## **ENGINEERING**



## UNDERGRADUATE



## ENGINEERING

## **Discover engineering** at Deakin University

Deakin's Bachelor of Engineering has been developed in accordance with the requirements of Engineers Australia and graduates are eligible for Graduate Professional Membership, which means your degree could take your career almost anywhere in the world.

Engineering at Deakin gives you flexibility - you take a general first year, then choose what area to specialise in. We offer four major sequences civil, electrical and electronics, mechanical, and mechatronics and robotics - allowing you to concentrate on the aspect of engineering that interests you most. Plus you can choose to study on campus or off campus, full time or part time.

Our engineering courses focus on the employability of our graduates and the future needs of industry. We expect that our graduates will be well-rounded engineers with significant exposure to professional engineering practices, well-equipped to meet the challenges of the future, including those caused by climate change and sustainability issues.

This booklet will tell you about the courses we offer in engineering, key features of our courses and career opportunities you can expect from completing a degree at Deakin.

Choosing a university course is an important decision - and we are here to help. We encourage you to gather as much information as possible to help you make an informed decision about which course is best for you.

If you need more information, please contact us on 1300 DEGREE (1300 334 733), email enquire@deakin.edu.au or visit deakin.edu.au.

We look forward to seeing you at Deakin!

The Deakin team



## **Finding more information**

## 2013 Undergraduate 2013 undergraduate Undergraduate **Course Guide**

This guide provides an overview of the undergraduate courses Deakin offers, and information about how to apply, our campuses, student services and study options, such as part time and off campus.

To order a copy of this or any other brochure, phone 1300 DEGREE (1300 334 733).

To view brochures online visit deakin.edu.au/ future-students/ brochures.

## career booklets

Deakin has a range of undergraduate career booklets which provide more information on areas of study, career opportunities, course overviews and course structures. These career booklets are available in the following areas:

- architecture and built » environment
- arts, humanities and social sciences
- business
- education engineering
- (this booklet)
- environment
- health
- information technology
- law
- nursing and midwifery
- optometry
- psychology
- science
- » sport.

## eBrochure

Find out more in our new interactive eBrochure available from deakin.edu.au/ ebrochure/ undergrad, the Apple App Store and Google play.



**Social media @Deakin** 

Connect with other future students and ask current students and staff about life and study at Deakin.

facebook.com/ discoverdeakin twitter.com/

discoverdeakin

You

Website Deakin's website offers comprehensive course and fee information including details of new courses, campuses, facilities and support services.

Visit deakin.edu.au. To search for courses

and click through to unit descriptions visit deakin.edu.au/ courses.

## **Contact us**

Phone 1300 DEGREE (1300 334 733) to speak with a student adviser. You can also contact us via email at enquire@deakin. edu.au.

There are many opportunities throughout the vear to visit Deakin. experience a campus tour and talk with representatives face-to-face.

For more information on event dates visit deakin.edu.au. 2012 Open Day dates are listed on the back cover of this booklet.

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## Using this booklet

This booklet provides you with detailed information about Deakin's undergraduate courses in engineering (for domestic students), including study areas, career opportunities, course overviews and course structures. It is designed to be read in conjunction with the 2013 Undergraduate Course Guide, which gives an overview of all Deakin's undergraduate courses, study options, support services and campuses.

Deakin University also produces course guides specifically for international students. To request a copy phone Deakin International on 03 9244 5095.

# **Engineering at Deakin**

## **Range of specialisations**

As a Deakin engineering student you will undertake common subjects in the first year of your four-year course to give you a broad base of engineering knowledge and help you make a more informed decision about your future career. At the end of this year, you will choose to specialise in civil, electrical and electronics, mechatronics and robotics or mechanical engineering. Deakin's Bachelor of Engineering is distinctive in that all of the specialism streams are available in both on and off-campus mode, so you can choose the study mode that best fits your lifestyle, and even switch between these study modes throughout your course.

## Engineering in the real world

An engineering qualification from Deakin is based on design-focused learning.

Civil engineers make modern life possible. Civil engineering students are involved with planning and analysis requiring real-life community considerations and implications, and gain relevant industry knowledge through a range of site visits and field trips.

Electrical and electronics engineers are highly depended on by society as they are involved in designing reliable power, communications and electronic systems, and design the equipment and systems that provide these essential services.

Mechanical engineering is the application of technology and science to the design, production and operation of systems, mechanical devices and machinery, and is associated with many fields of interest. Mechanical engineers are involved with almost every design imaginable, especially complex items like cars, robots and aeroplanes.

Mechatronics and robotics engineers integrate electronic devices with mechanical design and information technology. They design mechanical systems such as chassis stabilising systems, cameras, anti-lock brakes, engine control units, disk drives, service and surgical robots, and artificial hearts.

## Hands-on learning

In engineering at Deakin, theory is complemented by hands-on, design focused learning to help create career-ready graduates. Professional practice units also provide you with opportunities for workplace visits, practical experience, industry learning and the establishment of valuable networks.

The Science and Technology Work-Integrated Learning (WIL) Program provides the opportunity to apply to undertake a full-time or part-time discipline-specific industry placement as part of your course. For more information, please visit deakin.edu.au/ scitech/future/wil.

## **Industry input**

At Deakin, we engage with the engineering industry to ensure our courses are relevant and responsive to the needs of employers in the sector.

Our curriculum is informed by the industry leaders and employer representatives on our Advisory Board, to ensure it is relevant and to help us define and develop the skill set that employers expect of top graduates.

Collaborative research partnerships as well as strong educational partnerships with industry provide you with a custom-made study program to suit your professional development needs.

## Sought-after graduates

At Deakin's School of Engineering we focus on the employability of our graduates and the future needs of industry. We aim for our graduates to be well-rounded engineers with significant exposure to professional engineering practices and able to meet future challenges caused by climate change and sustainability issues.

