

INDUSTRIAL ENGINEER

ALSO KNOWN AS: **PROCESS ENGINEER** **MANUFACTURING ENGINEER** **CONTINUOUS IMPROVEMENT ENGINEER**

PRODUCTION ENGINEER

STREAMLINE YOUR CAREER PATH AND ENGINEER EFFICIENCY.

As an Industrial Engineer, you'll be the architect of productivity in the ever-evolving world of industry.

KEY SKILLS

Skills which may benefit anyone considering a job as a industrial engineer include:

- ✔ Critical Thinking
- ✔ Statistical Analysis
- ✔ Process Analysis
- ✔ Software literacy
- ✔ Project management

VALUES & ATTRIBUTES

Values and attributes of anyone considering a job as a industrial engineer include:

- ✔ Attention to detail
- ✔ Innovative
- ✔ Logical
- ✔ Adaptable
- ✔ Efficient
- ✔ Conventional – "Organiser"

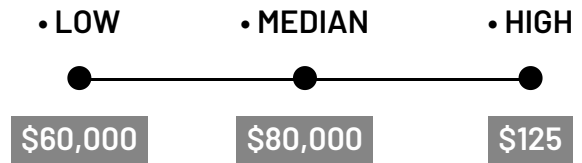
CAREER PROGRESSION

In this role, you may have the opportunity to progress to other positions. Career progression opportunities include:

- Chief Engineering Officer
- Chief Executive Officer
- Chief Financial Officer

SALARY EXPECTATION

The expected salary for an Industrial Engineer can vary across different areas of manufacturing and may vary as you become more experienced.



RELATED INDUSTRIES

- ▶ Aerospace and Defence
- ▶ Chemicals, Hydrocarbons and Refining
- ▶ Food and Beverage
- ▶ Furniture and Other Products
- ▶ General Manufacturing and Engineering
- ▶ Pharmaceutical and Medical Technology
- ▶ Polymers, Plastic and Rubber
- ▶ Printing and Graphic arts
- ▶ Pulp, Paper and Packaging
- ▶ Renewables
- ▶ Textiles, Clothing and Footwear
- ▶ Timber and Wood
- ▶ Transport Equipment and Machinery

RECOMMENDED SCHOOL SUBJECTS

- Engineering Skills
- Mathematical Methods
- Specialist Mathematics

CORE SCHOOL SUBJECTS

- General Mathematics
- Essential English
- Engineering
- Physics

JOB OVERVIEW

Industrial Engineers are the efficiency experts of the manufacturing and service sectors. They analyse complex systems, integrating workers, machines, materials, information, and energy to make products or provide services in the most efficient way possible. Their goal is to eliminate wastefulness in production processes, reduce costs, improve quality, and increase productivity.

These versatile professionals apply their skills across a wide range of sub-industries, from healthcare and finance to logistics and manufacturing. Industrial Engineers use their unique blend of technical knowledge and business acumen to optimise processes, implement quality control systems, and manage projects that enhance overall organisational performance.

Industrial Engineers employ a variety of tools and technologies in their daily work, including data analytics software for process optimisation, simulation software for modelling complex systems, and motion capture equipment for ergonomic studies. A typical day might involve using time study software to analyse assembly line efficiency, creating a digital twin of a warehouse layout to improve logistics, and meeting with cross-functional teams to implement lean manufacturing principles.

While Industrial Engineers don't typically design specific products, they play a crucial role in optimising the systems and processes that manufacture and deliver products. Their work might involve improving the production line for electric vehicles, streamlining the supply chain for consumer electronics, or enhancing patient flow in healthcare facilities to reduce wait times and improve care delivery.

WHAT WILL YOU DO?

Your role may include duties as follows:

1. Design and develop electrical systems and components
2. Create and interpret electrical schematics and technical drawings
3. Conduct tests and analyse electrical data
4. Ensure compliance with safety regulations and industry standards
5. Troubleshoot and resolve electrical system issues

HOW TO BECOME A INDUSTRIAL ENGINEER

Employers in manufacturing typically look for candidates with a strong educational background and relevant experience. To become an industrial engineer, you typically require a bachelor's degree in a relevant field. Here are the steps to secure a job as an industrial engineer:

1. Earn a bachelor's degree in engineering majoring in relevant field
2. Apply to work as an intern, or directly with an employer
3. Develop a strong portfolio showcasing your projects and skills
4. Obtain relevant certifications (e.g., Six Sigma, Lean Manufacturing)
5. Continue to grow your networks within the industry

VOCATIONAL EDUCATION & TRAINING

While most engineering positions require a bachelor's degree, vocational education and training can provide a pathway and skills useful to higher level application.

PATHWAY THROUGH A TRADE

A trade certificate can be a valuable stepping stone towards university education, offering a unique blend of practical skills and industry knowledge. This pathway allows individuals to gain hands-on, real-world experience in their chosen field before transitioning to higher-level academic learning.

One trade pathway would be to undertake a Certificate III in Engineering as an apprenticeship.

Post-trade qualifications are also available, including a Certificate IV in Engineering (MEM40119). This qualification is also undertaken as an apprenticeship.

Higher level vocational education and training can also offer foundation skills, and entry pathways to university. These qualifications include:

- Diploma of Engineering – Advanced Trade (MEM50119)
- Diploma of Engineering – Technical (MEM50222)
- Diploma of Engineering – Materials (MEM50522)
- Diploma of Engineering – Prototyping (MEM50522)
- Diploma of Engineering – Planning (MEM50522)
- Advanced Diploma of Engineering (MEM60122)
- Advanced Diploma of Engineering – Planning (MEM60322)

Advanced level vocational education and training qualifications can sometimes count towards or give you entry to a university degree.

UNIVERSITY & HIGHER EDUCATION

Many universities offer cooperative education programs that combine classroom study with practical work experience in the manufacturing industry. To become an Industrial Engineer, you typically need:

- A bachelor's degree in engineering with a manufacturing related major
- Some positions may require or prefer a master's degree in engineering or a related field
- Ph.D. for research and development positions or university teaching roles

Beyond the core curriculum, aspiring Industrial Engineers should focus on developing skills in data analytics, simulation modelling, and lean manufacturing principles. Courses in operations research, quality control, and supply chain management are crucial. Many programs now incorporate Industry 4.0 concepts, preparing students for the digital transformation of manufacturing and logistics. Participating in case competitions or process improvement projects can provide valuable real-world experience.

Some universities offer specialisations in areas such as healthcare systems engineering or sustainable manufacturing, allowing students to tailor their education to specific industry needs.

Pursuing certifications like Six Sigma or Lean Manufacturing alongside your degree can significantly enhance your employability and demonstrate practical expertise to potential employers.