Industrial Engineering, PhD

The industrial engineering program at ASU is consistently ranked among the top 20 graduate programs in the United States. Faculty members in the program are internationally recognized for their innovative research projects, funded both by government and industry.

Program Description

Degree Awarded: PHD Industrial Engineering
The PhD program in industrial engineering engages students in fundamental and applied research. The overall educational objective of graduate study in industrial engineering is to improve each student's ability to identify, define and solve problems and perform original research to address the underlying causes of these problems. Industrial engineers develop qualitative and quantitative abilities to guide the design and operation of sustainable organizations and systems.

This doctoral program provides students with a rigorous education and with research and educational experiences. A large number of students are involved in applied research projects that are carried out in the context of government or privately-funded research. The program provides students with many opportunities to participate in highly impactful research projects and interact with the leaders of the subfield that they choose to study and specialize in. Hence, many of them graduate with significant accomplishments resulting from the work they performed during the course of their doctoral study.

At a Glance

- **College/School:** [Ira A. Fulton Schools of Engineering](http://fulton.asu.edu)
- **Location:** Tempe
Degree Requirements

85 credit hours, a written comprehensive exam, an oral comprehensive exam, a prospectus and a dissertation

Required Core (15 credit hours)
IEE 605 Foundations of Information Systems Engineering (3)
IEE 620 Optimization I (3)
IEE 622 Optimization II (3)
IEE 640 Probability and Stochastic Processes (3)
IEE 670 Mathematical Statistics (3)

Electives (42 credit hours)

Research and Internship Required Coursework (16 credit hours)
IEE 594 Conference and Workshop (1)
IEE 700 Research Methods (1)
IEE 784 Teaching Internship (1)
IEE 790 Reading and Conference (1) OR IEE 584 Internship (1)
IEE 792 Research (12)

Culminating Experience (12 credit hours)
IEE 799 Dissertation (12)

Additional Curriculum Information
Students are required to complete five core courses within the first year of full-time enrollment in the doctoral program. To be allowed to continue in the program after completion of the core courses, each student must take and successfully pass a qualifying exam on three of the five core courses.

Eligible students can request a master's in passing after successfully completing the qualifying exam and completing 30 credit hours in the doctoral program.

A written and an oral comprehensive examination are required no later than the semester following completion of 57 credit hours of coursework in the plan of study. The student must also successfully defend the dissertation prospectus and the dissertation research.

Admission Requirements

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in any field from a regionally accredited institution.
Applicants must have a minimum cumulative GPA of 3.50 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or applicants must have a minimum cumulative GPA of 3.50 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. a statement of purpose
4. GRE scores
5. three letters of recommendation
6. proof of English proficiency

Additional Application Information
An applicant whose native language is not English must provide proof of English proficiency regardless of their current residency.

At the time of application, all applicants must have successfully completed a minimum of nine credit hours of calculus (Calculus I, II, III) with a grade of "C" or higher (scale is 4.00 = "A").

A student with any deficiency coursework must complete each deficiency with a grade of "B" (3.00) or better within two semesters of admission to the program.

Deficiency courses include:
CSE 110 Principles of Programming
CSE 205 Object-Oriented Programming and Data Structures
IEE 376 Operations Research Deterministic Techniques/Applications
IEE 380 Probability and Statistics for Engineering Problem Solving
IEE 470 Stochastic Operations Research
MAT 242 Elementary Linear Algebra

Students should see the program website for application deadlines.

Tuition Information
When it comes to paying for college, everyone’s situation is different. Students can learn about ASU tuition and financial aid options to find out which will work best for them.

Application Deadlines

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>expand</td>
<td></td>
<td>expand</td>
</tr>
</tbody>
</table>

Program Learning Outcomes
Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Develop advanced modeling to solve problems/issues in the field of Industrial Engineering.
- Produce novel scholarly research that makes a unique contribution to the field of industrial engineering.
- Develop innovative methodology, algorithms, and tools to solve a complex systems problem.

**Career Opportunities**

Graduates of the program are prepared for careers in academia, government and industry doing teaching, advanced research, and developing and making use of advanced techniques for the operation of their businesses.

**Contact Information**

Industrial, Systems & Operations Engineering Prgm | CTRPT 105
SCAI.Grad.Admission@asu.edu | 480-965-3199