## Flexibility

At Deakin we offer you the flexibility and choice to make your learning experience fit with your lifestyle, work and personal commitments. We are one of only a few universities in Australia to offer engineering in both on-campus and off-campus mode, allowing you to choose the study option that suits you best.

Off-campus students experience campus life during specified activities requiring on-campus attendance (approximately two weeks duration for each year of equivalent full-time study). See online course structure for more details.

## **First-class facilities**

As a Deakin engineering student you will have access to recently refurbished, fully-equipped laboratories and cutting-edge computer-aided software that is used in modern industrial workplaces. Accessible lecturers help you get the most out of your university education and provide a friendly learning environment.

## Innovative engineering research

A further advantage of studying engineering at Deakin is the opportunity to learn from world-standard researchers. Engineering at Deakin is different as it is research led, rather than simply research informed. Deakin is a significant leader in a number of engineering focused research areas, most notably manufacturing and materials.

As well as the opportunity to learn from leading researchers, there is also the opportunity to access facilities at the Geelong Technology Precinct, also located at Deakin's Geelong Waurn Ponds Campus.

## **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives our degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

## **Study abroad**

Give your degree a competitive edge with a Deakin Study Abroad Program. The Study Abroad and Exchange Office offers various programs including exchange, study abroad, short-term study programs, study tours and international volunteering opportunities which allow you to study overseas for a few weeks, a trimester, or a year as part of your Deakin degree.

For more information on study abroad, please visit deakin.edu.au/future-students/ student-exchange/exchange.

## **Scholarships**

Deakin University offers scholarships for academic excellence, access and equity, accommodation and Aboriginal and Torres Strait Islanders, ensuring higher education is accessible for all members of the community.

Scholarships in the Faculty of Science and Technology for engineering students include:

IGNITED (Initiative for a Girls' Network in Information Technology and Engineering @ Deakin): for first-year female students entering an undergraduate course within the School of Engineering or School of Information Technology valued at \$10 000 in total over the duration of the course.

**Barwon Water Civil Engineering** Scholarship: two scholarships awarded to Year 12 students completing secondary school within the Barwon Water catchment area and entering the Bachelor of Engineering or related combined degree, majoring in the civil engineering stream.

**CPG Australia Pty Ltd Civil Engineering** Scholarship: four scholarships - two for students from the Albury/Wodonga and Shepparton regions and two for students from the Barwon region – awarded to Year 12 students entering the Bachelor of Engineering or related combined course, majoring in the civil engineering stream.

Dean's Scholars Program: aims to recognise, reward and nurture high-achieving students who have recently completed Year 12 and who have been admitted through VTAC.

For more information on scholarships, please visit deakin.edu.au/scholarships.



Industry representatives sit on our Advisory Board to help ensure our courses remain relevant and produce graduates who are job-ready.





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# **Courses and ATARs table**

	Melbourne Burwood Campus	Geelong campuses	Warrnambool Campus	Off campus	
	Clearly-in ATAR 2012	Clearly-in ATAR 2012	Clearly-in ATAR 2012	Available	Page
Bachelor of					
Engineering   \$367		66.85		Yes	6
For information on major sequences available, please refer to page 6.					
Engineering Scholars Program <sup>o</sup>		94.05			8
For information on major sequences available, please refer to page 6.					
Science and Technology (Dean's Scholars Program in engineering)		90.00*			8
Combined courses					
Bachelor of / Bachelor of					
Engineering/Commerce   D373		82.15		Yes	10
Engineering/Information Technology   D375		N/A		Yes	12
Engineering/Science   D372		69.80			13

Geelong campuses = Geelong Waurn Ponds Campus and Geelong Waterfront Campus.

N/A = Not available or not applicable. The course is offered at this campus. Where no ATAR is available it may mean that other admission requirements apply. Please refer to the course entry for more information.

° Available for high achieving students with a minimum ATAR of 80.

\* Minimum ATAR and interviews are also taken into consideration.

If a clearly-in ATAR is not listed it means that the course is not available at that campus

For more information on ATARs please visit deakin.edu.au/future-students/year12.

# Where do our graduates go?

Deakin's engineering graduates are entering an industry in which their skills and knowledge are in high demand. Depending on your chosen area of specialisation, you may find opportunities in a range of sought-after careers with organisations in the automotive, manufacturing, electronics, telecommunications, power generation and distribution, construction, mining, resources, aeronautical, aerospace, water resource management, railroad and ship building industries. You may find employment designing, constructing and project managing critical infrastructure such as roads, railways and water supply; operating and maintaining mechanical systems for aerospace, aircraft or railroads; or developing and controlling mechatronics and robotics systems that are revolutionising industries such as manufacturing, aircraft control and the automotive industry.

Recent Deakin engineering graduates have been employed by a range of companies including, but not limited to, the following:

- » Alcoa
- » Barwon Water
- » Boeing
- » Ford
- » Godfrey Hurst
- » Harrop Engineering
- » Hatch Associates
- » Holden (General Motors)
- » Industrial Control Technology Pty Ltd
- » Insight Engineering
- » Kempe Engineering
- » Melbourne Water
- » Rio Tinto
- » Shell» Toyota.

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## **EMPLOYER PROFILE**

Mark Bieser Managing Director Insight Engineering, Highton

'Insight Engineering is an electrical engineering consultancy, located in Highton, only a few minutes drive from the Geelong Waurn Ponds Campus.

Over the years we have had many students successfully complete the Industry-Based Learning Program. During their time with us, students are taught advanced AutoCAD, electrical design and office procedures.

Some of these students are now full-time employees of Insight Engineering."

# **Major study areas**

Deakin's Bachelor of Engineering provides you with a broad-based foundation with a common first year, before specialising in your chosen field of civil, electrical and electronics, mechanical or mechatronics and robotics engineering.

