

2018 POSTGRADUATE Engineering

Cloud Campus | Geelong | Melbourne | Warrnambool



Electrical and renewable energy engineering

Electromaterials

Electronics engineering

Engineering management

Mechanical engineering design

Research





Develop the engineering expertise to design the infrastructure of our modern world, from roads and power generation to complex mechanical systems. Get a competitive edge at Deakin by tackling real-world engineering problems in collaborative projects with industry partners and through work placements.



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Engineering at Deakin

World-class facilities

Engineering students at Deakin access world-class facilities located within the Centre for Advanced Design in Engineering Training (CADET) and the Institute for Frontier Materials (IFM). Having access to some of the best facilities in the Australian sector allows students to realise and validate their designs through combinations of computer simulation, prototyping, testing and manufacturing. The teaching-focused approach in CADET ensures that students have extensive access to state-of-the-art equipment, enabling them to gain practical experience and a deeper understanding of their use.

Key facilities/laboratories

- Virtual reality
- 3D printing/additive manufacturing
- Materials and manufacturing
- Renewable energy
- High voltage
- Geomechanical
- Concrete and structural testing
- Water

CADET is a partnership between Deakin University and the Australian Government.

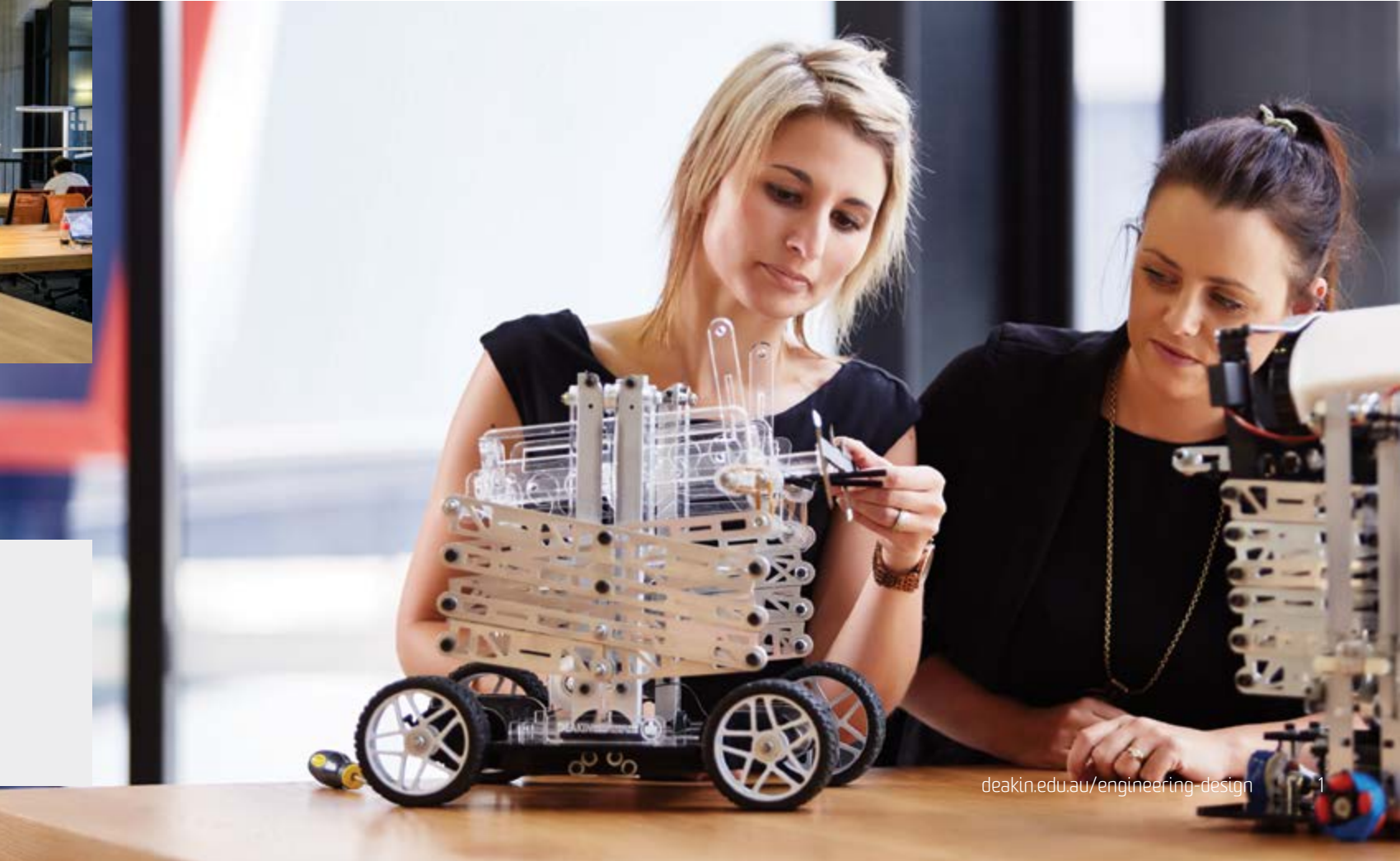
Find out more at deakin.edu.au/engineering/cadet.

