# CPI _ Improving Program Learning Outcomes Report

**CPI Improving PLO Report (AY22-23)**

**Name of the program**:   **M.S. in Energy Management**

**Dean' signature:**   _____

**Date of Submission:**   **6/30/2023**

**Department Chair or Director:**   **Robert N. Amundsen, Ph.D.**

PLO assessment plan (2022-2025) is posted through this link:

http://www.nyit.edu/planning/academic_assessment_plans_reports

This is a report of its implementation for year 2022-2023.

**1. Program Learning Outcomes (PLOs) Assessed in AY 22-23:**

Graduates of the M.S. in Energy Management program are expected to:

1. Compare and contrast methods and equipment which are used to reduce energy consumption in buildings.

2. Analyze conventional and alternative energy technologies.

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**2. Method of Assessment**

Our direct method of assessment is based on Faculty Course Assessment Reports (FCARs) which are submitted by the faculty for each course they teach.

The FCAR requires the faculty member to identify course-specific learning outcomes (LO's) for his/her course and to establish appropriate performance tasks (APTs) with appropriate documentation to assess to what extent the Student Outcomes are being met. These APTs may be quizzes, exam questions, reports, projects, presentations, etc. Each student's APT is then scored with the method shown in the table below to create an EGMU vector for that specific Student Outcome and a corresponding assessment metric.

The department has determined that the minimum level of quality that it felt was necessary in order to produce graduates that will ultimately achieve our Program Educational Objectives is an EGMU score of 2.0 for each Student Outcome. This score of 2.0 was chosen by the department because in the EGMU score of 2.0 indicates Good and therefore represents what a student would need in order to satisfy the requirements for graduation. A typical EGMU vector for a class with 19 students in which the APT was the third problem of the first exam might be (8, 9, 1, 1) which would signify that 8 students demonstrated a complete and accurate understanding, while 9 students applied appropriate strategies, etc. The average score in this case being $43/19 = 2.26$ which is Good.

| EGMU | Rubric | Score |
|---|---|---|
| E - Excellent | Fully demonstrates/accomplishes the attributes and behavior in the rubric | 3 |
| G – Good | Mostly demonstrates/accomplishes the attributes and behavior in the rubric | 2 |
| M – Minimal | Minimally demonstrates/accomplishes the attributes and behavior in the rubric | 1 |
| U - Unsatisfactory | Does not demonstrate/accomplish the attributes and behavior in the rubric | 0 |

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**3. Analysis**

| Learning Outcome #1 Tasks | ENGY 610 | ENGY 615 | Average |
|---|---|---|---|
| Auditing and Monitoring | 2.43 | 2.39 | 2.41 |
| Rates and Economic Evaluation | 2.11 | 2.07 | 2.09 |
| Building Envelope | 2.55 | 2.48 | 2.52 |
| Heating and Cooling | 2.30 | 2.26 | 2.28 |
| Lighting and Retrofits | 2.37 | 2.41 | 2.39 |

| Learning Outcome #2 Tasks | ENGY 670 | ENGY 775 | Average |
|---|---|---|---|
| Solar Energy | 2.51 | 2.44 | 2.48 |
| Wind Energy | 2.32 | 2.27 | 2.30 |
| Ocean Energy | 2.43 | 2.19 | 2.31 |
| Biomass Energy | 2.28 | 2.36 | 2.32 |
| Distributed Generation | 2.12 | 2.20 | 2.16 |

**4. Interpretation**

The students exceeded the minimum EGMU score for Learning Outcome #1 and Learning Outcome #2. The lowest scores were in "Rates and Economic Evaluation" for LO #1 and "Distributed Generation" for LO #2.

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**5. Close the Loop**

| Learning Outcome #1 Actions | ENGY 610 | ENGY 615 |
|---|---|---|
| Auditing and Monitoring | Distribute sample energy audits | Provide monitoring examples |
| Rates and Economic Evaluation | Practice rate calculations | Demonstrate cost analysis |
| Building Envelope | Compare typical envelopes | Perform heat load calculations |
| Heating and Cooling | Examine equipment specifications | Design HVAC system |
| Lighting and Retrofits | Provide case studies | Tour campus buildings |

| Learning Outcome #2 Actions | ENGY 670 | ENGY 775 |
|---|---|---|
| Solar Energy | Add solar reference materials | Use solar energy software |
| Wind Energy | Evaluate wind resources | Assess offshore wind development |
| Ocean Energy | Compare ocean energy devices | Collect and analyze ocean data |
| Biomass Energy | Contrast fuel sources | Evaluate available biomass |
| Distributed Generation | Perform site analysis | Design DG complete system |

In order to improve student performance in Learning Outcome #1 and Learning Outcome #2, specific measures have been identified and summarized above. These measures will be implemented by the instructors of these courses.