## Civil engineering **G** X

A civil engineering degree gives you the building blocks to design, construct and maintain our community. Learn to plan and build the infrastructure systems that are necessary for our day-to-day life.

Deakin's civil engineering degree covers the broad range of civil engineering disciplines including engineering materials, structural engineering, water engineering, geotechnical engineering and transport engineering. This major sequence is designed to provide you with practical industry knowledge in the design, construction and project management of roads, airports, railways, water supply and sewerage systems, water resources management, buildings and other infrastructures.

## Electrical and electronics engineering **G** X

Electrical and electronics engineers are responsible for the design, construction and project management of power generation, distribution, scheduling and usage, automation and factory control, electronic systems and devices and integrated circuit design.

This program covers the broad areas of electrical and electronics engineering disciplines including renewable electrical power generation, smart distribution, materials science, urban, industrial, rural and regional power usage, the role of energy production and efficiency in climate change adaptation, Very Large Scale Integration (VLSI), control systems and electronic device design.

## KEY

- 3 Course duration in years
- В Melbourne Burwood Campus
- F **Geelong Waterfront Campus**
- G Geelong Waurn Ponds Campus Warrnambool Campus
- X Off campus

## Mechanical engineering **G** X

Product development and innovation are key drivers for Australian industry. To meet this demand, Deakin's mechanical engineering degree brings together leading computer-aided engineering technologies and advanced materials to provide one of the most relevant mechanical engineering degrees in Australia.

The course draws strongly on Deakin's world-class research teams in automotive engineering and advanced materials, with a practical, hands-on approach that could include an opportunity to work on the Formula Society of Automotive Engineering (SAE) race car, designed and built by our degree students. Along the way, you will develop project management, communication and financial management skills, as well as a solid understanding of product and process modelling and designing for sustainability.

## Mechatronics and robotics engineering **G** X

Mechatronics and robotics are combined in one degree at Deakin, providing a broader-based course that can lead to more career choices. The course combines electronic, mechanical and robotic engineering, with mechanical engineering and robotics featuring more strongly than in other degree programs. It offers studies in autonomous systems, robotic system design and industrial communication design. The course is tailored to industry needs and has close links through strong research programs, cutting-edge technology and facilities, and project-based learning.

## Engineering Scholars Program

The Bachelor of Engineering (Engineering Scholars Program) offers students who achieve an ATAR of 80 (or equivalent) and above, all of the sequences in the Bachelor of Engineering with additional opportunities for paid industry internships or research placements and, mentoring from our world-class researchers. On your VTAC application, you can place the Bachelor of Engineering (Engineering Scholars Program) one preference higher than the Bachelor of Engineering to increase your chances of getting into engineering at Deakin.

## STUDENT SNAPSHOT



Rebecca Kendall Bachelor of Engineering - Civil major (Engineering Scholars Program) **Geelong Waurn Ponds Campus** 

'I like that the first year of engineering is broad so you get to do all sorts of engineering. With civil engineering I like the solution focus. I would like to be able to drive down the road and say "I built that". I was offered a place in Deakin's Engineering Scholars Program and I also received an IGNITED\* scholarship. The opportunity to have an industry mentor has been very valuable ... this helps me to keep motivated.

Organised placements at the City of Greater Geelong and City West Water have given me invaluable knowledge.'

\* Initiative for a Girls' Network in Information Technology and Engineering @ Deakin



🔇 1300 DEGREE (1300 334 733) 😭 facebook.com/discoverdeakin @ enquire@deakin.edu.au

## Bachelor of Engineering 4 G X

Deakin code	VTAC code	Indicative first year fee	ATAR
S367	G 15401 (CSP) X 14611 (CSP)	\$6850 (CSP) <sup>1</sup>	G 66.85 X N/A
Year 12 prerequisites	VCE units 3 and 4 – a study score of at least 25 in English (ESL) or 20 in any other English and a study score of at least 20 in mathematical methods (CAS) or specialist mathematics.		
Non-Year 12 requirements	VTAC Pi form and demonstrated mathematical background equivalent to Year 12 level.		

Deakin's Bachelor of Engineering places great emphasis on the practical application of engineering and scientific principles to produce industry-ready engineers, who are immediately employable and capable of adapting to an ever-changing future.

Engineering at Deakin gives you flexibility. You will undertake common subjects in your first year before moving on to specialise in civil, electrical and electronics, mechanical, or mechatronics and robotics engineering. While you may already know the area you want to specialise in when you start your degree, studying common subjects in your first year helps you make a more informed decision about your choice of major as well as equipping you with a broad base of engineering knowledge.

The Bachelor of Engineering is awarded at pass or honours level to high-achieving students.

## **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives the degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

#### **Career opportunities**

Depending on your chosen specialisation, career opportunities can be found in the areas listed below.

- » Civil engineering: design, construction and project management of roads, airports, railways, and harbours; water supply and sewerage systems; water authorities, local government bodies, public works departments and consulting.
- » Electrical and electronics engineering: power generation and distribution, electronic design, factory control, local government, public works and consulting.
- » Mechanical engineering: the automotive industry, supplier companies, other leading manufacturing and design companies, aircraft, ship-building, aerospace and railroad.
- » Mechatronics and robotics engineering: electronic control systems or robotics engineering, in areas including factory control, automation, control system design, aircraft control and navigation, in the automated vehicles and automotive industry, and in advanced manufacturing industries.

#### Work-Integrated Learning

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As an engineering student you will have the opportunity to undertake at least 12 weeks of suitable practical experience during your course. Practical experience is normally undertaken during the vacation periods.

### **Course structure**

You must complete 32 credit points of study.

#### Major sequences

At the end of the common first year you will choose one area as a major sequence.

Civil

- Electrical and electronics
- » Mechanical
- » Mechatronics and robotics

This format allows you to make a more informed decision and gain a broad base of knowledge in engineering.

