**Civil and Environmental Engineering**

**Annual Program Report Template**

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| **Year:** | 2022 (Submitted March 2023) |
| **Program:** | Masters of Science Environmental Studies |
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**Summary of Continuous Improvement Efforts since Last Report**

*Provide a brief description of how assessment results have been used for program improvement. Point to a specific example of how an assessment provided the program with data it could use for improvement and what that improvement was, if possible, also show evidence of the improvement. You may look at data from the two previous academic years to support this case.*

**Respond here:**

A new format for comprehensive exam for non-thesis option was implemented in Fall 2022. All students in the program take the same comprehsive exam which is modeled after the Fundamentals of Engineering/Professional Engineering licensure exams. Prior to this student's took different exams based on the examination committee they selected. This change was brought to ensure consistency in testing of the graduates.

**Program Highlights Since Last Report**

*Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course deletions).*

Respond here:

Three new courses were added to the program. These include:

1. Computational Skills for Engineers using Python
2. Machine Learning for Engineering
3. Optmization and Decision Making for Engineers

The courses were developed by new faculty hires as special topics in Fall 2022 and Spring 2023 and are in the process of obtaining regular numbers for inclusion into the department course offerings.

**Table 1. Assessment Results and Analyses for Current Cycle.**

| STAGE 1: PLAN | | | | STAGE 2: DO | | STAGE 3: STUDY |
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| **Departmental Student Learning Goal** | **Program Student Learning Outcome** | **Assessment** | **Assessment Method/Location** | **Benchmark Expectations** | **Data Results** | **Actions/Goals Based on Data Results*** What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes? |
| An understanding of the impact of human activities to the atmospheric and aquatic environment | 1.1 An understanding of the pollution sources<br><br>1.2 Literacy of the Environmental Media | Direct | Comprehsive examination. | 70% of the students will achieve a 3.0/4.0 or higher | The target threshold was met with an overall score of 3.6 (3.6 and 3.6) on both sub-SLOs | There was only one student who graduated in the reporting period as the enrollment was affected by COVID related issues. No changes are deemed at this stage but the indicators will be monitored as cohort size increases in coming years. |
| An ability to design engineering components to meet desired needs for pollution control in air and water | 2.1 Use of engineering principles to analyze and design pollution control systems<br><br>2.2 Knowledge of design processes | Direct | **Comprehensive examination** | 70% of the students will achieve a 3.0/4.0 or higher | The outcome was met with average of 3.5 on both sub-SLOs | No improvements were deemed necessary at this stage based on the results of the evaluation. |
| Ability to survey and organize peer-reviewed literature in environmental engineering for problem solving tasks | 3.1 Knowledge of available literature in environmental science and engineering<br>3.2 Ability of organizing information | Direct a | **Direct:** Thesis defense or Comprehensive Examination | 70% of students in the program will achieve 3.0/4.0 or higher. | The outcome was met with average score of 3.5 and 3.4 on the two subcriteria for an overall score of 3.4 | No improvements were deemed necessary at this stage. |

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| | published in peer-reviewed literature | | | | | |
| Ability to complete a masters thesis successfully and effectively communicate the thesis work orally and in Writing | 4.1 Thesis significance<br><br>4.2 Organization of the thesis<br><br>4.3 Thesis presentation and delivery<br><br>4.4 Question and Answer during defense and impromptou thinking skills | Direct | Evidence from written thesis and oral defense. | The students in the program will achieve 3.0/4.0 or higher. | NA | No student defended their thesis during the period of performance and as such there was insufficient data to assess. This metric will continue to be monitored in the future. |
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**Table 2. Continuous Improvement Results Since Last Report**

| **Stage 4: ACT** | | |
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| **Actions/Goals Based on Data Results**<br>**Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.* | **Status**<br>*C=Complete*<br>*P=Progressing*<br>*N=No Action Taken* | **Discussion of Status**<br>*If C, describe efforts that led to accomplishment of actions/goals.*<br>*If P, provide update on progress made toward accomplishing actions/goals and what tasks remain*<br>*If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.* |
| No actions or goals were listed in the previous assessment | N | Some modifications such as standardization of testing; addition of new courses were carried out even though they were not explictly identified in the previous planning cycle. |
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