Geelong Technology Precinct

The Geelong Technology Precinct provides a unique resource and facility for research aimed at industry cooperation and research application. The precinct is home to the Institute for Frontier Materials (IFM), Institute for Intelligent Systems Research and Innovation (IISRI), CSIRO Materials Science and Engineering, and the Australian Future Fibre Research and Innovation Centre. The Metabolic Research Unit (MRU) and several industry tenants are also located within the precinct. Bringing together industry expertise, state-of-the-art equipment and some of the brightest minds in research, the technology precinct is a rich resource for our students to tap into.

Innovative course design

Innovation is at the heart of great engineering, with design playing a central role. Deakin's CADET provides some of the best future-focused engineering and design facilities, and a curriculum framework configured around 'design-based learning' and industry collaboration, enabling our graduates to become as visionary and forward thinking as CADET itself.



Deakin Hallmarks are awarded as digital credentials that can be shared through professional social platforms such as LinkedIn. They recognise students' outstanding achievement, at course level, of capabilities that are key to employment success.

| | | | | | | |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
| Communication | Digital literacy | Teamwork | Critical thinking | Problem solving | Self management | Global citizenship |

Engineering at Deakin

Industry engagement

Our postgraduate engineering programs offer a number of work placement opportunities so you graduate fully equipped with advanced engineering skills and capable of starting work on projects immediately. Industry partnerships play a significant role in our direction through genuine engagement with organisations such as Shell, ISCAR, AusNet Services, Ford, Barwon Water, VicRoads, Quiksilver, Hazeldene's, CSIRO, HeiQ and many others, enabling us to develop industry-ready graduates who are in high demand. Work placements, industry projects and collaboration with industry experts all culminate in a career-shaping learning experience.

A Postgraduate Engineering Internship unit is available to selected students, providing up to 160 hours or 12 weeks of mentored, hands-on learning in industry. Students accepted into the program have completed internships with a range of organisations – from seedling producer to carbon fibre research – undertaking a variety of activities.

Find out more at deakin.edu.au/sebe/enhance-study/work-integrated-learning/school-placements.

Top ranking university

Deakin is ranked #3 in Australia for graduate employability by the prestigious Times Higher Education index. Deakin was recently ranked Victoria's #1 university under 50 years old by Times Higher Education (2016 and 2017). And as a result of our renowned quality of research and teaching, all three international university rankings put us in the top 2% of the world's universities.

Data sources: Quacquarelli Symonds (QS); Academic Ranking of World Universities, Times Higher Education and QS World University Rankings.

A practical focus

Develop technical skills, a positive approach to problem-solving and the ability to work as part of a team. Your course will focus on practical experience and a supervised research or industry project, providing you with the advanced project management skills required to tackle complex, industry-focused problems head on.



'Our postgraduate engineering courses are innovative, unique and designed to build on our students' understanding of the principles required to secure a successful engineering career within Australia and globally.'

Associate Professor Arun Patil
Course Director, School of Engineering



Highly sought-after graduates

The majority of engineers today are baby boomers, ready for retirement. This is creating an engineering skills shortage.

As a result, roles in engineering are expected to rise by 429 000, or 17.3%, in the next five years.*

* Australian Government's Industry Employment Predictions 2015 Report



Engineering students at Deakin access world-class facilities within the Centre for Advanced Design in Engineering Training (CADET) and the Institute for Frontier Materials (IFM).

What can I study?