### Civil engineering G X

#### Career opportunities

This course covers the broad range of civil engineering disciplines including engineering materials, structural engineering, water engineering, geotechnical engineering and transport engineering. Graduates can expect to gain employment in a wide range of organisations such as construction companies, water authorities, local government bodies, public works departments and as consulting engineers.

#### Course structure

Level 1

SEB121 Engineering Practice SED102 Engineering Graphics and CAD SEE010 Safety Induction Program (0 credit point safety unit) SEE103 Electrical Systems

SEM111 Engineering Materials 1

SEP101 Engineering Physics

SIT172 Programming for Engineers

SIT194 Introduction to Mathematical Modelling

SIT199 Applied Algebra and Statistics

#### Level 2

SEB323 The Professional Environment for Engineers and Scientists SEM218 Mechanics of Fluids SEM222 Stress Analysis SEM223 Engineering Mechanics SEV215 Water Systems SEV217 Engineering Geology and Surveying SEV217 Engineering development

SEV222 Hydrology and Hydraulics SIT294 Engineering Mathematics

#### Level 3

SEB324 Project Management SEB324 Project Management SEP490 Engineering Work Experience (0 credit points) SEV320 Theory of Structures SEV323 Steel Structures SEV328 Water and Wastewater Treatment SEV352 Geo Mechanics 1 SEV353 Reinforced Concrete Structures SEV354 Transportation Engineering

SEV362 Geo Mechanics 2

## Level 4

SEJ441 Engineering Project A SEJ446 Engineering Project B (2 credit points) SEV453 Advanced Structural Analysis SEV454 Civil Engineering Design 1 SEV455 Civil Engineering Design 2 plus two credit points of engineering elective units

Hiahlv recommended elective units:

SET401 Advanced Topics in Engineering 1 SET402 Advanced Topics in Engineering 2

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3 Course duration in years В Melbourne Burwood Campus F Geelong Waterfront Campus **Geelong Waurn Ponds Campus** G Warrnambool Campus

X Off campus

## Electrical and electronics engineering G X

## **Career opportunities**

Electrical and electronics engineering graduates can expect to find employment opportunities in a wide range of organisations such as power generation and distribution authorities, electronic design companies, factory control companies, local government bodies, public works departments and as consulting engineers.

## **Course structure**

Level 1 SEB121 Engineering Practice SED102 Engineering Graphics and CAD SEE010 Safety Induction Program (0 credit point safety unit) SEE103 Electrical Systems SEM111 Engineering Materials 1 SEP101 Engineering Physics SIT172 Programming for Engineers SIT194 Introduction to Mathematical Modelling SIT199 Applied Algebra and Statistics

#### Level 2

SEB323 The Professional Environment for Engineers and Scientists SEE202 Digital Electronics SEE206 Electronic Measurement and Interfacing SEE207 Power Electrical SEE208 Modern Power Generation Systems Design SEE209 Photonics SEE215 Microprocessor Principles SIT294 Engineering Mathematics

#### Level 3

SEB324 Project Management SEE306 VLSI Design SEE307 Electronic Systems and Signals SEE308 Electro-Magnetics and Machines^ SEE312 Electronic Data Communications SEE320 Microcontroller System Design SEE321 Electro-Mechanical Systems SEE434 Control Engineering

#### Year 4

SEE405 Smart Electrical Distribution^^ SEE406 Electrical Control and Safety^^ SEE412 Industrial Data Communication and Design SEJ441 Engineering Project A SEJ446 Engineering Project B (2 credit points) SEP490 Engineering Work Experience plus two credit points of engineering elective units

#### Highly recommended elective units: SET401 Advanced Topics in Engineering 1 SET402 Advanced Topics in Engineering 2

Available from 2014 ^^ Available from 2015

## Mechanical engineering G X

#### **Career opportunities**

The automotive industry, in particular, has been involved in the design of the degree. The degree draws heavily on Deakin's world-class research teams in automotive engineering and advanced materials, with a practical hands-on approach that could include an opportunity to work on the Formula Society of Automotive Engineering (SAE) race car, designed and built by our degree students. Along the way, you will develop project management, communication and financial management skills, as well as a solid understanding of product and process modelling and designing for sustainability.

## **Course structure**

Level 1 SEB121 Engineering Practice SED102 Engineering Graphics and CAD SEE010 Safety Induction Program (0 credit point safety unit) SEE103 Electrical Systems SEM111 Engineering Materials 1 SEP101 Engineering Physics SIT172 Programming for Engineers SIT194 Introduction to Mathematical Modelling SIT199 Applied Algebra and Statistics Level 2

SEB323 The Professional Environment for Engineers and Scientists SED202 Engineering Design and CAD SEM212 Materials 2 SEM218 Mechanics of Fluids SEM222 Stress Analysis SEM223 Engineering Mechanics SEM314 Principles of Thermodynamics

SIT294 Engineering Mathematics

#### Level 3

SEB324 Project Management SED302 Computer Aided Engineering SEE321 Electro-Mechanical Systems SEE434 Control Engineering SEM313 Manufacturing Technology SEM327 Dynamics of Machines SEM329 Materials Selection and Performance SEM422 Advanced Stress Analysis

#### Level 4

SED402 Advanced Design Methodologies SEJ441 Engineering Project A SEJ446 Engineering Project B (2 credit points) SEM405 Heat Transfer SEM406 Modelling and Simulation SEP490 Engineering Work Experience (0 credit points) plus two credit points of engineering elective units

Highly recommended elective units: SET401 Advanced Topics in Engineering 1 SET402 Advanced Topics in Engineering 2

Continued on next page ...

Deakin engineering students can have access to state-of-the-art robotics systems.

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## Courses

## Mechatronics and robotics engineering **G** X

#### **Career opportunities**

This interdisciplinary program can enable you to take up employment across a wide range of employer groups, such as manufacturers of mechatronic-based consumer goods, aircraft control and navigation industry, automated vehicles and automotive industry, other advanced manufacturing industries, and traditional mining and agricultural industries.

