**Continuous Improvement Plan**

**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:** 1.27.20 **Name of Program/Unit: Biotechnology**

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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 use laboratory math techniques to calculate dilutions and plan multicomponent solutions. | Individual practical test | 70% of students will receive a 100% on test |
| Students will demonstrate accurate pipetting skills. | Individual practical test | 70% of students will receive a 100% on test |
| Students will demonstrate proper sterile technique and microbiological methods. | Individual practical test | 70% of students will receive a 100% on test |

**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 (FOCUS ON AT LEAST 1)**

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| 1. **Outcome #1** Students will be able to use laboratory math techniques to calculate dilutions and plan multicomponent solutions. | |
| 1. **Measure (Outcome #1)**   Students will take an individual practical test that assesses their ability to calculate dilutions and prepare multicomponent solutions that use both dilutions and stock chemicals. Assessment test will be pass/fail. | 1. **Target (Outcome #1)**   70% of students will pass the practical test with all answers correct. |
| 1. **Action Plan (Outcome #1)** Develop test based on learning outcomes and administer to students in biotechnology classes. Explore the possibility of creating a badge for this skill. | |
| 1. **Results Summary (Outcome #1)**   Students did a serial dilution of yellow food dye, each student had a different starting concentration. They calculated the volumes they needed in total and the concentrations of the dilutions doing 5 dilutions by 1/2; they then pipetted each dilution into a 96-well plate in triplicate, and measured absorbance at 450nm. | |
| 1. **Findings (Outcome #1)**   All students passed with a 70% or better, they were to graph their data and calculate unknown concentrations. Their values in triplicate were analyzed for variation. | |
| 1. **Implementation of Findings**   This exercise was extremely useful and will be built upon in future courses | |

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| **Outcome #2** Students will demonstrate accurate pipetting skills. | |
| 1. **Measure (Outcome #2)**   Students will take an individual practical test that assesses their ability to pipette volumes of less than 1mL. Students will be tested on accuracy and precision. Assessment test will be pass/fail. | **Target (Outcome #2)** 70% of students will pass the practical test with all answers correct. |
| 1. **Action Plan (Outcome #2)** Develop test based on learning outcomes and administer to students in biotechnology classes. Explore the possibility of creating a badge for this skill. | |
| 1. **Results Summary (Outcome #2)**   Students did a serial dilution of yellow food dye, each student had a different starting concentration. They calculated the volumes they needed in total and the concentrations of the dilutions doing 5 dilutions by 1/2; they then pipetted each dilution into a 96-well plate in triplicate, and measured absorbance at 450nm. | |
| 1. **Findings (Outcome #1)**   All students passed with a 70% or better, they were to graph their data and calculate unknown concentrations. Their values in triplicate were analyzed for variation. | |
| 1. **Implementation of Findings**   This exercise was extremely useful and will be built upon in future courses | |