AGRICULTURAL ENGINEER

ALSO KNOWN AS: AGRICULTURAL TECHNICIAN | NATURAL RESOURCES ENGINEER | IRRIGATION ENGINEER

CULTIVATE INNOVATION AND HARVEST TECHNOLOGICAL ADVANCEMENTS.

As an Agricultural Engineer, you'll sow the seeds of sustainable farming for a greener, more productive future.

KEY SKILLS

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

- Agricultural sciences knowledge
- Data analysis
- Mechanical design
- Regulatory knowledge
- Soil and water conservation techniques

VALUES & ATTRIBUTES

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

- Innovative
- Environmentally-conscious
- Attention to detail
- Adaptable
- Communication
- Investigative – "Thinker"

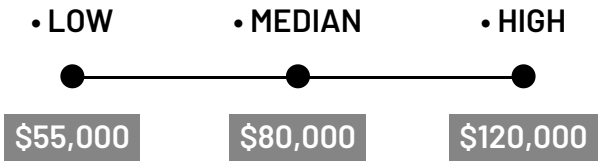
CAREER PROGRESSION

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

- Supply Chain Manager
- Chief Executive Officer
- Chief Operating Officer
- Renewable Energy Engineer

SALARY EXPECTATION

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



RELATED INDUSTRIES

▸ General Manufacturing and Engineering ▸ Transport Equipment and Machinery

RECOMMENDED SCHOOL SUBJECTS

- Biology
- Engineering Skills
- Food and Nutrition
- Mathematical Methods
- Physics
- Specialist Mathematics

CORE SCHOOL SUBJECTS

- General Mathematics
- Essential English
- Engineering
- Agricultural Science
- Agricultural Practices

JOB OVERVIEW

Agricultural Engineers are the innovative minds behind the technological advancements in farming, food production, and environmental conservation. They apply engineering principles to solve agricultural challenges, improve efficiency, and develop sustainable practices. These professionals play a crucial role in addressing global food security, environmental sustainability, and the modernisation of agricultural practices.

Working at the intersection of biology, technology, and engineering, Agricultural Engineers develop solutions for a wide range of agricultural needs. Their work spans from designing advanced farming equipment and irrigation systems to creating more efficient food processing methods and implementing precision agriculture technologies. They contribute significantly to increasing crop yields, reducing environmental impact, and enhancing the overall sustainability of agricultural operations.

In their daily work, Agricultural Engineers utilise a diverse set of tools and technologies. They might use computer-aided design (CAD) software to design new farming equipment, geographic information systems (GIS) for precision agriculture mapping, and data analytics tools to optimise crop yields. A typical day could involve analysing soil data to develop a custom fertilisation plan, designing a water-efficient irrigation system for a large farm, and collaborating with biologists to develop drought-resistant crop varieties. These engineers often work on innovative projects, from developing autonomous tractors and drones for crop monitoring to creating vertical farming systems for urban agriculture.

WHAT WILL YOU DO?

Your role may include duties as follows:

1. Design agricultural machinery and equipment
2. Develop systems for land drainage, irrigation, and waste management
3. Implement precision agriculture technologies
4. Conduct environmental impact assessments for agricultural projects
5. Optimise food processing and storage systems

HOW TO BECOME A AGRICULTURAL ENGINEER

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

1. Earn a bachelor's degree in engineering majoring in agricultural technology or agricultural equipment
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

REGISTRATION

Once you have industry experience with an employer, you may be able to seek registration as an engineer. Learn more and explore the Engineers Australia's National Engineering Register (NER) and Board of Professional Engineers.

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 steppingstone 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) or a Certificate III in Agriculture (AHC30122) 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 Food Science and Technology (FBP50121)
- Diploma of Meat Processing (AMP50221)
- Diploma of Sustainable Operations (MSS50122)
- Advanced Diploma of Engineering (MEM60122)

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 agriculture industry. To become an Agriculture Engineer, you typically need:

- Graduate Diploma of Engineering (MEM80122)
- Graduate Certificate in Agribusiness (AMP80115)
- Graduate Diploma of Agribusiness (AMP80215)
- Bachelor of Engineering
- Bachelor of Agricultural Technology and Management
- Some positions may require or prefer a master's degree in engineering or a related field
- PHD for research and development positions or university teaching roles

In addition to core engineering courses, students should focus on developing a strong foundation in biological sciences, soil science, and environmental studies. Courses in precision agriculture, sustainable farming practices, and agricultural robotics are particularly valuable. Many programs offer opportunities to work on real-world projects, such as designing irrigation systems for local farms or developing new agricultural technologies. Participating in agricultural engineering competitions or joining student chapters of organisations like the Society for Engineering in Agriculture (SEA) can provide excellent networking opportunities and hands-on experience. Some universities also offer specialised tracks in areas like biosystems engineering or food engineering, allowing students to tailor their education to specific career goals. Pursuing internships or co-op placements with agricultural companies, research institutions, or government agencies can provide invaluable real-world experience and potentially lead to job opportunities after graduation.