Cloud Campus **C**
Melbourne Burwood Campus **B**
Geelong Waterfront Campus **WF**
Geelong Waurrn Ponds Campus **WP**
Warrnambool Campus **WB**

Gain credit towards your degree

With Credit for Prior Learning (CPL), your previous study or work experience may make you eligible for credit towards your Deakin degree, reducing the number of units you need to study and allowing you to complete your course earlier and often more affordably. Find out more at deakin.edu.au/courses/credit-for-prior-learning.

| | Campus | Course duration in years [#] | Trimester intake options [^] | 2018 domestic full fee (8 CP) [*] | 2018 international fee [*] | IELTS [~] |
|--|-------------|---------------------------------------|---------------------------------------|--|-------------------------------------|--------------------|
| Coursework degrees | | | | | | |
| Master of Engineering (Professional) S751 SPECIALISATIONS: Electrical and renewable energy engineering Electronics engineering Engineering management Mechanical engineering design ADMISSION REQUIREMENTS: A four-year bachelor's degree in related discipline (engineering); or membership of Engineers Australia or equivalent professional body. An exit option is available at the graduate certificate (4 credit points) level. | WP | 2 | T1, T2, T3 | \$28 000 | \$34 488 | 6.5/6 |
| Master of Philosophy (Electromaterials)[†] F801 ADMISSION REQUIREMENTS: A bachelor's degree or other qualification at a higher AQF level in any discipline. | B WP | 2 | T1, T2 | – | \$33 368 | 6.5/6 |

Information correct at July 2017. Deakin University reserves the right to alter, amend or delete course offerings and other information listed.

^{*} A unit or subject is usually 1 credit point (CP). Fees quoted are based on an annual full-time study load (8 CP/1 FT), regardless of your unit selection. If the course duration is more than one year full-time study (1 FT), the annual fee does not represent the full cost of the course; it represents the cost of one year full-time study (8 CP) in 2018. Fee-Paying Place (FPP): 2018 annual course fees for FPPs are shown in the 2018 domestic full fee (8 CP) column. Fees displayed should be used as a guide only and are subject to change. International fees are based on 8 CP in one year of full-time study, unless otherwise indicated. If you're a successful applicant for research degree candidature, and you're an Australian citizen, permanent resident or New Zealand citizen, you won't pay any tuition fees. Please visit deakin.edu.au/fees for the most up-to-date information.

[^] Most courses start in Trimester 1 (March to June). This column indicates whether you have the option of commencing your studies in Trimester 2 (July to October) or Trimester 3 (November to February). Not all units are offered in every trimester. Commencement of research degrees is not confined to Deakin's trimesters.
[#] Course lengths may vary in response to requirements within the Australian Qualifications Framework (AQF). Applicants should refer to the handbook for the latest information: deakin.edu.au/handbook.
[~] IELTS is the International English Language Testing System. The IELTS scores in the table above reflect the minimum overall score required as well as the lowest score allowed for any band (overall score/lowest band score).
[†] The Master of Philosophy (Electromaterials) is a joint course with the University of Wollongong. Students are expected to engage in studies at both universities as part of the degree.

Join the most satisfied students in Victoria

For seven consecutive years, Deakin has achieved the highest level of overall student satisfaction among Victorian universities. These great results are from the responses to 'Overall Satisfaction' in the Australian Graduate Survey, 2010–2016.

Source: gooduniversities.com.au



Virtual reality bringing prehistoric remnants to life

A virtual reality (VR) and 3D printing project is creating sensory dinosaur encounters. The application of cutting-edge technology is breathing life into dinosaur fossils. Dr Ben Horan, director of Deakin's CADET VR Lab, and Dr Kaja Antlej, industrial design lecturer and researcher in digital heritage interpretation, are working to develop visual and tactile encounters with dinosaurs.


The project illustrates how the use of new technologies can create more dynamic and engaging avenues to promote the sciences, as well as renewed interest in historical artefacts. A particular focus of the study is 'how we can use virtual reality and 3D printing to help with providing educational experiences in a museum context,' Dr Horan says.

Dr Horan said the team was working to create the VR experience using 360-degree video, illustrating both a present-day scene as well as a historical view from the era of the dinosaur.

'When the users put on a VR headset, they will be immediately immersed into a dig site. After a while, a fern-tree forest will appear, together with a 3D model of a *Leaellynasaura*,' he says.

'We are very excited to not only provide visitors with an immersive VR experience, but allow them to touch and play with the dinosaur model, which normally isn't possible.'



