above.

Method Status: ARCHIVED

Critical Thinking - Engineering Practice and Biological Systems -

Graduates will be able to use the techniques, skills, and modern engineering tools necessary for engineering practice, including the ability to model and analyze biological systems as engineering systems.

Outcome Status: ARCHIVED

Competency Category: Critical Thinking

Outcome Start Date: 06/01/2010

Outcome End Date: 05/31/2015

Rubric - Assessment #1

Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to engineering practice and biological systems.

The Senior Design External

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.</p> <p>Scale used: (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: 1. Senior Design External Evaluation: Students will achieve 2.5 or above. 2. Senior Design Faculty Assessment: Students will achieve 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following</p>		

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used: (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: Students will score 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Survey (Describe in Detail Below) - Assessment #3</p> <p>Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.</p> <p>Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.</p> <p>Sampling: Graduating students.</p> <p>Minimum Criteria for Success: Students will rate their satisfaction with how the program has prepared them to apply engineering practice</p>		

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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and biological systems as 3 or above.

Method Status: ARCHIVED

Multi-disciplinary Teams - Graduates will be able to function in multi-disciplinary teams.

Outcome Status: ARCHIVED

Competency Category:

Communication (Oral or Written)

Outcome Start Date: 06/01/2011

Outcome End Date: 05/31/2015

Rubric - Assessment #1:

Direct Measures: Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to working in multidisciplinary teams.

The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5- point grading scale.

Scale used:

- (4) Excellent
- (3) Very Good
- (2) Good
- (1) Fair
- (0) Poor

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success:

Senior Design External Evaluation -

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Students will achieve 2.5 or above. Senior Design Faculty Assessment - Students will achieve 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: BME Lab Course Assessment achieve > 2.5/4.0.</p> <p>Method Status: ARCHIVED</p>		
	<p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program's Outcomes.</p>		

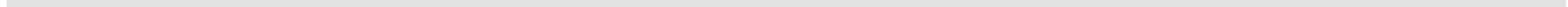
<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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Student Exit Surveys are completed by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success: Students will rate their satisfaction with how the program prepared them to work in multi-disciplinary teams as 3 or more.

Method Status: ARCHIVED



Content Knowledge - Impact of Engineering Solutions - Awareness of the characteristics of responsible professional engineering practice, including ethical conduct, consideration of the impact of engineering solutions on society in a global and contemporary context, and the value of life-long learning.

Outcome Status: ARCHIVED

Competency Category: Content Knowledge and Skills (including Technology)

Outcome Start Date: 06/01/2010

Outcome End Date: 05/31/2015

Rubric - Assessment #1

Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to the impact of engineering solutions. The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 4 point grading scale.</p> <p>Scale used: (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Biomedical Engineering BS Students.</p> <p>Minimum Criteria for Success: Senior Design External Evaluation - Students will achieve 2.5 or above. Senior Design Faculty Assessment - Students will achieve 2.5 or above.</p> <p>Method Status: ARCHIVED</p> <p>Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p>		

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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Scale used:
 (4) Excellent
 (3) Very Good
 (2) Good
 (1) Fair
 (0) Poor
Sampling: Biomedical Engineering BS Students.
Minimum Criteria for Success: Students will score 2.5 or above.
Method Status: ARCHIVED
Survey (Describe in Detail Below) -
 Assessment #3
 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to master specific Program?s Outcomes.

Student Exit Surveys are completed by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.
Sampling: Graduating Students.
Minimum Criteria for Success: Students will rate their satisfaction with how the program prepared them to consider the impact of

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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engineering solutions as 3 or above.
Method Status: ARCHIVED

Technology - Ability to use Engineering Technology - The graduates will be able to use engineering technology such as advanced instrumentation, computer modeling and software for engineering applications as well as data evaluation.
Outcome Status: ARCHIVED
Competency Category: Content Knowledge and Skills (including Technology)
Outcome Start Date: 06/01/2010
Outcome End Date: 05/31/2019
Sub-competency: Technology

Rubric - Assessment #1
 Senior Design assessments include the Senior Design Faculty Evaluation form and the Senior Design External Evaluation Form. The Senior Design Faculty Assessment is filled out by the Senior Design Faculty member responsible for mentoring the team and is filled out for each member in the team. Each student is assessed by the faculty member with regards to a number of specific questions which are directly related to their ability to use engineering technology. The Senior Design External Evaluation form is filled out for each senior design team by outside evaluators chosen from local industry and other academic institutions. A similar taxonomy is used for this form as was used for the Senior Design Faculty Evaluation ranging from Poor to Excellent with the same 5-point grading scale.

Scale used:
 (4) Excellent
 (3) Very Good
 (2) Good
 (1) Fair
 (0) Poor
Sampling: Biomedical Engineering BS Students.
Minimum Criteria for Success:
 Senior Design External Evaluation - Students will achieve 2.5 or above.
 Senior Design Faculty Assessment -

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
	<p>Students will achieve 2.5 or above. Method Status: ARCHIVED Rubric - Assessment #2 Direct Measure: Laboratory Evaluation Forms assess student performance based on specific criteria which are filled out by the Laboratory Instructor at the end of the course. The evaluation sheet contains a list of core competencies important to the program and a series of questions relating to each of these core competencies. Each question is weighted with respect to how important it is to the particular student learning outcome and is scored using the following taxonomy. The taxonomy for this evaluation ranges from Poor to Excellent where Poor corresponds to 0 and Excellent corresponds to 4.</p> <p>Scale used: (4) Excellent (3) Very Good (2) Good (1) Fair (0) Poor</p> <p>Sampling: Graduating students. Minimum Criteria for Success: Students will score 2.5 or above. Method Status: ARCHIVED</p>		
	<p>Survey (Describe in Detail Below) - Assessment #3 Indirect Measure: Student Exit Survey. Evaluation surveys are performed by each student just prior to graduation self assessing student satisfaction that the BS Program has provided them with the ability to</p>		

<i>Outcomes</i>	<i>Assessment Method</i>	<i>Results & Analysis</i>	<i>Use of Results for Improvement</i>
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master specific Program's Outcomes.

Student Exit Surveys are completed by each graduating student from the Biomedical Engineering Program. Each student learning outcome is evaluated by the student with respect to how satisfied they were that they have been taught (or provided with the ability to perform) each student learning outcome. The student response options include (1) Very Dissatisfied (2) Dissatisfied (3) Satisfied and (4) Very Satisfied.

Sampling: Biomedical Engineering BS Students.

Minimum Criteria for Success:

Students will rate their satisfaction with how the program prepared them to use engineering technology as 3 or above.

Method Status: ARCHIVED