

# INDUSTRIAL ENGINEERING

## Undergraduate Program Information

Industrial engineers design, develop, install, and improve integrated systems. Integrated systems can involve people, equipment, information, financial resources, software, materials, or energy. Industrial engineers work in a variety of manufacturing, health care, utility, retail, government, and research settings, therefore the tools and methods of the industrial engineer are both varied and broad. Industrial Engineers use knowledge and skills in engineering, mathematics, and physical and social sciences. They also use principles and methods of engineering analysis and design to monitor and improve systems. New Mexico State University's undergraduate degree program in Industrial Engineering prepares students to join the workforce or pursue graduate education while setting the foundation for lifelong learning.

Specifically, within 2-3 years of graduation, graduates of the program will have:

- successfully applied various industrial Engineering techniques in an integrated fashion to solve real-world problems in process design and/or improvement;
- been engaged in a successful career sustained by life-long learning experiences

In addition, the Engineering Accreditation Commission of ABET, Inc. criteria in conjunction with the Institute of Industrial Engineers, requires that:

- baccalaureate degree graduates will be able to demonstrate the ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment, and energy;
- industrial engineering curricula include in-depth instruction allowing students to accomplish the integration of systems using appropriate analytical, computational, and experimental practices; and
- that faculty teaching in industrial engineering departments shows evidence of understanding professional practice and staying current in their respective professional areas. Program faculty must have a responsibility and sufficient authority to define, revise, implement, and achieve program objectives.

**Master's Accelerated Program:** The Master's Accelerated Program (MAP) option provides excellent opportunities for academically qualified undergraduate students to begin working on a master's degree during their junior year and senior year. The student must obtain prior approval from the department head before starting the MAP. Note that the MAP is only applicable if the student has not yet completed a bachelor's degree.

## Graduate Program Information

The Department of Industrial Engineering offers graduate work leading to the degrees of Master of Engineering in Industrial Engineering (MEIE), Master of Science in Industrial Engineering (MSIE), and Doctor of Philosophy (Ph.D.) with a specialization in industrial engineering. Areas of emphasis include

- operations research and simulation analytics,
- manufacturing systems,
- quality and reliability engineering,
- engineering management and systems engineering.

Departmental admission requirements in addition to those of the Graduate School must be considered on an individual basis because of the diversity of backgrounds of applicants in the program. An applicant should meet or correspond directly with the department as a first step in determining his or her specific admission status. Applicants should present mathematics preparation equivalent to 9 credits of calculus for engineers, 3 credits of differential equations, and 3 credits of calculus-based probability and statistics.

The MEIE is a Professional Master's degree targeting a working professional who wants to pursue a Master's degree in Industrial Engineering. The minimum credit-hour requirements for the MEIE degree may be met in the following way:

- 30-semester credits of approved coursework.

The MSIE is a research-oriented degree. The minimum credit-hour requirements for the MSIE degree may be met in any of the following ways:

- 24-semester credits approved course work and 6-semester credits of thesis (I E 599 Master's Thesis) for a total of 30-semester credits or
- 27-semester credits approved course work and 3-semester credits of project (I E 598 Special Research Programs) for a total of 30-semester credits.

Approved coursework must meet all requirements of the Graduate School, represent a consistent master's program in relation to a student's graduate study goals as determined through consultation with the graduate program adviser, and be approved by a program committee of the graduate faculty of the department. Programs in the focus areas of operations research and simulation analytics, manufacturing systems, quality and reliability engineering, or engineering management and systems engineering can be developed with the aid of a faculty advisor.

Departmental facilities and equipment are available to support the research efforts of graduate students, including computer terminals and laboratories. In addition to departmental facilities, supporting facilities such as the Aggie Innovation Space (AIS) and interdisciplinary research clusters are available for research work.

The Ph.D. program is research-oriented with the final product being the dissertation. The general information (<https://catalogs.nmsu.edu/nmsu/regulations-policies/>) chapter in this catalog describes the Ph.D. degree program. The Ph.D. in Industrial Engineering also includes the following requirements:

- the coursework must include at least 12 credits at the 500 level in a related field,
- 6 credits of 600-level research courses covering two areas, and
- 18 credits of 700-level courses following successful completion of the comprehensive examination.

The department does not have any foreign language or research tool requirements. Interested individuals should correspond directly with the department to determine eligibility for admission.