 Watch the lab in action at deakin.yt/vrlab.

Courses

| | | | |
|--------------------------|------|----------------------------|----|
| Deakin code | S304 | Cloud Campus | C |
| Course duration in years | 3 | Melbourne Burwood Campus | B |
| Trimester | T | Geelong Waterfront Campus | WF |
| | | Geelong Waurn Ponds Campus | WP |
| | | Warrnambool Campus | WB |

Master of Engineering (Professional)

Study the Master of Engineering (Professional) and you'll develop technical skills, a positive approach to problem-solving and the ability to work as part of a team, while focusing on practical experience and a supervised research or industry project that provides you with the advanced project management skills required to tackle complex, industry-focused problems head on.

Develop advanced engineering skills and the forward-thinking, innovative and entrepreneurial skills employers are looking for, while strengthening and extending your understanding of engineering through the pursuit of specialised study in engineering management, mechanical engineering design, electronics engineering or electrical and renewable energy engineering – the choice is yours.

Deakin's Master of Engineering (Professional) partners with industry to provide you with practical work experience and professional networks prior to graduation.

Course structure

The 16 credit points include eight core units, four elective units (you can choose which ones to study) and four units from a specialisation. You must complete at least one specialisation as part of this course.

Core units

Engineering Entrepreneurship
Engineering Sustainability
Introduction to Work Placement (0 credit points)
Managing and Developing Innovation
Research Methodology
Project Scoping and Planning (2 credit points)#
Project Implementation and Evaluation (2 credit points)
Safety Induction Program (0 credit points)

Must have successfully completed STP710 Introduction to Work Placements (0 credit-point compulsory unit)

Elective units

Select from a range of elective units, including our Internship Engineering unit offered to high-achieving students that enables you to complete a placement in an engineering-related position typically as a 4–6 week or 12 week placement. Alternatively, in some cases you may even be able to choose elective units from a completely different discipline area (subject to meeting unit requirements).

Specialisations

Electrical and renewable energy engineering
Electrical Systems Protection
Energy Efficiency and Demand Management
Renewable Energy Systems
Smart Grid Systems

Electronics engineering

Control Systems Engineering
Embedded Systems
Instrumentation and Process Control
Sensor Networks

Engineering management

Engineering Leadership (2 credit points)
Engineering Project Management (2 credit points)

Mechanical engineering design

Advanced Manufacturing Technology
CAE and Finite Element Analysis
Product Development
Product Development Technologies

Pathway option

Deakin also offers a Graduate Certificate of Engineering (4 credit points) as an alternative exit option for those commencing the Master of Engineering (Professional) who no longer wish to pursue a master's level qualification.



‘Whether you are interested in a challenging and rewarding career in research and development, or looking to expand your skills in professional innovation and entrepreneurial thinking, Deakin’s engineering postgraduate degree options are a terrific way to advance your career.’

Professor Karen Hapgood
Head of School, School of Engineering

Specialisation overview

Electrical and renewable energy engineering

Deakin's electrical and renewable energy engineering specialisation is designed to produce engineers and professionals who can take up leadership roles in the contemporary power system environment. The program is carefully developed in response to industry needs, due to the strong demand in the renewable energy sector worldwide. It provides unique technical, research and practical learning experiences. Industry projects allow you to work closely with engineers in the area of electrical and renewable energy, and our academic staff are internationally recognised experts in the area of electrical and renewable energy.

Electronics engineering

The electronics engineering specialisation allows you to upgrade your skills and specialise in technology areas associated with electronics. The focus is on systems control, sensor networks, instrumentation and process control, and embedded systems.

Graduates can work in a wide range of industries, including:

- communications
- microelectronics
- electronic equipment design and manufacturing
- medical equipment and networks.

Engineering management

Professional engineers dealing with an increasingly diverse range of engineering activities often find themselves as champions and managers, expected to couple their engineering knowledge with practical management skills. Industry expects professional engineers to lead, develop and manage products throughout their life cycle. The expectations later grow towards marketing, servicing and supporting the product, while ensuring its sustainability.

Engineering management assists graduates to devise real solutions for challenges faced by today's engineering managers and leaders, as well as to cope with changes and develop flexibility. You are invited to embark on your journey in a real engineering environment and to acquire the skills and the knowledge to become a successful technical leader.

