INDUSTRIAL ENGINEERING, MS

for the degree of Master of Science in Industrial Engineering (on campus & online)

department head: Deborah L Thurston (thurston@illinois.edu)
associate head of graduate studies: Ramavarapu S Sreenivas (rsree@illinois.edu)
overview of admissions & requirements: https://ise.illinois.edu/graduate/admissions/
overview of grad college admissions & requirements: https://grad.illinois.edu/admissions/apply (https://grad.illinois.edu/admissions/apply/)
department website: https://ise.illinois.edu/
program website: https://ise.illinois.edu/graduate/degrees-and-programs/ms-degree-guide.html
department faculty: https://ise.illinois.edu/directory/faculty.html
college website: https://grainger.illinois.edu/
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The Department of Industrial & Enterprise Systems Engineering offers both an MS with thesis and an MS non-thesis program. Students in the MS with thesis program are required to have a research advisor and applicants are encouraged to contact department faculty (https://ise.illinois.edu/directory/faculty.html) in their areas of interest to inquire about possible research and funding opportunities.

Opportunity exists for specializing in i) advanced analytics via the Advanced Analytics in Industrial & Enterprise Systems Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/advanced-analytics-industrial-enterprise-systems-engineering/) optional graduate concentration and ii) computational science and engineering via the Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/) optional graduate concentration.

Admission Requirements

Applicants who have completed degree requirements in an accredited engineering program or its equivalent are eligible to apply for admission. A minimum grade point average of 3.25 (A = 4.00) for the last two years of undergraduate study is required.

Scores on the Graduate Record Examination (GRE) (http://www.ets.org/) general test are required of all applicants. Based upon the previous preparation of the student for either program, prerequisite courses may be specified by the advisor, but the credit may not be applied toward a degree.

All applicants whose native language is not English are required to submit TOEFL (http://www.toefl.org/) or International English Language Testing System (IELTS) (http://www.ielts.org/) scores as evidence of English proficiency. Minimum admission requirements (https://grad.illinois.edu/admissions/instructions/04c/) are set by the Graduate College. Students applying to the online program must satisfy the full status admissions requirement.

Financial Aid

Qualified students may compete for financial assistance in the form of teaching/graduate/research assistantships, fellowships, grants, and tuition waiver scholarships. Under certain conditions, fellowships may be augmented by part-time assistantships.

All applicants, regardless of US citizenship, whose native language is not English and who wish to be considered for teaching assistantships must demonstrate spoken English language proficiency (http://grad.illinois.edu/admissions/taengprof.htm) by achieving a minimum score of 24 on the speaking subsection of the TOEFL iBT or 8 on the speaking subsection of the IELTS. For students who are unable to take the iBT or IELTS, a minimum score of 4CP is required on the English Proficiency Interview (http://cte.illinois.edu/testing/oral_eng/epi_overview.html) (EPI), offered on campus. All new teaching assistants are required to participate in the Graduate Academy for College Teaching (https://citl.illinois.edu/citl-101/teaching-learning/grad-academy-for-college-teaching/) conducted prior to the start of the semester.

Department Research

Faculty research by ISE faculty is pursued in the following fields:

•computer-aided design
•data
•optimization
•design
•manufacturing
•nondestructive testing and evaluation
•system dynamics and simulation
•reliability
•financial engineering
•human factors
•robotics
•real-time decision making
•manufacturing systems
•operations management
•supply chain systems
•biomechanics
•manufacturing systems
•operations management
•supply chain systems
•biomechanics

Members of the ISE Department have access to a wide range of excellent research facilities. These laboratories support a wide range of activity and are described at the department’s research laboratories Web site (https://ise.illinois.edu/research/labs/).

Graduate Programs in Industrial & Enterprise Systems Engineering
degrees:
Industry Engineering, MS (p. 1)

optional concentrations:
Advanced Analytics in Industrial & Enterprise Systems Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/advanced-analytics-industrial-enterprise-systems-engineering/) | Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)

Industrial Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/industrial-engineering-PhD/)

optional concentrations:
Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
Systems & Entrepreneurial Engineering, MS (http://catalog.illinois.edu/graduate/engineering/systems-entrepreneurial-engineering-ms/)

optional concentrations:
Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
Systems & Entrepreneurial Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/systems-entrepreneurial-engineering-phd/)

Financial Engineering, MS (http://catalog.illinois.edu/graduate/bus_engineering/financial-engineering-ms/) (sponsored jointly with Department of Finance)

optional concentrations:
Advanced Analytics in Industrial & Enterprise Systems Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/advanced-analytics-industrial-enterprise-systems-engineering/) | Data Analytics in Finance (http://catalog.illinois.edu/graduate/bus/concentration/finance/data-analytics-finance/)

The Department of Industrial and Enterprise Systems Engineering (ISE) offers graduate programs leading to degrees of Master of Science and Doctor of Philosophy in Industrial Engineering (IE) and Systems and Entrepreneurial Engineering (SEE), as well as (jointly with the Department of Finance) Master of Science in Financial Engineering. The ISE programs offer an approach to industrial engineering and systems engineering, engineering design, and entrepreneurial engineering that crosses disciplinary lines. The IE program is based in advanced studies that focus on operations research, optimization, supply chain management, financial engineering, quality and reliability engineering and production management, with the aim to advance modeling, simulation, analysis and decision making for complex engineering and economic systems. The SEE program is founded on the premise of dual competency in both traditional engineering and systems integration. The SEE program offers flexibility by permitting the student to select from a menu of advanced courses and take a wide range of electives to meet individual career goals. Graduates of these programs are prepared to enter academic and professional engineering positions in universities, industry, government, and private practice.

Opportunity also exists for specializing in energy and sustainability engineering via the Energy and Sustainability Engineering (EaSE) Graduate Certificate Option (http://ease.illinois.edu/)

This degree program can be completed with or without a thesis; either on campus or online, the requirements are listed below:

**Thesis Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 599</td>
<td>Thesis Research (min-max applied toward the degree)</td>
<td>8</td>
</tr>
<tr>
<td>IE 590</td>
<td>Seminar (registration for 0 hours every term while in residence)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Total Hours</td>
<td>32</td>
</tr>
</tbody>
</table>

**Other Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and conditions may overlap</td>
<td>A minimum of 12 500-level credit hours applied toward the degree, 8 of which must be IE.</td>
</tr>
<tr>
<td>A maximum of 4 hours of IE 597 (or other approved independent study) may be applied toward the elective course work requirement.</td>
<td>Minimum GPA: 3.0</td>
</tr>
</tbody>
</table>

**Non-Thesis Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 590</td>
<td>Seminar (registration for 0 hours every term while in residence)</td>
<td>0</td>
</tr>
<tr>
<td>IE 597</td>
<td>Independent Study (4 hours)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Total Hours</td>
<td>36</td>
</tr>
</tbody>
</table>

**Other Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and conditions may overlap</td>
<td>A minimum of 12 500-level credit hours applied toward the degree, 8 of which must be IE.</td>
</tr>
</tbody>
</table>
Departmental approval is required to pursue the non-thesis option, for students terminating their studies with the M.S. degree.

For students in the non-thesis option, 4 hours of IE 597 are required (4 hours maximum allowed towards the M.S. degree), because each student must show evidence of the ability to do independent research.

Minimum GPA: 3.0