

WHAT DOES AN ELECTRONICS ENGINEER DO?

CAREER FACT SHEET

WHAT IS ELECTRONICS ENGINEERING?

Being an engineer is about problem solving, having a design focus, and utilising technology to benefit society. Electronics engineering encompasses the design, construction, manufacture and management of systems based on modern electronics technology.

WHAT DOES AN ELECTRONICS ENGINEER DO?

Electronics engineering is a broad specialisation of engineering involving the design, construction, manufacture, installation and management of systems based on modern electronics technology in telecommunications, computer, manufacturing, consumer electronic, medical, energy production, media, entertainment, environmental control and other systems.

WHAT SKILLS DOES AN ELECTRONICS ENGINEER NEED?

- project management skills
- high level of technical expertise
- good communication skills
- leadership capability
- strong analytical skills
- ability to work as part of a team
- problem solving capabilities
- practical/resourceful
- creativity (invention, innovation, thinking outside box)

WHAT CAREER OPPORTUNITIES ARE AVAILABLE?

- computer and communication networking
- engineering research and development
- sales and service of technical equipment
- telecommunication systems design and installation
- project and technology management
- design and manufacture of industrial and consumer products

WHERE DO ELECTRONICS ENGINEERS WORK?

- telecommunications companies such as Optus, Telstra, Nokia, Vodafone, Alcatel-Lucent, Toshiba and Erickson
- developers and manufacturers of medical devices such as Cochlear
- IT companies such as IBM, Hewlett-Packard and EMC
- banks and financial institutions such as The Macquarie Group, NAB and Commonwealth Bank
- public sector institutions at both state and federal level such as RailCorp
- government and university research laboratories such as CSIRO, DSTO (Defence Science and Technology Organisation), and university research laboratories around the world

Did you know?

Engineers are in high demand in Australia and overseas. The fast-growing, high-technology fields of telecommunications, computing and electronics need engineers to drive the future of their products and services. Many of our graduates are offered employment before they graduate.

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HOW MUCH DO THEY EARN?

According to GradStats 2007, Careers Council of Australia's annual Australian graduate survey, the median starting salary for bachelor degree Engineering graduates aged less than 25 and in first full-time employment in Australia was \$50,000. This was the fourth highest starting salary of professionals in Australia in 2007. This salary ranking has been consistent for engineering for at least 5 years. By comparison, Economics, Business and Accounting graduates had a median annual starting salary of \$40,000 in 2007, \$10,000 less than that for engineers.

ABOUT THE ENGINEERING PROGRAM AT MACQUARIE UNIVERSITY

The Bachelor of Engineering in Electronics Engineering at Macquarie University is a 4 year full-time degree and begins with a solid foundation of basic sciences and core electronics engineering and then focuses on core areas of engineering such as analogue and digital electronics, communications and control theory enabling students to then specialise in their final years. Optional units allow the student to develop skills in one or more related areas such as computer engineering, control systems, optical technology and photonics, electromagnetics and wireless systems, and telecommunication networks.

The types of units studied in electronics engineering may include the following topic areas along with a range of other units:

- analogue and digital electronics
- computer hardware
- computer networking
- instrumentation and control
- information technology
- mathematics and physics
- optical technology and photonics
- telecommunications systems
- wireless technology

ENTRY REQUIREMENTS

2 unit HSC Mathematics (Band 4) or its equivalent is a subject prerequisite for Physics and Mathematics units which form part of the Bachelor of Engineering degree. Students not meeting this requirement will need to enrol in an additional mathematic unit in their first year of study. A combination of higher levels of mathematics, physics, chemistry, engineering studies, senior science, information processes, technology or software design and development are also strongly recommended. Other units taken as part of the degree may have assumed knowledge, prerequisites or recommended studies. Therefore, students should refer to the University Handbook for full degree requirements (www.handbook.mq.edu.au).

OTHER CAREER FACT SHEETS IN THIS SERIES

- wireless engineering
- computer engineering
- software engineering
- photonics engineering
- telecommunications engineering
- instrumentation and control engineering

FOR MORE INFORMATION

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Double-Degree Option

The Bachelor of Engineering combined with Bachelor of Science allows students to undertake a computing major along with a major in software engineering or telecommunications engineering. The Bachelor of Engineering with Bachelor of Commerce combines software engineering or telecommunications engineering with an economics major. The Bachelor of Engineering with a major in any of the seven engineering specialisations can also be combined with the Bachelor of Business Administration. These degrees offer an efficient way for students to broaden their skills and obtain two qualifications in five years.