MECHANICAL ENGINEER

ALSO KNOWN AS: MECHANICAL DESIGN ENGINEER | MECHANICAL ENGINEERING MANAGER

GEAR UP FOR A CAREER THAT PUTS YOU AT THE HEART OF INNOVATION.

As a Mechanical Engineer you'll engineer solutions that make the world go round.

KEY SKILLS

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

- CAD software proficiency
- Circuit design
- Knowledge of programming languages
- Knowledge of power systems
- Process Analysis

VALUES & ATTRIBUTES

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

- Precision
- Innovative
- Collaborative
- Adaptable
- Quality-focused
- Realistic – "Do-er"

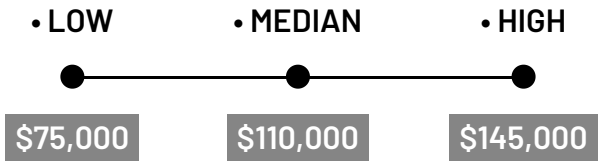
CAREER PROGRESSION

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

- Quality Engineer
- Chief Engineering Officer
- Chemical Engineer

SALARY EXPECTATION

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



RELATED INDUSTRIES

▸ Aerospace and Defence ▸ General Manufacturing and Engineering ▸ Pharmaceutical and Medical Technology ▸ Renewables ▸ Transport Equipment and Machinery

RECOMMENDED SCHOOL SUBJECTS

• Agricultural Science • Chemistry • Design • Engineering Skills • Mathematical Methods • Specialist Mathematics

CORE SCHOOL SUBJECTS

• General Mathematics • Essential English • Engineering • Biology • Physics

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JOB OVERVIEW

Mechanical Engineers are the masterminds behind the machines that power our world. They design, develop, build, and test mechanical devices, including tools, engines, and machines. From the smallest components to complex systems, these professionals are involved in every stage of product development, from conceptualisation to manufacturing.

With a broad skill set, Mechanical Engineers work across various industries, including automotive, aerospace, robotics, and energy. They apply principles of motion, energy, and force to create mechanical solutions that improve efficiency, reduce costs, and enhance performance. Their work often involves collaborating with other engineers and professionals to integrate mechanical systems with electrical, hydraulic, and other components.

Mechanical Engineers employ a variety of tools and equipment in their daily work, including 3D printers for rapid prototyping, dynamometers for testing engine performance, and sophisticated measurement devices like coordinate measuring machines (CMMs) for precision analysis. A typical day might involve using CAD software to refine the design of a new robotic arm, conducting stress analysis simulations on a proposed bridge structure, and meeting with manufacturing teams to optimize production processes. These versatile professionals might work on a wide range of products, from designing more energy-efficient HVAC systems and developing advanced prosthetics to creating innovative automotive powertrains and conceptualizing next-generation wind turbines for renewable energy production.

WHAT WILL YOU DO?

Your role may include duties as follows:

1. Design and prototype mechanical systems and components
2. Analyse and interpret data to improve mechanical designs
3. Develop and conduct tests for mechanical devices
4. Troubleshoot and resolve mechanical issues in existing products
5. Create technical documentation and reports

HOW TO BECOME A MECHANICAL ENGINEER

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Employers in the engineering field typically look for candidates with a strong educational background and relevant experience. To become a mechanical engineer, you typically require a bachelor's degree in a relevant field. Here are the steps to secure a job as a Mechanical 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. Continue to grow your networks within the industry

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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 – Mechanical Trade (MEM30219) as an apprenticeship. This qualification is designed for apprentices in the mechanical engineering trade. It covers skills in fitting, assembly, manufacture, installation, and maintenance of mechanical equipment.

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)
- Diploma of Applied Technologies (MEM50822)
- 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

To become a Mechanical Engineer, you typically need:

- A bachelor's degree in engineering with a relevant 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 Mechanical Engineers should consider specialising in areas such as robotics, biomechanics, or sustainable energy systems, depending on their interests and career goals. Courses in computer-aided design (CAD), finite element analysis (FEA), and programming are increasingly important in the field. Participation in engineering design competitions, such as Formula SAE or robotics contests, can provide valuable hands-on experience and demonstrate practical skills to potential employers. Some universities also offer interdisciplinary programs that combine mechanical engineering with fields like materials science or mechatronics, preparing students for emerging technological challenges.

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