

# INDUSTRIAL AND SYSTEMS ENGINEERING

The first bachelor of science in industrial engineering at the University of Wisconsin–Madison was awarded in 1972. Since that time, the demand for industrial engineers has grown dramatically for one chief reason: the need for organizations to raise their level of productivity through thoughtful, systematic applications.

Becoming an industrial engineer (IE) places one in an exciting field of engineering that focuses on productivity improvement worldwide. It is a field that deals as much with human aspects of work as with today's sophisticated tools of work.

What sets industrial engineering apart from other engineering disciplines is its broader scope. An IE deals with people as well as things. The industrial engineer applies problem-solving techniques in almost every kind of industry, business, or institution. There are IEs in banks, hospitals, government at all levels, transportation, construction, processing, social services, electronics, facilities design, manufacturing, and warehousing.

An IE looks at the "big picture" of what makes society perform best – the right combination of human resources, natural resources, and human-made structures and equipment. An IE bridges the gap between management and operations, dealing with and motivating people as well as determining what tools should be used and how they should be used. Industrial engineering is concerned with performance measures and standards, research of new products and product applications, ways to improve use of scarce resources, and many other problem-solving adventures.

Because industrial engineering serves a broad cross-section of business, industry, and institutions, the IE's work environment varies from office to plant to field. Choices can be made even after the IE begins his or her career. Few other vocations offer a graduating student such a wide selection of places to work or kind of work to perform. Need for industrial engineers makes this profession particularly attractive from the financial standpoint. Beginning salaries rank in the top group of high-paying engineering disciplines, and fast advancement is not unusual.

In the industrial and systems engineering department at UW–Madison, the course curriculum is set up to provide a diversified background and at the same time allow choices according to individual interests. Specialized coursework might be categorized in four main areas:

- Industrial Data Analytics
- Optimization and Operations Research
- Human Factors and Ergonomics
- Applications of Industrial Engineering

Although there is no sub-major within IE, it is possible to achieve a degree of specialization through the choice of a focus area. Courses focusing on teams and design projects prepare students to succeed in the workplace.