**Continuous Improvement Plan (CIP)**

**Outcomes might not change from year to year. For example, if you have not met previous targets, you may wish to retain the same outcomes. *If this is an academic, workforce, or continuing education program, you must have at least one student learning outcome.* You may also add short-term administrative, technological, assessment, resource, or professional development goals, as needed.**

**Date:** 3/23/2023 **Name of Program/Unit:** Civil Engineering FOS (Field of Study)

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**Table 1: CIP Outcomes, Measures & Targets Table (focus on at least one for the next two years)**

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| **A. Expected Outcome(s)**  Results expected in this unit  (e.g., Authorization requests will be completed more quickly; Increase client satisfaction with our services) | **B. Measure(s)**  Instrument(s) / process(es) used to measure results  (e.g., survey results, exam questions, etc.) | **C. Target(s)**  Level of success expected  (e.g., 80% approval rating, 10-day faster request turn-around time, etc.) |
| * Students will be able to apply principles of physics to analyze forces acting on stationary engineering structures and systems. | Two-unit exams containing questions on structural analysis of frames and machines composing 50% of each exam grade (ENGR 2301) | Min. 70% on each exam assessments by 70% of the students |
| * Students will be able to analyze engineering structures and systems involving the motion of particles and rigid bodies | Unit exam on planar motion analysis and kinetic equation of motion (ENGR 2302) | Min. 70% on exam assessment by 70% of the students |
| * Students will be able to perform stress, strain and deformation analysis of engineering structures and systems. | Unit exam on calculation of stress and strain, and their transformation from one coordinate system to another (ENGR 2332) | Min. 70% on exam assessment by 70% of the students |
| * Students will be able to create engineering drawings using industry software. | Final project to create engineering drawings with 2D and 3D views using advanced CADD (ENGR 1304) | Min. 70% on project assessment by 70% of the students |

**Description of Fields in the Following CIP Tables:**

**A. Outcome(s)** -Results expected in this program (e.g., Students will learn how to compare/contrast conflict and structural functional theories; increase student retention in Nursing Program).

**B. Measure(s)** -Instrument(s)/process(es) used to measure results

(e.g., results of surveys, test item questions 6 & 7 from final exam, end of term retention rates, etc.)

**C. Target(s)** -Degree of success expected (e.g., 80% approval rating, 25 graduates per year, increase retention by 2% etc.).

**D. Action Plan** -Based on analysis, identify actions to be taken to accomplish outcome. What will you do?

**E. Results Summary** - Summarize the information and data collected in year 1.

**F. Findings** - Explain how the information and data has impacted the expected outcome and program success.

**G. Implementation of Findings** – Describe how you have used or will use your findings and analysis of the data to make improvements.

**Table 2. CIP Outcomes 1, 2 & 3 (FOCUS ON AT LEAST 1)**

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| 1. Students will be able to apply principles of physics to analyze forces acting on stationary engineering structures and systems. | |
| 1. **Measure (Outcome #1)**   Two-unit exams containing questions on structural analysis of frames and machines composing 50% of each exam grade (ENGR 2301) | 1. **Target (Outcome #1)**  * Min. 70% on each exam assessments by 70% of the students |
| 1. **Action Plan (Outcome #1)**   Two-unit exam rubrics to assess the measures | |
| 1. **Results Summary (Outcome #1)**   F21/S22: 85.9% exams met standard; F22: 75% exams met standard  Median: F21/S22: 91%; F22 91%  Average: F21/S22: 85%; F22: 75%  High: 100%  Low: 0% | |
| 1. **Findings (Outcome #1)**  * The measure was set to test performance twice – in Exam 2 of the semester and Exam 3 of the semester. There was an improvement in the performance from Exam 2 to Exam 3. This is a desired outcome, indicating improved understanding/mastery of subject as students progressed. * The students’ performance in structural analysis improves during the semester, which is the trend the department is looking for at this stage of the program. * The targets were met for all semesters. * The results provide insight into one of the key targets for this course, proficiency in structural analysis of frames and machines. However, a flat point value average artificially amplifies extreme outliers (I.e., students who stopped attending the class, but did not drop). | |
| 1. **Implementation of Findings**  * In F22, the average is pulled down by two students who stopped attending and did not take the exams. A new metric should be developed for the following academic year to better account for outlier performance while continuing to capture information about the student cohort that remains in the class. | |

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| 1. Students will be able to analyze engineering structures and systems involving the motion of particles and rigid bodies | |
| 1. **Measure (Outcome #3)**   Unit exam on planar motion analysis and kinetic equation of motion (ENGR 2302) | 1. **Target (Outcome #3)**   Min. 70% on exam assessment by 70% of the students |
| 1. **Action Plan (Outcome #3)**   Unit exam rubric to assess the measure | |
| 1. **Results Summary (Outcome #3)**   F21/S22: 87% exams met standard; F22: 86% exams met standard  Median: 89%  Average: 85%  High: 100% + extra credit  Low: 0 (student was ill, did not take exam) | |
| 1. **Findings (Outcome #3)**  * Target was met for all semesters. * A flat point value average artificially amplifies extreme outliers (I.e., students who stopped attending the class, but did not drop). | |
| 1. **Implementation of Findings**  * A new metric should be chosen for the next academic year. | |

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| 1. Students will be able to create engineering drawings using industry software. | |
| 1. **Measure (Outcome #5)**   Final project to create engineering drawings with 2D and 3D views using advanced CADD (ENGR 1304) | 1. **Target (Outcome #5)**   Min. 70% on project assessment by 70% of the students |
| 1. **Action Plan (Outcome #5)**   Final project rubric | |
| 1. **Results Summary (Outcome #5)**   F21/S22: 97.5% met standard; F/22: 100% met standard  Average: F21/S22 90%; F22 87%  Median: F21/S22 94%; F22 85%  High: 100%  Low: 68% | |
| 1. **Findings (Outcome #5)**  * Target was met for all semesters. * Overall performance was very high – the lowest grade earned on the course was only 2% from the target metric. | |
| 1. **Implementation of Findings**  * A new metric should be chosen for the next academic year. | |