

# Industrial Engineering, MS

The MS in industrial engineering program supports two major paths: one focusing on courses and one on research and a thesis. The first path is intended primarily for students who wish to advance their technical knowledge and move toward a career in industry. The second path is also a good choice for students interested in industry, but it is targeted more toward developing independent research skills and writing, and it also can support future graduate work.

Both paths expect some diversity of technical skills in three major areas: systems, human factors, and analytics. The systems area emphasizes the design, construction, and analysis of complex systems with interdependent parts that include people and machines. The human factors area emphasizes the interaction of people with systems and includes the study and analysis of people's cognitive and physical limitations. The analytics area emphasizes the application of mathematical formulas, including statistical approaches, as well as algorithmic and computational approaches to deriving knowledge from data. Each area is supported by several faculty members and many faculty members support multiple areas; see Facilities in the Department of Industrial and Systems Engineering section of the catalog to learn more about each research lab and its activities.

## Learning Outcomes

### Without Thesis

Students will:

- demonstrate a broad knowledge of the field of industrial and systems engineering and deep knowledge in their specific area of study;
- identify and analyze problems of value to industry and society;
- apply contemporary methodologies for solving problems valued by industry and society;
- demonstrate project and team management skills and initiative; and
- demonstrate ethical and professional behavior.

### With Thesis

Students will:

- demonstrate a broad knowledge of the field of industrial and systems engineering and deep knowledge in their specific area of study;
- identify and analyze problems of value to industry and society;
- transform knowledge into applications valued by industry and society;
- demonstrate collaborative and communication skills;
- demonstrate project and team management skills; and
- demonstrate ethical and professional behavior.