

Academic Assessment Report
PhD / Industrial Engineering
June 1, 2023

Program Goals

1. Prepare students for independent research in Industrial Engineering.
2. Prepare students to contribute new knowledge of fundamental importance.
3. Contribute new knowledge of fundamental importance or significantly modify, amplify, or interpret existing knowledge in a new and important manner.

Student Learning Outcomes (SLO)

1. Students will make satisfactory progress toward the degree, preparing for independent research to contribute new knowledge of fundamental importance to Industrial Engineering.
2. Students will be prepared for independent research in Industrial Engineering.
3. Students will be prepared to contribute new knowledge of fundamental importance to Industrial Engineering.
4. Students will contribute new knowledge of fundamental importance to Industrial Engineering or significantly modify, amplify or interpret existing knowledge in a new and important manner
5. Students will be able to communicate effectively.

Assessment Process

1. Timeline
 - a) Annual Graduate Student Academic Reviews submitted to the Graduate School by June 30
 - b) For those students who joined the program before fall 2018: Candidacy Exam after approximately two years of graduate study; for those who joined the program in fall 2018 and beyond: (with a master's degree) must attempt the qualifying exam before the beginning of their third long semester or (without a master's degree) [direct admits] must attempt the exam before the beginning of their fifth long semester.
 - c) Dissertation Proposal may not occur in the same semester as Candidacy Exam
 - d) Final Oral Defense may not occur in the same semester as Dissertation Proposal
 - e) Assessment results and analysis presented at August faculty "retreat" to stimulate discussion about any program (or assessment process) changes.
2. Means of assessment
 - a) SLO1 assessed annually (indirect and direct)
 - Cumulative GPA (desired level of achievement ≥ 3.0)
 - Annual Graduate Student Academic Review by graduate coordinator in consultation with student advisor (desired level of achievement is "satisfactory")

- b) SLO2 assessed with Candidacy Exam
 - Student self-assessment of independent research preparation with respect to **Comprehension** (understanding literature), **Application** (problem solving), **Analysis and Synthesis** (support for generalizations, alternative solutions), and **Evaluation** (validity)
 - Advisory Committee members assessment of independent research...
 - c) SLO3 assessed with Dissertation Proposal
 - Student self-assessment of preparation to contribute new knowledge with respect to...
 - Dissertation Committee members assessment of preparation to contribute new knowledge...
 - d) SLO4 assessed with Final Oral Defense
 - Student self-assessment of contributing new knowledge...
 - Dissertation Committee assessment of contributing new knowledge...
 - e) SLO5 assessed with Candidacy Exam, Dissertation Proposal, and Final Oral Defense
 - Student self-assessment of effective communication
 - Committee members assessment of effective communication
3. Reported annually to the Dean: Assessment results and analysis, and any consequential program or assessment process changes

Assessment Results

1. Annual Graduate Student Academic Reviews

Table 1. Academic Warning letters received from the Graduate School after following semesters

| | 2021 | 2022 | 2023 |
|---------------|------|------|------|
| fall | 0 | 0 | 0 |
| spring | 0 | 1 | 0 |

2. Candidacy Exam, Dissertation Proposal and Final Oral Defense

Scores in Table 2 are averages of medians across Student, Chair and Member responses after the Candidacy Exam, Dissertation Proposal and Final Oral Defense.

Table 2. The student is prepared for independent research or to contribute new knowledge, or has contributed new knowledge based on...

| | 2021 | 2022 | 2023 |
|----------------------|------|------|------|
| Comprehension | 5.00 | 4.73 | 4.83 |
| Application | 5.00 | 4.71 | 4.93 |
| Analysis | 5.00 | 4.54 | 4.77 |
| Evaluation | 4.67 | 4.44 | 4.70 |

3. Effective Communication

Scores in Table 3 are averages of medians across Student, Chair and Member responses after the Candidacy Exam, Dissertation Proposal and Final Oral Defense.

Table 3. The student has demonstrated effective communication skills

| 2021 | 2022 | 2023 |
|------|------|------|
| 4.67 | 4.52 | 4.83 |

Consequential Program Changes

2021

Faculty will discuss statistics in Tables 1 – 3 at August “retreat.”

- Table 1. We received no Academic Warning Letters since the last assessment report.
- Table 2. The scores in all four areas (i.e., Comprehension (understanding literature), Evaluation (validity), Application (problem solving), Analysis (support for generalizations, alternative solutions)) have improved in the last year. This is perhaps partially due to receiving more reviews from students and faculty members and due to the fact that we are reporting average of median scores.
- Table 3. Scores associated with Effective Communication have also improved.

2022

Faculty will discuss consequential program changes at August “retreat.”

- Table 2. INEG PhD students maintained their performance on Comprehension (understanding literature), Application (problem solving), Analysis (support for generalizations, alternative solutions) and Evaluation (validity) in the past 3 years.
- Table 3. The communication skills of INEG PhD students continue to be good.

2023

Faculty will discuss consequential program changes at August “retreat.” More discussions will be focused on the qualifying exam and MSIE program restructuring.

Assessment Process Changes

2021

Faculty will discuss assessment process changes during the faculty retreat in August. As noted in the 2019 and 2020 summaries above, students and faculty were reminded to complete the assessment reports which resulted in an increase in the number of reports submitted.

2022

Faculty will discuss consequential assessment process changes during the August retreat. Students and faculty are reminded to complete the assessment reports each semester.

2023

Faculty will discuss consequential assessment process changes at August “retreat.” An updated assessment form was uploaded to the departmental web site to resolve the problems with missing answers to those questions.