## Course structure

Level 1

SEB121 Engineering Practice SEB121 Engineering Graphics and CAD SEE010 Safety Induction Program (0 credit point safety unit) SEE103 Electrical Systems SEM111 Engineering Materials 1 SEP101 Engineering Physics SIT172 Programming for Engineers SIT194 Introduction to Mathematical Modelling SIT199 Applied Algebra and Statistics

#### Level 2

SEB323 The Professional Environment for Engineers and Scientists SEE202 Digital Electronics SEE206 Electronic Measurement and Interfacing SEE208 Modern Power Generation Systems Design SEE215 Microprocessor Principles SEM222 Stress Analysis SEM223 Engineering Mechanics SIT294 Engineering Mathematics

## Level 3

SEB324 Project Management SEE312 Electronic Data Communications SEE320 Microcontroller System Design SEE321 Electro-Mechanical Systems SEE325 Robotics and Applications SEE326 Artificial Intelligence for Autonomous Systems SEE434 Control Engineering SEM327 Dynamics of Machines

#### Level 4

SEE412 Industrial Data Communication and Design SEE426 Robotic System Design SEJ441 Engineering Project A SEJ446 Engineering Project B (2 credit points) SEM433 Mechatronic Design SEP490 Engineering Work Experience (0 credit points) plus two credit points of engineering elective units

Highly recommended elective units: SET401 Advanced Topics in Engineering 1 SET402 Advanced Topics in Engineering 2

## Bachelor of Engineering (Engineering Scholars Program) 4 G

Deakin code	VTAC code	Indicative first year fee	ATAR
N/A	15011 (CSP)	\$6850 (CSP)1	94.05
Year 12 prerequisites	VCE units 3 and 4 – a study score of at least 25 in English (ESL) or 20 in any other English and a study score of at least 20 in mathematical methods (CAS) or specialist mathematics. Minimum ATAR of 80.00		

The Engineering Scholars Program is available to students who have achieved an ATAR score of 80.00 (or equivalent). It is designed to extend high-achieving students by providing them with opportunities to work with Deakin's leading researchers and industry partners on cutting-edge projects. Students will be assigned a mentor and have additional opportunities for paid industry internships or research placements.

## **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives the degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

## **Career opportunities**

Refer to the course entry for the Bachelor of Engineering (S367) on page 6 for career opportunities.

#### **Course structure**

Refer to the course entry for the Bachelor of Engineering (S367) on page 6 for course structure.

## Science and Technology (Dean's Scholars Program)

Deakin code	VTAC code	Indicative first year fee	ATAR
Refer to specific course entry	G 15091 (CSP)	Refer to specific course entry	<b>G</b> 90.00*
Year 12 prerequisites	Applicants must refer to the prerequisites for their specific engineering course preference. Minimum ATAR of 90.00.		

The Dean's Scholars Program aims to recognise, reward and nurture high-achieving students. A minimum ATAR of 90.00 is required for entry into this course. Scholarships will be awarded annually across the Faculty to Year 12 students admitted to the program through VTAC. Successful applicants will also be offered a professional development program and have a high chance of being selected for the Science and Technology Industry-Based Learning Program.

### **Course structure**

You are able to select any one of the undergraduate degrees offered by the Faculty of Science and Technology through this single, campus-based VTAC preference. Refer to specific course entries from the list of engineering courses. Refer also to the campus of offer for each course within the specific course entries.



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Deakin's teaching and research staff are experts in their respective fields, with broad international links and connections with industry.



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3 Course duration in years Melbourne Burwood Campus Geelong Waterfront Campus Geelong Waurn Ponds Campus

W Warrnambool Campus

X Off campus

## **ACADEMIC PROFILE**



Alireza Asgari Lecturer, School of Engineering Geelong Waurn Ponds Campus

'Being able to combine cutting-edge research with teaching is the most rewarding part for me. Because my teaching is related to my research, I draw on up-to-date information, relevant examples and projects that matter the most to our society.

It is great to see our students find jobs in industry or continue with postgraduate studies after graduation.'

## **Combined courses**

## Bachelor of Engineering/ Bachelor of Commerce 5.5 G/F X

Deakin code	VTAC code	Indicative first year fee	ATAR
D373	<b>G</b> / <b>F</b> 15761 (CSP) <b>X</b> 14601 (CSP)	\$7290 (CSP) <sup>1</sup>	G/F 82.15 X N/A
Year 12 prerequisites	VCE units 3 and 4 – a study score of at least 25 in English (ESL) or 20 in any other English and a study score of at least 20 in mathematical methods (CAS) or specialist mathematics.		
Non-Year 12 requirements	VTAC Pi form and demonstrated mathematical background equivalent to Year 12 level.		

Engineering and commerce is a sought after combination. Whether you're studying different areas for professional recognition or personal interest, you will increase your employment opportunities with this combined course. You may combine one of the engineering major sequences – civil, electrical and electronics, mechanical or mechatronics and robotics engineering – with a commerce major sequence.

### **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives the degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

Deakin's Bachelor of Commerce can lead to accreditation with many professional bodies, such as the Certified Practicing Accountant (CPA) Program of CPA Australia, the Australian Computer Society (ACS), the Economics Society of Australia and the Australian Marketing Institute, providing you meet the specified requirements within the course.

### **Career opportunities**

The Bachelor of Engineering/Bachelor of Commerce offers you the chance to broaden your career opportunities. The opportunities available will depend on the major sequences you take within your course. For information on career outcomes for the Bachelor of Engineering, please see page 6.

Deakin's Bachelor of Commerce can open doors to careers in virtually every area of business and government internationally, including professional accountant, IT and systems professional, economist, financial planner, business consultant, network manager, internet administrator, human resources manager, manager, social and economic policy developer, international trade officer or marketing assistant/manager.