Mechanical engineering design

Mechanical engineering involves the design, production and operation of systems, mechanical devices and machinery. Mechanical engineers are involved with almost every design imaginable, especially complex items such as cars, robots and aeroplanes.

Product development and innovation are key drivers for the Australian industry. To meet this demand, Deakin's mechanical engineering design specialisation brings together studies in leading computer-aided engineering technologies and advanced materials and manufacturing, while drawing on Deakin's world-class research teams in a practical and applied approach. This allows students to acquire a solid understanding of product and process modelling and designing for sustainability.



[deakin.edu.au/study-at-deakin/
find-a-course/engineering](https://deakin.edu.au/study-at-deakin/find-a-course/engineering)



Engineering students have access to state-of-the-art equipment, enabling them to gain practical experience and a deeper understanding of their use.



Courses

| | | | |
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Master of Philosophy (Electromaterials)



The Master of Philosophy (Electromaterials) provides both a pathway to future PhD studies and also training for future jobs in the energy, manufacturing and health arenas. This is your chance to discover new materials and develop smart devices to help solve some of today's most challenging global problems.

As a student in the world-first Master of Philosophy (Electromaterials) course, your study will be hands-on – discovering new materials, using cutting-edge characterisation techniques and assembling new materials into electrochemical devices for applications in clean energy, health or advanced manufacturing. You'll be working with leading, world-renowned researchers in electromaterials through the ARC Centre of Excellence for Electromaterials Science.

Deakin University and the University of Wollongong have teamed up to offer this unique opportunity. You'll choose from a variety of unique research projects – anything from medical bionics to sustainable energy generation, robotic hands to solar water splitting and the next generation of battery designs. In addition, core units will be streamed live between the two campuses, so you get the best of both worlds.

Course structure

The course comprises a total of 16 credit points, including:

Year 1

Two core units, two elective units* and a research project.

Core units

Electromaterials Fabrication and Application
Electromaterials Synthesis and Characterisation
Research Project

Elective unit

An elective unit from a range of subjects, including:

Advanced Materials Characterisation
Foundations of Materials Modelling

Year 2

Research project and thesis

* Electives can be taken at either Deakin or University of Wollongong and will be selected in consultation with your supervisor.



'At Deakin, I am learning all about photovoltaic technology, smart grid systems and future energy demand and management, which are key subjects to the renewable energy sector, which is where I hope to work in the future.'

Pranita Gangurde
Master of Engineering (Professional) student

 [deakin.edu.au/study-at-deakin/
find-a-course/engineering](https://deakin.edu.au/study-at-deakin/find-a-course/engineering)



Hear what our researchers have to say about research in the School of Engineering.

deakin.yt/engres

Deakin provides world-class research opportunities and the best in research training for students. Our research groups in advanced engineering and design, sustainable infrastructure, engineering education, as well as the Institute for Intelligent Systems Research and Innovation (IISRI) and the Institute for Frontier Materials (IFM), help advance industry and give our graduates a competitive edge.

| | Campus | Course duration in years [#] | 2018 domestic full fee (8 CP)* | 2018 international fee* | IELTS [~] |
|------------------------------|---|---------------------------------------|--------------------------------|-------------------------|--------------------|
| Research degrees | | | | | |
| Master of Engineering S825 | <div>C</div> <div>WP</div> | 1–2 | – | \$36 712 | 6.5/6 |
| Doctor of Philosophy S915 | <div>C</div> <div>B</div> <div>WP</div> | 3–4 | – | \$36 712 | 6.5/6 |

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* If you’re a successful applicant for research degree candidature, and you’re an Australian citizen, permanent resident or New Zealand citizen, you won’t pay any tuition fees. Fees displayed should be used as a guide only and are subject to change. International fees are based on 8 CP in one year of full-time study, unless otherwise indicated. Please visit [deakin.edu.au/fees](#) for the most up-to-date information.

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Research snapshot

Deakin’s Centre for Advanced Design in Engineering Training (CADET) houses virtual reality, digital manufacturing and high voltage labs that allow researchers and students to work together on industry-based projects.

Deakin’s Institute for Intelligent Systems Research and Innovation is home to a unique Universal Motion Simulator – the first haptically enabled robot-based motion simulator in the world.

In the field of energy, our researchers are making outstanding progress in developing more efficient energy storage systems.

