**Industrial and Systems Engineering Dept.**

**Assessment Plan**

**Basic Information**

**Program Name:** Industrial and Systems Engineering (ISE) M.S.

**School or College your program resides in:** SECS

**Program Level (check all that apply):** Master's

**Date Report Submitted:** 10/12/2017

**Current Assessment Contact Representative:** Robert Van Til (vantil@oakland.edu)

**Current Department Chair:** Robert Van Til (vantil@oakland.edu)

**Current Dean:** Louay Chamra (chamra@oakland.edu)

**Type of Assessment Plan**

Option B.

**Aligning the OU Mission, Program Goals, Student Learning Outcomes, and Assessment Measures**

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| --- | --- | --- | --- |
| **(1) OU Mission** | **(2) Program Goals** | **(3) Student Learning Outcomes** | **(4) Assessment Measures** |
| Each program provides a variety of courses and curricula experiences to ensure an enriched life along with superior career preparation or enhancement. | The program will enable students to design and analyze systems composed of diverse components that must interact in prescribed fashions to meet specified objectives. | Students will demonstrate an ability to design and analyze a product or process to satisfy a client’s needs subject to constraints. | **Direct Measure:**  The ISE M.S. key courses are chosen to insure that all of the learning outcomes are demonstrated. The current key courses are *ISE 5431 Engineering Operations Research - Stochastic Models, ISE 5469 Computer Simulation of Discrete Event Systems, ISE 5483 Production Systems and Workflow Analysis, ISE 5485 Statistical Quality Analysis, and ISE 5487 Foundations of Systems Engineering I*. All ISE M.S. students are required to take at least two of these key courses. Each semester, one of these key courses is selected for external evaluation on a rotating basis.  **Indirect Measure:**  At the end of each semester, the students in each course rate online how well that particular course section achieved its stated objectives. |
|  | The program will enable students to apply mathematical and computer skills to engineering design and analysis. | Students will demonstrate an ability to apply the skills and knowledge necessary for mathematical, scientific, and engineering practices. |
|  |  | Students will demonstrate an ability to interpret graphical, numerical, and textual data. |
|  | The program will enable students to adapt to new technologies and methods and use these in engineering design and analysis. | Students will demonstrate an ability to use modern engineering tools. |
| The university offers master’s programs that meet demonstrable needs of Michigan residents ... | The program will enable students to function successfully in the automotive and other global industries. | Students will demonstrate an ability to recognize when information is needed and to have the ability to locate, evaluate, and use effectively the needed information. |

**Participation in Assessment Process**

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| **Who Will Participate in Carrying Out the Assessment Plan** | **What Will Be Their Specific Role/s** |
| ISE Assessment Coordinator | Organize external evaluation of key courses |
| All ISE faculty, ISE Advisory Board members, engineers from industry | Conduct external evaluation of key courses |
| All ISE faculty | Review indirect measure and fill-out an End-of-Course Summary for each course taught |
| All ISE faculty | Discuss results from direct and indirect measures each semester; generate appropriate plans to improve the achievement of the program outcomes |
| ISE Assessment Coordinate | Archive all assessment activities on online assessment diary |

**Plan for Analyzing and Using Assessment Results to Improve Program**

**Analyzing Assessment Data:**

**Direct Measure:** A key courses are identified in the ISE M.S. program where students have the opportunity to demonstrate the achievement of the program learning outcomes. Note that any engineering M.S. program basically consists of fifth-year elective courses. On the undergraduate level, the program requirements are general in nature requiring the students to take courses in many areas. On the graduate level, students have freedom to select from elective-type courses with a concentration in a few areas or spread out over several areas. Thus, no single course is required for all students enrolled in the ISE M.S. program.

When a key course is under review, student materials are collected that provide evidence that the outcomes have been achieved, such as homework assignments, laboratory assignments, project assignment and exams. External evaluators (faculty not directly involved with the course, engineers from industry and ISE Dept. Advisory Board members) review these materials to establish whether the students in that class have achieved some or all of the program outcomes.

**Indirect Measure:** Each ISE M.S. course has a set of course objectives, developed by the instructing faculty and the ISE Dept. Graduate Committee, which insure the logical sequence of topics necessary to the eventual achievement of the program outcomes. The ISE faculty review all of these course evaluations each semester and summarize the results in an End-of-Course Summary. The End-of-Course Summaries for all courses are presented and discussed at a department faculty meeting each semester.

**Using results to improve EM M.S. program:**

The ISE faculty review results from all direct and indirect measures each semester at a department faculty meeting and generate appropriate plans to improve the achievement of the program outcomes.