## Work-Integrated Learning

For the Bachelor of Engineering component of this course you must obtain an aggregate of at least 12 weeks of suitable practical experience during your program. Practical experience is normally undertaken during the vacation periods.

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At Deakin we offer a number of combined courses that enable you to obtain two highly-regarded professional qualifications in a shorter timeframe than it would take to complete the courses separately – thereby saving time and money and broadening your skills.

#### **Course structure**

You must complete 44 credit points of study, which must include specified engineering and commerce core units and a major sequence from each degree.

## Bachelor of Engineering major sequences and units Refer to the Bachelor of Engineering (S367) course description on page 6 for

details of major sequences and units available. Bachelor of Commerce units

## Core units

Level 1 MAA103 Accounting for Decision Making MAE101 Economic Principles MAE102 The Global Economy MAF101 Fundamentals of Finance MLC101 Business Law MMM132 Management MSC120 Business Information Systems MSQ171 Business Data Analysis

## Level 2

MMH299 Business Communication MMK277 Marketing Management

## Commerce elective units

MLL382 Indian Law (Tour) MME101 Business Academic Skills MMI301 Business Internship 1 MMI302 Business Internship 2 MMK330 Tourism and Leisure Marketing MMM385 Business in Asia MMS308 Sport Marketing SHD201 Creating Sustainable Futures SHD301 Creating Sustainable Futures

## Bachelor of Commerce major sequences » Accounting I X

- Accounting information systems I X
- Business security management I X
- Commercial law F X
- » eBusiness 🖪 🗴
- » Economics 🖪 🗴
- Finance F X
- Financial planning 🖪 🗴
- Health informatics E<sup>A</sup> X
   Human resource management E X
- Interactive marketing 1<sup>^</sup> X
- International management I X
- International trade and economic policy E X
- » Management 🖪 🗴
- » Marketing 🖪 🗴
- » Professional practice **F** X
- » Quantitative business analysis E<sup>A</sup> X
- » Supply chain management 🖪 🗴
- » Technology management **G** / **F** X

^ Geelong students will be required to undertake one unit in off-campus or online mode.

For more information on these major sequences, please refer to the 2013 Undergraduate Business Career Booklet.



В

F

3 Course duration in years Melbourne Burwood Campus Geelong Waterfront Campus

G **Geelong Waurn Ponds Campus** 

W Warrnambool Campus

X Off campus

## **STUDENT SNAPSHOT**

Jake Kays



Bachelor of Engineering - Civil major/Bachelor of Commerce (major sequence in technology management) Geelong Waurn Ponds Campus

'One of the things I enjoy most is that we get to do both theory and practicals. The civil engineering labs have just had a face lift and look great. With the new equipment, we have completed fluid mechanics practicals and explored what we learnt in theory.

When I graduate I want to pursue a career as a structural engineer. I love how buildings, bridges and structures constantly push the boundaries of science and technology and I want to be a part of building the future.'

idO1S

## Courses

## Bachelor of Engineering/ Bachelor of Information Technology 55 G X

Deakin code	VTAC code	Indicative first year fee	ATAR
D375	G 15271 (CSP) X 14591 (CSP)	\$6710 (CSP) <sup>1</sup>	G N/A X N/A
Year 12 prerequisites	VCE units 3 and 4 – a study score of at least 25 in English (ESL) or 20 in any other English and a study score of at least 20 in mathematical methods (CAS) or specialist mathematics.		
Non-Year 12 requirements	VTAC Pi form and demonstrated mathematical background equivalent to Year 12 level.		

This combined course enables you to specialise in a niche field by gaining two professional and highly-complementary degrees. You may combine one of the engineering major sequences – civil, electrical and electronics, mechanical or mechatronics and robotics engineering – with a major sequence in information technology, for example, computer science, game development, mathematical modelling, networking, security, or software development.

## **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives the degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

The Bachelor of Information Technology is professionally accredited with the Australian Computer Society (ACS).

## **Career opportunities**

The Bachelor of Engineering/Bachelor of Information Technology offers you the chance to broaden your career opportunities after graduation. The opportunities available will depend on the major sequences you take within your course. For information on career outcomes for the Bachelor of Engineering, please see page 6.

Career outcomes for the Bachelor of Information Technology can include object-oriented and procedural programmer, database and web designer and manager, network manager, component integrator, project manager, consultant, system analyst, multimedia designer, games developer and web programmer.

## Work-Integrated Learning

For the Bachelor of Engineering component of the course, you must obtain an aggregate of at least 12 weeks of suitable practical experience during your program. Practical experience is normally undertaken during the vacation periods.

### **Course structure**

You must complete 44 credit points of study, which must include specified engineering and information technology core units and a major sequence from each degree.

## Bachelor of Engineering major sequences and units

Refer to the Bachelor of Engineering (S367) course entry on page 6 for details of major sequences and units available.

#### **Bachelor of Information Technology units**

Core units

- Level 1
- SIT010 Safety Induction Program (0 credit point safety unit)
- SIT101 Fundamentals of Information Technology
- SIT103 Introduction to Database Design

SIT104 Introduction to Web Development

SIT105 Critical Thinking and Problem Solving

## Level 2

SIT202 Computer Networks SIT223 Information Technology Professional Skills

## Level 3

SIT302 Project SIT374 Project Management

### Bachelor of Information Technology major sequences

- Computer science G X
- » Game development 🖸 🗴
- » Mathematical modelling 🖪 🗙
- » Networking G
   » Security G X
- » Software development G X
- For more information on these major sequences, please refer to the 2013 Undergraduate Information Technology Career Booklet.

## **STUDENT SNAPSHOT**



12

Daniel Howard Bachelor of Engineering/Bachelor of Information Technology (Dean's Scholars Program) Geelong Waurn Ponds Campus

'Since childhood I have had a strong interest in IT, and combining this degree with engineering allowed me to increase my job prospects as well as extend my knowledge of technology further.

