PhD in Industrial Engineering and Operations Research

Admission Requirements

In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- **Baccalaureate Field** Industrial engineering or a related curriculum. The degree must be from an American Board of Engineering Technology (ABET) accredited college or university or the equivalent.
- **Grade Point Average** At least 3.00/4.00 for the final 60 semester hours (90 quarter hours) of undergraduate study. A grade point average of at least 3.50 is preferred for applicants to the PhD program.
- **Tests Required** International applicants are required to take the GRE. Applicants seeking a teaching or research assistantship are strongly encouraged to take the GRE General.
- **Minimum English Competency Test Score**
  - **TOEFL** 80, with subscores of Reading 19, Listening 17, Speaking 20, and Writing 21 (iBT Test); 60, with subscores of Reading 19, Listening 17, Writing 21 (revised Paper-Delivered Test), **OR,**
  - **IELTS** 6.5, with subscores of 6.0 for all four subscores, **OR,**
  - **PTE-Academic** 54, with subscores of Reading 51, Listening 47, Speaking 53, and Writing 56.
- **Letters of Recommendation** Three required.
- **Personal Statement** Required.
- **Other Requirements** Admission to the PhD program is not automatic for students completing their MS degree in the department. Master's students who desire to continue on to the PhD must see the department's graduate coordinator for forms to apply to the PhD program.
- **Nondegree Applicants** Nondegree applicants may be admitted for no more than 8 semester hours.
- **Deadlines** The application deadline is the same as the Graduate College deadline; the deadline for applicants who want to be considered for funding can be found on the Graduate College website.

Degree Requirements

In addition to the Graduate College minimum requirements, students must meet the following program requirements:

- **Minimum Semester Hours Required** 108 from the baccalaureate.
- **Students must complete one of the following two options:**

I. Direct PhD

- 108 hours total from the baccalaureate

Code	Title	Hours
Course Work (48 hours)		
Select 24 hours at the 500 level		
Excluding IE 596, IE 598, and IE 599		
At least 12 hours must be in the IE rubric		
Remaining 24 hours		
Up to 4 hours of IE 596 can be used		
At least 8 hours must be in the IE rubric		
8 hours of mathematics and statistics (may be at the 400 or 500 level) [a,b]		
Additional courses		
IE 599	Ph.D. Thesis Research (60 hours)	
IE 595	Industrial Engineering Seminar [c]	

a *Rubrics MATH and STAT are allowed with approval of the advisor and the director of graduate studies.*
b *Certain IE classes may be approved to be used toward this requirement.*
c *All students must enroll in IE 595 every fall and spring semester.*

II. PhD Post MS

- 108 hours total, including 32 hours transferred from the MS
- **Credit for MS Degree**: Those having an MS degree from an accredited institution will be awarded 32 semester hours of credit toward the PhD degree requirement, which includes 24 hours of course work and 8 hours of IE 599.

Code	Title	Hours
Course Work (24 hours)		
Select 12 hours at the 500 level		
Excluding IE 596, IE 598, and IE 599		
At least 8 hours must be in the IE rubric		
Remaining 12 hours at the 400 and/or 500 level		
Up to 4 hours of IE 596 can be used		
At least 4 hours must be in the IE rubric		
8 hours of mathematics and statistics (may be at the 400 or 500 level) [a,b]		
Additional courses		
IE 599	Ph.D. Thesis Research (52 hours)	
32 hours transferred from MS degree		
IE 595	Industrial Engineering Seminar [c]	

a *Rubrics MATH and STAT are allowed with approval of the advisor and director of graduate studies.*
b *Certain IE classes may be approved to be used toward this requirement.*
c *All students must enroll in IE 595 every fall and spring semester.*

Other Requirements

- No graduation credit will be given for Credit/No Credit courses.
- Students must get the director of graduate studies' approval to take online courses.
- All courses must be approved first by the student's advisor and then by the director of graduate studies.
- **Examinations**
  - *Departmental Qualifying Examination:* Required.
  - *Preliminary Examination:* Required.
- **Dissertation** Required. Students in the Direct PhD program must earn at least 60 semester hours in IE 599. Post-master's students must earn at least 52 hours in IE 599.

- **Other Requirements** Students must be registered during the semester of intended graduation.

Financial Aid

There are several different forms of financial aid available to incoming graduate students: University Fellowship, Teaching Assistantships, Research Assistantships, and Tuition and Fee Waivers. Applicants may seek financial aid by completing the Application for Graduate Appointment as part of the online application. They will automatically be considered for all four forms of financial aid listed above. Additional information can be found on the MIE home page.