A team is working with China’s Dongfang Turbine Company to create more efficient composite materials for wind turbines. Another group is exploring the use of graphene to extract hydrogen from water.

In analytics, an innovative data-mining initiative is currently being introduced across 10 hospital branches in India. This joint project involves using data to identify critical safety issues and improve efficiencies.

Researchers and students are working collaboratively on world-first technology to turn waste plastic into filaments suitable for use in 3D printers to print fully engineered plumbing parts, such as pipe connectors. To add to the sustainability credentials of the project, the team has developed a way to power the printers using solar energy. This would be the first example of using 3D printing as recycling and renewable technology all in one.

Be it robotics, pioneering research in big data or developing high-tech aerospace-grade carbon fibre composites, our researchers are dedicating their know-how to solving 21st century problems through cutting-edge, smart technologies.

Research interests

The School of Engineering offers research opportunities in the following areas:

- Advanced design and manufacturing
- Biomedical engineering systems
- Engineering education
- Human interaction systems
- Networked sensing and control
- Structural engineering
- Sustainable infrastructure and energy systems
- Sustainable water management
- Virtual reality environments

Institutes associated with the School of Engineering include:

- Institute for Intelligent Systems Research and Innovation (IISRI)
- Institute for Frontier Materials (IFM).

Advanced design and manufacturing

Researchers from the School of Engineering, the Institute for Frontier Materials and the Institute for Intelligent Systems Research and Innovation have expertise in design, numerical simulation, materials and manufacturing. They collaborate closely with the manufacturing sector both locally and globally across a broad range of industries.

Research areas include: automotive innovation, biological, micro-electromechanical systems, materials manufacturing and modelling, networked sensing and control, signals and systems, sports and rehabilitation engineering.

Engineering education

Deakin Engineering Education Research (DEER) is dedicated to the establishment of a multidisciplinary research platform that enables researchers to address current and future challenges in engineering education.

DEER brings together academic staff from across the University and includes nationally and internationally recognised researchers. DEER has the expertise to deliver high-impact collaborative research in the areas of design-based learning, project-based learning, distance-based and cloud-based education and educational technologies.

Sustainable infrastructure

The Sustainable Infrastructure research theme is dedicated to the establishment of a multidisciplinary research platform that enables researchers to address current and future challenges in infrastructure engineering. The research team has the expertise to deliver high-impact applied and fundamental collaborative research in the areas of structural engineering, corrosion and water management.

HDR applications now open

Applications for research degrees without scholarship may be made at any time. Commencement of research degrees is not confined to Deakin’s trimesters.

For more information about research in engineering visit: [deakin.edu.au/engineering/research](#).



'Students have the ability to travel globally through exchange and study tours; this is something I recommend at any opportunity. Design and product development is heavily rooted in context and the ability to design for other people. The more you understand about the world, the better designer/engineer you will be.'

Paul Collins
Senior lecturer, School of Engineering



Your digital learning tools

DeakinSync is a digital study hub giving Deakin students and staff easy access to relevant University resources, customised to their specific needs. You can access everything from unit sites to enrolment details, study tools to your calendar, as well as IBM Watson – a question and answer tool.

Visit deakin.edu.au/deakinsync or deakin.edu.au/life-at-deakin/why-study-at-deakin/ibm-watson for more information.

IBM Watson is a trademark of International Business Machines Corporate, registered in many jurisdictions worldwide.



Contact us

Need to contact Deakin?

Prospective student enquiries

Domestic students
1800 693 888
myfuture@deakin.edu.au

International students
+61 3 9627 4877
study@deakin.edu.au

Applying to Deakin
deakin.edu.au/how-to-apply

Social media at Deakin

facebook.com/DeakinUniversity

twitter.com/Deakin

twitter.com/DeakinSEBE

instagram.com/DeakinUniversity

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this.

Inspiration for life,
learning and career

Visit this.deakin.edu.au to uncover unique stories about Deakin and explore different perspectives on study, careers, research and culture.

1800 MYFUTURE (1800 693 888)
deakin.edu.au

For information on upcoming events and activities, please visit deakin.edu.au/deakin-events

Published by Deakin University in July 2017. While the information published in this guide was accurate at the time of publication, Deakin University reserves the right to alter, amend or delete details of course offerings and other information published here. For the most up-to-date course information please view our website at deakin.edu.au.

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