I chose to study at Deakin because it has a good reputation and offered the course I wanted to study. I plan on looking into work placement/Industry-Based Learning opportunities and in the future. I would like to finish my degree with honours.'

## Bachelor of Engineering/Bachelor of Science 5.5 G

Deakin code	VTAC code	Indicative first year fee	ATAR
D372	15321 (CSP)	\$6690 (CSP) <sup>1</sup>	69.80
Year 12 prerequisites	VCE units 3 and 4 – a study score of at least 25 in English (ESL) or 20 in any other English and a study score of at least 20 in mathematical methods (CAS) or specialist mathematics.		
Non-Year 12 requirements	VTAC Pi form and demonstrated mathematical background equivalent to Year 12 level.		

This combined course will strengthen your engineering degree with complementary studies in science. You may combine one of the engineering major sequences – civil, electrical and electronics, mechanical or mechatronics and robotics engineering – with a science stream, for example, biology, biological chemistry, chemistry, mathematical modelling or zoology. Only the mathematical modelling major sequence is available off campus.

### **Professional recognition**

Deakin's Bachelor of Engineering is accredited by Engineers Australia, which gives the degree international recognition, allowing graduates to practise as professional engineers in many countries around the world.

### **Career opportunities**

The Bachelor of Engineering/Bachelor of Science offers you the chance to broaden your career opportunities after graduation. The opportunities available will depend on the major sequences you take within your course. For information on career outcomes for the Bachelor of Engineering, please see page 6.

As a graduate of Deakin's Bachelor of Science you may find work in government institutions in roles such as quality assurance, occupational health and safety, research, planning, management or marketing; science-related industries, working in pharmaceutical production or pharmaceutical sales; in biomedical science areas such as research or hospital and laboratory science; quality assurance in analytical and diagnostic laboratories; the food industry in quality control; environment and natural resources, teaching, information technology, mathematics or science journalism to name a few.

## Work-Integrated Learning

As part of the Bachelor of Engineering component of this course you must obtain an aggregate of at least 12 weeks of suitable practical experience during your program. Practical experience is normally undertaken during the vacation periods.

As part of the Bachelor of Science component of this course you are required to complete Professional Practice or an internship. This will allow you to gain valuable industry experience, giving you the opportunity to apply and consolidate knowledge gained in your course, experience workplace culture and workplace practices, explore career options and develop a professional network.

#### **Course structure**

You must complete 44 credit points of study, which must include specified engineering and science core units and a major sequence from each degree.

#### Bachelor of Engineering major sequences and units

Refer to the Bachelor of Engineering (S367) course entry on page 6 for details of major sequences and units available.

## **Bachelor of Science units**

Core units Level 1 EES101 Communicating Science SLE010 Laboratory and Fieldwork Safety Induction Program (0 credit point safety unit) SLE103 Ecology and the Environment SLE111 Cells and Genes SLE131 Principles of Chemistry

## Physics

Select one of: SEP101 Engineering Physics SEP122 Physics for the Life Sciences

For the latest information about new courses at Deakin University, please visit deakin.edu.au.

#### Quantitative skills

Levels 1 and 2 – select one of: HPS201 Research Methods in Psychology A SIT191 Introduction to Statistics SIT194 Introduction to Mathematical Modelling SLE251 Research Methods and Data Analysis

### **Professional Practice**

Level 3 Select at least one unit from: SLE314 Research Project SLE335 Industrial Applications of Science SLE352 Community Science Project SLE390 Professional Practice in Bioscience STP321 Industry-Based Learning – Science STP371 Internship – Science

## **Bachelor of Science major sequences**

- » Biological chemistry G
- » Biology G
- » Chemistry G
   » Mathematical modelling G X
- » Zoology G

For more information on these major sequences, please refer to the 2013 Undergraduate Science Career Booklet.

1 The indicative first year fee is an approximate indication of the cost of this course in the first year of full-time study for a Commonwealth Supported Place (CSP). We can't specify the exact figure, because fees are charged per unit, not per course, so the actual fees may vary depending on what units you choose to study.

The fees quoted in this booklet are for Australian students in 2012, and may change for 2013 and later years. You can find more information about fees on our website at deakin.edu.au. For information on fees for international students, please visit deakin.edu.au/international.

# How to apply

Applying to study at Deakin University is easy. Whether you are a current Year 12 student, TAFE graduate, mature-age student, non-school leaver, or international student studying VCE in Australia, you can apply to study a Deakin undergraduate course through the **Victorian Tertiary Admissions Centre (VTAC)** (unless stated otherwise in the admission guidelines).

When you are applying for a course, make sure you check all of the entry requirements carefully. Most courses have prerequisites and some have additional requirements that you will need to complete to be eligible for selection into that course. For prerequisite and extra requirement information, please visit the VTAC website www.vtac.edu.au.

For more information on how to apply, including special consideration and deferment, check out our *Undergraduate eBrochure* at deakin.edu.au/ebrochure/undergrad or visit deakin.edu.au/future-students/applications-enrolments.

( 1300 DEGREE (1300 334 733)

13.

Pathway programs provide alternative entry options which take into consideration previous qualifications or your time in the workforce. Deakin has pathway options for a range of applicants including current Year 12 students, International Baccalaureate (IB) students and non-school leavers. Examples for engineering students include:





## **TAFE pathways**

If you complete a diploma or advanced diploma at TAFE in a field similar to the Deakin course of your choice, you can then apply for the Deakin course and you may receive credit for your TAFE qualification. In most cases, this will reduce the number of units you need to complete to obtain your Deakin qualification. Plus, upon graduation, you'll have not one, but two qualifications.

Deakin has pathway programs and special credit arrangements with its partner TAFEs (Box Hill Institute in Melbourne, South West TAFE in Warrnambool and The Gordon in Geelong) however all TAFE qualifications are considered for application to Deakin.

