

Graduate Program in Industrial and Systems Engineering Ph.D. Degree Learning Goals and Assessment

The joint Rutgers University doctoral program in Industrial and Systems Engineering provides outstanding training in critical areas of Industrial and Systems Engineering that spans research thrusts of Industrial and Systems Engineering, Production & Manufacturing Systems, and Quality & Reliability Engineering.

Learning Goal 1 for Students: Attain marked ability, scholarship, research, and practical skills concerning factors that contribute to areas within Industrial and Systems Engineering

Assessment of graduate student achievement of Goal 1:

- Grades in graduate courses
- Written qualifying examination assessing ability to think critically, integrate knowledge and understanding, and communicate
- Formal, required annual reviews by faculty advisors and/or committees to gauge student progress
- Placement in positions and careers that require ability and scholarship in those research thrusts in Industrial and Systems Engineering

Role of the graduate program in helping students to achieve Goal 1:

- Close tracking to assure that students are being prepared in a coherent and academically rigorous fashion
- Effective monitoring of student progress
 - Includes annual reviews on research progress from the student's advisor and committee
- Evaluations of teaching effectiveness of instructors in graduate courses
 - If effectiveness is below program expectations, work with instructors to improve course content
- Periodic review of curricular offerings, degree requirements and assessment tools
 - By graduate program executive committees
 - By Industrial and Systems Engineering Advisory Board during the annual IAB meeting
 - At ISE Research Seminars and other gatherings with students
 - In consultation with the Graduate School of Rutgers – New Brunswick

Learning Goal 2 for Students: Engage in and conduct original research

Assessment of graduate student achievement of Goal 2:

- Preparation and defense of Ph.D. dissertation proposal
- Assessment of quality of Ph.D. dissertation:
 - Public defense of dissertation
 - Critical reading of dissertation by committee of graduate faculty members and a committee member from outside of the Industrial and Systems Engineering graduate program

- Achievement of students as evidenced by professional placements, selection for conference presentations, peer-reviewed publications and individual grant attainment

Role of the graduate program in helping students achieve Goal 2:

- Provide early introduction to research methods and opportunities for research
- Provide opportunities to present research and receive feedback through Graduate Research Seminar Series
- Assist in maintaining adequate funding levels through the research phase
- Provide comprehensive advising and assist in the identification of mentors

Learning Goal 3 for Students: Prepare to be professionals in careers that require training at the highest levels in areas within Industrial and Systems Engineering

Assessment of graduate student achievement of Goal 3:

- Review evidence of papers presented, publications and professional networking
- Evaluations of teaching effectiveness of graduate student instructors
- Collection of placement data
- Review by external advisory committees, both inside of and external to the University
- Survey alumni/ae

Role of the program in helping students achieve Goal 3:

- Host discipline-specific Seminars of external faculty in Industrial and Systems Engineering
- Teach students how to do assessments in their future professional capacities
- Provide flexible options for students with interdisciplinary interests related to Industrial and Systems Engineering
- Develop or enhance programs related to job and networking skills, including activity in professional societies and preparation for necessary certifications
- Acquaint students with Industrial Internship Program in Industrial and Systems Engineering
- Provide opportunities to mentor undergraduate projects through Senior Design, Aresty, independent study, and summer “REU” programs

The leadership of the Industrial and Systems Engineering graduate program will regularly review the structure and content of the program and the feedback received from assessments and surveys. These reviews will be used to provide the best possible education to students in order to meet the needs for highly trained individuals in the Industrial and Systems Engineering fields.

Adapted from Rutgers BME (<http://biomedical.rutgers.edu/pdf/BMEmsgoals.pdf>)