

# Bachelor of Engineering (Mechanical and Advanced Manufacturing)

**Open Day** will be held on Sunday 15 August 2010, City West campus. Visit [unisa.edu.au/openday](http://unisa.edu.au/openday)

**Information Sessions** will be held at the **Careers Festival**, Sunday 29 August 2010, Mawson Lakes campus.

To register, visit [unisa.edu.au/infosessions](http://unisa.edu.au/infosessions)

**Drop-In Times** will be available from 6-10 December 2010, from 9.00am – 7.00pm at Campus Central, Mawson Lakes campus.

An additional **Information Session** will be held on Wednesday 15 December, 2010, at 6.30pm, Mawson Lakes campus. To register visit [unisa.edu.au/infosessions](http://unisa.edu.au/infosessions)

SATAC code	434791
UniSA program code	LBMR
CRICOS code (international students only)	063509E
TER (February 2010 cut-off)	75.10
Program length	4 years
Prerequisites	SACE Stage 2 Mathematical Studies
Assumed knowledge	SACE Stage 2 Physics
Home campus	Mawson Lakes
Accepts Special Entry (STAT)	Yes
External study available	No
Part-time study available	Yes
TAFE credit available	Yes
Honours study available	Yes
Program fees	Commonwealth supported
Program fees (international students only)	(A\$) \$23,500 per annum
Scholarships available	<a href="http://unisa.edu.au/scholarship">unisa.edu.au/scholarship</a>

## Program overview

Advanced manufacturing involves the utilisation of new manufacturing and management techniques, sophisticated, high-precision machines combined with the application of information and communication technology (ICT), electronics and new organisational practices within the manufacturing sector to improve products and processes.

This degree focuses on theoretical knowledge as well as applied exposure to the latest technologies and techniques, a mixture that is highly sought by today's employers. Students develop the ability

to find practical solutions to engineering problems, and have the opportunity to apply this knowledge through a final-year project with either the Mawson Institute, one of UniSA's leading Research Institutes, or a project with one of UniSA's industry partners.

## Accelerated three-year Engineering program

It is possible to complete this program in less than four years by undertaking courses offered during study period breaks. This accelerated option will be offered by the Program Director to students who achieve outstanding grades in the first year.

## What will I study?

In the first year, all Engineering students study eight core engineering courses, including Engineering Design and Innovation, Mathematical Methods for Engineers 1 and 2, Mechanics and Physics, Computer Techniques, Sustainable Engineering Practice and Electrical and Energy Systems. These courses provide a practice-centred foundation to engineering that exposes students to the breadth of cross-disciplinary studies as well as how engineering is applied in industry.

Students undertake a number of hands-on engineering projects including participation in the Engineers Without Borders Challenge. By the end of first year, students can choose an area of interest to specialise in. Students then select courses in the areas of design, mechanics, materials, energy, fluids, processes and engineering modelling. Specialised courses in the final-year provide advanced and innovative topics in mechanical and manufacturing engineering such as robotics, supply chain management, industrial automation and quality management.

The final-year project offers the choice of a range of industry-based projects or a School-based research project.

All students in the program undertake 12 weeks of compulsory industrial experience during their study. This experience is highly regarded by students and prospective employers. Students have the opportunity to apply and integrate the knowledge and skills they have gained

during their program in an industry setting. Industry experience also helps students to determine their engineering career pathway as they are able to experience particular sectors prior to graduation.

UniSA, in association with industry partners and sponsors, recognises many deserving students with prizes and awards at various levels of study (for more information visit [unisa.edu.au/ame/prizes](http://unisa.edu.au/ame/prizes)).

Students who graduate from this degree are able to apply for entry into the Master of Engineering (LMEN), and receive credit for four courses completed in the undergraduate degree. Hence it is possible to gain a bachelor and master degree in five years of full-time study.

## What does it take?

Strong interpersonal skills, matched with the ability to identify, analyse, design, communicate and solve problems, will enable graduates to implement new and emerging technologies and organisational practices to help companies improve productivity and efficiency. Students should be competent in mathematics, physics and chemistry and have a keen interest in the sustainability issues of tomorrow. Good verbal and written communication skills and an inquiring mind are also important.

## Who will employ me?

Australia's excellence in manufacturing can be found in all industries, including aerospace, automotive, ship building, fabricated metal products, industrial machinery and equipment,

pharmaceutical, defence, food and beverage industries, and primary metal industries.

Careers in this area are multi-faceted, and could include: responsibility for running and optimising existing plants; improving automated processes; implementing software such as Enterprise Resource Planning (ERP); programmable logic controllers (PLCs); proximity sensors; robotics; 3D mechanical design software and systems; advanced planning and scheduling software; CMMS software systems; and manufacturing execution systems.

Just a few examples of the South Australian manufacturers who have employed graduates include the Orlando Wyndham Group, Caroma, Schefenacker, WMC (Olympic Dam), Mayne Pharma, Holden, ASC, Tenix and Bridgestone.

#### Professional recognition

The program is professionally accredited by Engineers Australia and is recognised as satisfying the requirements for graduate membership of Engineers Australia and comparable international institutions through the Washington Accord.

*For further information on these organisations visit [washingtonaccord.org](http://washingtonaccord.org) and [engineersaustralia.org.au](http://engineersaustralia.org.au)*

#### Honours

Students achieving a credit level average at the end of third year will be allowed to enrol in honours courses in fourth year. Successful completion of the program and the honours project courses may lead to the award of a degree with honours.

#### Program requirements

##### FIRST YEAR

Computer Techniques  
Engineering Materials  
Mathematical Methods for Engineers 1  
Sustainable Engineering Practice  
Electrical and Energy Systems  
Engineering Design and Innovation  
Mathematical Methods for Engineers 2

Mechanics and Physics

##### SECOND YEAR

Mechanics and Structures  
Engineering Modelling  
Manufacturing Practice  
Mechanical Engineering Practice N  
Mechanics of Machines  
Mechanical Design Practice  
Fluid and Energy Engineering  
Elective  
Industrial Experience

##### THIRD YEAR

Design for Manufacture and Assembly  
Energy Conversion and Management  
Project Planning and Control  
Computer Aided Engineering Practice  
Design in Plastics and Advanced Composites  
Engineering Maintenance  
Operations Management for Engineers  
Fluid and Energy Management Practice  
Students are required to select a plan specialisation aligned with their project

##### FOURTH YEAR

Intelligent Manufacturing Systems  
Total Quality Management  
Mechanical Engineering Project 1  
Mechanical Systems Design  
Supply Chain Management G  
Mechanical Engineering Project 2

##### FOURTH YEAR (HONOURS)

Intelligent Manufacturing Systems  
Total Quality Management  
Mechanical Engineering Project 1  
Mechanical Systems Design  
Supply Chain Management G  
Mechanical Engineering Honours Project



## Bill Vine

**Test and Evaluation Manager**  
BAE Systems Australia - Land Systems

'The low volume manufacturer's of defence equipment require flexibility from their engineers with the ability to not only undertake mechanical design tasks but to also fill production, process and test engineering roles.

The Advanced Mechanical and Manufacturing program will provide the industry with such engineers. Combined with the practical, hands-on experience gained during their studies they will be well suited to the design-prototype-test environment. They will be capable of making a significant contribution and be highly sought after.'

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