Undergraduate Program Overview

Nature of the Work

Industrial engineers determine the most effective ways for an organization to use the basic factors of production - people, machines, materials, information, and energy - to make or process a product or produce a service. They are the bridge between management goals and operational performance. They are more concerned with increasing productivity through the management of people, methods of business organization, and technology than are engineers in other specialties, who generally work more with products or processes.

To solve organizational, production, and related problems most efficiently, industrial engineers:

- study the product and its requirements
- use mathematical methods to meet product requirements
- design manufacturing and information systems
- develop management control systems for financial planning and cost analysis
- design production planning and control systems to coordinate activities and control product quality
- design or improve systems for the physical distribution of goods and services
- determine which plant location has the best combination of raw materials availability, transportation, and costs
- develop wage and salary administration systems and job evaluation programs

Many industrial engineers move into management positions because the work is closely related.

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Employment

Industrial engineers held about 220,130 jobs in 2012 in U.S.. Because their skills can be used in almost any type of organization, industrial engineers are more widely distributed among manufacturing industries than other engineers. These skills can be readily applied outside manufacturing as well. Some work in engineering and management services, utilities, and business services; others work for government agencies or as independent consultants.

Job Outlook

Employment of industrial engineers is expected to grow about as fast as the average for all occupations through the year 2006, making for favorable opportunities. Industrial growth, more complex business operations, and the greater use of automation in factories and in offices underlie the projected employment growth. Because the main function of an industrial engineer is to make a higher quality product as efficiently as possible, their services should be in demand in the manufacturing sector as firms seek to reduce costs and increase productivity through scientific management and safety engineering. Most job openings, however, will result from the need to replace industrial engineers who transfer to other occupations or leave the labor force.

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