The assessment of credit is based on a number of factors and is determined on an individual basis. To find out what credit you are entitled to, please visit deakin.edu.au/courses/credit.

## Single unit study (non-award)

You may wish to undertake a single unit of study at Deakin (without being enrolled or accepted into a course). These units are subject to fees and do not lead to a degree, but may be credited towards a degree if you succeed in gaining entry to a course at a later stage.

For more information, please visit deakin.edu.au/future-students/ applications-enrolments/applications/single-subject.

## Honours

The Bachelor of Engineering is awarded at honours level to students who achieve an outstanding academic result on completion of their degree.

Honours can offer you a competitive edge in the job market along with providing a pathway into a higher degree – many honours students go on to complete a PhD or other advanced qualifications.

For more information on honours degrees, please visit deakin.edu.au/honours.

For more information on pathways into Deakin University, please visit deakin.edu.au/pathways.

## **STUDENT SNAPSHOT**

Dean Harwood

Bachelor of Engineering – Mechanical major Engineering Scholars Program Geelong Waurn Ponds Campus

'At uni, I have had the opportunity to undertake two Industry-Based Learning placements at the Ford Motor Company Stamping Plant and the Shell Refinery in Geelong.

After graduating I'm hoping to get a job in one of the wide range of work opportunities ... I'm still exploring the options, but I'm interested in product development and design.'

## **STUDENT SNAPSHOT**



Liam Lyons

Bachelor of Engineering – Mechatronics and Robotics major (Engineering Scholars Program) Geelong Waurn Ponds Campus

'I was impressed with the facilities available at Deakin, and all the resources I could use. The course has a perfect mix of theoretical and practical elements. Having more options with how I complete my study also allows for more flexibility.

At uni I've had the opportunity to study overseas, at Massey University in New Zealand. It wasn't something I initially planned to do, but when given the opportunity, it seemed too good to pass up.

In the future I would like to build goal-orientated robots that can effectively communicate with each other and work together to complete complex, dynamic tasks, while being mobile and needing no human assistance.

# Find out more

## **Contact us**

**P** 1300 DEGREE (1300 334 733) **E** enquire@deakin.edu.au

## deakin.edu.au/scitech/eng

For the latest information about new courses at Deakin University, please visit deakin.edu.au.

## **Further reading**

- » 2013 Undergraduate Course Guide
- » 2013 undergraduate career booklets
- » Pathways to Deakin
- » Parents' Guide to University
- » Off-Campus Course Guide
- » Scholarships Guide
- » Accommodation Guide

To order copies of these brochures, phone 1300 DEGREE (1300 334 733) or view them online at deakin.edu.au/ future-students/brochures.

## Undergraduate eBrochure

Check out our *Undergraduate eBrochure*, available from deakin.edu.au/ebrochure/ undergrad, the Apple App Store and Google play.



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You can follow Deakin University through

Facebook, Twitter and YouTube.

Connect with other future students and ask current students and staff about life and study at Deakin.

facebook.com/discoverdeakin twitter.com/discoverdeakin youtube.com/discoverdeakin



## **Other useful websites**

Future students deakin.edu.au/future-students

Subject information deakin.edu.au/handbook

Campuses deakin.edu.au/campuses deakin.edu.au/tour

Clubs and societies dusa.org.au/pages/clubs

Scholarships deakin.edu.au/scholarships

VTAC www.vtac.edu.au

# **Important dates 2012**

## **Deakin events**

Sunday 12 August Open Day Warrnambool Campus

## Sunday 19 August

Open Day Geelong Waurn Ponds Campus and Geelong Waterfront Campus

## Sunday 26 August Open Day Melbourne Burwood Campus

Deakin will hold additional events for prospective students and parents. Please visit deakin.edu.au/future-students for updates.

Box Hill Institute CRICOS Provider Code: 02411J

Gordon Institute of TAFE CRICOS Provider Code: 00011G

## **Application dates**

Early August\* VTAC applications open

Late September\* Timely VTAC applications close

**Mid November\*** Late VTAC applications close (late fee applies)

**Mid December\*** Very late VTAC applications close (very late fee applies)

**December** Change of Preference

Please check the Deakin University Change of Preference website closer to the date for specific event details, deakin.edu.au/cop.

 Please check dates on the VTAC website www.vtac.edu.au and on the other websites provided.

## **Careers markets and expos**

## Melbourne

Thursday 3–Sunday 6 May The Age VCE Careers Expo

Friday 25–Saturday 26 May National Careers and Employment Expo

Saturday 16–Sunday 17 June Reinvent Your Career Expo

Friday 27–Sunday 29 July Herald Sun Careers Expo

## Interstate

Sunday 29–Monday 30 April Adelaide – Tertiary Studies and Careers Expo

**Thursday 13–Sunday 16 May** Perth – Careers, Education and Employment Expo

Thursday 21–Sunday 24 June Sydney – Western Sydney Careers Expo

Saturday 21–Sunday 22 July Brisbane – The Tertiary Studies Expo (TSXPO)

Melbourne Institute of Business and Technology (MIBT) CRICOS Provider Code: 01590J South West Institute of TAFE CRICOS Provider Code: 01575G

## More information | Engineering

1300 DEGREE (1300 334 733) | enquire@deakin.edu.au | deakin.edu.au/scitech/eng

## 2012 DEAKIN UNIVERSITY OPEN DAYS

WARRNAMBOOL CAMPUS	12
Princes Highway Warrnambool Victoria	AUG
GEELONG WAURN PONDS CAMPUS	19
Pigdons Road Waurn Ponds Victoria	AUG
GEELONG WATERFRONT CAMPUS	19
1 Gheringhap Street Geelong Victoria	AUG
MELBOURNE BURWOOD CAMPUS	26
221 Burwood Highway Burwood Victoria	AUG

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deakin.edu.au