

### ABOUT THIS OCCUPATION

As stated by the Institute of Industrial Engineers professional society, Industrial engineering is about choices. Other engineering disciplines apply skills to very specific areas. IE gives practitioners the opportunity to work in a variety of businesses.

Many practitioners say that an industrial engineering education offers the best of both worlds: an education in both engineering and business. The most distinctive aspect of industrial engineering is the flexibility it offers. Whether it's shortening a rollercoaster line, streamlining an operating room, distributing products worldwide, or manufacturing superior automobiles, all these challenges share the common goal of saving company's money and increasing efficiencies. As companies adopt management philosophies of continuous productivity and quality improvement to survive in the increasingly competitive world market, the need for industrial engineers is growing. Why? Industrial engineers are the only engineering professionals trained specifically to be productivity and quality improvement specialists.

Industrial Engineers figure out how to do things better. They engineer processes and systems that improve quality and productivity. They work to eliminate waste of time, money, materials, energy, and other commodities. This is why many industrial engineers end up being promoted into management positions.

Many people are misled by the term industrial engineer. It's not just about manufacturing. It also encompasses service industries, with many IEs employed in entertainment industries, shipping and logistics businesses, and health care organizations.

IEs make processes better in the following ways:

- More efficient and more profitable business practices
- Better customer service and product quality
- Improved efficiency
- Increased ability to do more with less
- Making work safer, faster, easier, and more rewarding
- Helping companies produce more products quickly
- Making the world safer through better designed products
- Reducing costs associated with new technologies

The total employment of Industrial engineers (including health and safety) had been predicted to increase almost as fast as the other occupations till and through 2012. Openings will also be created in case of transfer and retirements of existing engineers. The hiring of industrial engineers is projected to increase as fast as other average occupations while that of health and safety engineers, more slowly.

Firms which focus on lowering costs and increasing efficiency and productivity would employ industrial, health and safety engineers because these engineers work on producing goods as efficiently and safely as is possible. An increasing need for health and safety engineers is also felt due to the increasing concern of health and safety regulations and rules in and out of the work place.

<http://www.careeroverview.com/industrial-engineering-careers.html>

## EDUCATION AND EXPERIENCE

A bachelor's degree in engineering is required for almost all entry-level engineering jobs. College graduates with a degree in a physical science or mathematics occasionally may qualify for some engineering jobs, especially in specialties in high demand. Most engineering degrees are granted in electrical, electronics, mechanical, or civil engineering. However, engineers trained in one branch may work in related branches. For example, many aerospace engineers have training in mechanical engineering. This flexibility allows employers to meet staffing needs in new technologies and specialties in which engineers are in short supply. It also allows engineers to shift to fields with better employment prospects or to those that more closely match their interests.

Most engineering programs involve a concentration of study in an engineering specialty, along with courses in both mathematics and science. Most programs include a design course, sometimes accompanied by a computer or laboratory class or both.

In addition to the standard engineering degree, many colleges offer 2- or 4-year degree programs in engineering technology. These programs, which usually include various hands-on laboratory classes that focus on current issues, prepare students for practical design and production work, rather than for jobs which require more theoretical and scientific knowledge. Graduates of 4-year technology programs may get jobs similar to those obtained by graduates with a bachelor's degree in engineering. Engineering technology graduates, however, are not qualified to register as professional engineers under the same terms as graduates with degrees in engineering. Some employers regard technology program graduates as having skills between those of a technician and an engineer.

Some engineering schools and 2-year colleges have agreements whereby the 2-year college provides the initial engineering education, and the engineering school automatically admits students for their last 2 years. In addition, a few engineering schools have arrangements whereby a student spends 3 years in a liberal arts college studying pre-engineering subjects and 2 years in an engineering school studying core subjects, and then receives a bachelor's degree from each school.

## LICENSURE

All 50 States and the District of Columbia require licensure for engineers who offer their services directly to the public. Engineers who are licensed are called professional engineers (PE). This licensure generally requires a degree from an ABET-accredited engineering program, 4 years of relevant work experience, and successful completion of a State examination. Recent graduates can start the licensing process by taking the examination in two stages. The initial Fundamentals of Engineering (FE) examination can be taken upon graduation. Engineers who pass this examination commonly are called engineers in training (EIT) or engineer interns (EI). After acquiring suitable work experience, EITs can take the second examination, the Principles and Practice of Engineering exam. Several States have imposed mandatory continuing education requirements for relicensure. Most States recognize licensure from other States, provided that the manner in which the initial license was obtained meets or exceeds their own licensure requirements. Independent of licensure, various certification programs are offered by professional organizations to demonstrate competency in specific fields of engineering.

*Sources are the Department of Education and Training Administration's [www.careervoyages.com](http://www.careervoyages.com) website; World Wide Learn [www.worldwidelearn.com](http://www.worldwidelearn.com) website; [careers.stateuniversity.com](http://careers.stateuniversity.com) online career information website; [www.CollegeGrad.com](http://www.CollegeGrad.com) about Career Information website;*

## SALARIES AND TRENDS

Industrial engineers are expected to have employment growth of 20 percent over the projections decade, **faster than the average** for all occupations. As firms look for new ways to reduce costs and raise productivity, they increasingly will turn to industrial engineers to develop more efficient processes and reduce costs, delays, and waste. This should lead to job growth for these engineers, even in manufacturing industries with slowly growing or declining employment overall. Because their work is similar to that done in management occupations, many industrial engineers leave the occupation to become managers. Many openings will be created by the need to replace industrial engineers who transfer to other occupations or leave the labor force.

Visit the Bureau of Labor and Statistics page to get very comprehensive data about salary and wages: <http://www.bls.gov/oes/current/oes172112.htm>

Employment estimate and mean wage estimates for this occupation at the national level:

<b>Employment</b>	<b>Employment RSE</b>	<b>Mean hourly wage</b>	<b>Mean annual wage</b>	<b>Wage RSE</b>
204,210	1.3 %	\$35.33	\$73,490	0.3 %

Percentile wage estimates for this occupation:

<b>Percentile</b>	<b>10%</b>	<b>25%</b>	<b>50% (Median)</b>	<b>75%</b>	<b>90%</b>
Hourly Wage	\$22.28	\$27.54	\$34.34	\$42.38	\$50.24
Annual Wage	\$46,340	\$57,270	\$71,430	\$88,150	\$104,490

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### National Salary Trend from Indeed.com

— industrial engineer



Sources are the Department of Education and Training Administration's [www.careervoyages.com](http://www.careervoyages.com) website; [www.CollegeGrad.com](http://www.CollegeGrad.com) about Career Information website; Bureau of Labor Statistics, Engineers [www.bls.gov](http://www.bls.gov) Occupational Outlook Handbook website; Indeed "one search all jobs" website [www.indeed.com](http://www.indeed.com); Career Overview career and job search resources website [www.careeroverview.com](http://www.careeroverview.com);