

CELEBRATING
A CENTENARY OF
OPPORTUNITY 2016



W&G
WALLBRIDGE & GILBERT
Consulting Engineers

VICTORIA UNIVERSITY
DISCIPLINE GUIDE 2017

ENGINEERING AND SCIENCE

vu.edu.au/engineering-science

W&G
WALLBRIDGE & GILBERT
Consulting Engineers

Emma Buis
Bachelor of Engineering (Architectural Engineering)



**VICTORIA
UNIVERSITY**
MELBOURNE AUSTRALIA

*"Industry exposure
gave me a great head start."*

"By taking a pathway from vocational education into higher education I was able to get credit and fast-track my degree.

My courses made me workforce ready. I have been able to apply everything I learnt in my studies to my role as an infrastructure engineer at Telstra – from security to networking and now infrastructure engineering.

The vendor technologies I was taught are industry current, and the industry exposure gave me a great head start."

ANDREW HINTON

TDIT - Diploma of Information Technology
ICA60211 - Advanced Diploma of Information Technology (Network Security)
Bachelor of Information Technology (Networking and Systems Computing)

CELEBRATING A CENTENARY OF OPPORTUNITY

In 2016, Victoria University is celebrating a Centenary of Opportunity. The University has a long, rich history as a direct descendant of Footscray Technical School, which first opened its doors to students in February 1916.

With 100 years of experience in providing excellent opportunities to all our students and communities, today's VU can help you find true success through high-quality teaching and flexible study options that suit your lifestyle.

Join us in 2017 and become a part of 100 years of tradition.

vu.edu.au/centenary

**CELEBRATING
A CENTENARY OF
OPPORTUNITY 2016**



VICTORIA UNIVERSITY

CHOOSE ENGINEERING AND SCIENCE AT VU

Do you dream of an innovative career in building, engineering, information technology or science?

Victoria University's (VU) unique engineering, science and information technology (IT) courses will help you achieve it.

Our flexible pathways can assist you in attaining higher qualifications, while our work placements and industry partnerships will give you direct access to future employers and the skills you need to be their top choice.

Our programs embrace everything from environmental management to sports engineering, and our strong industry focus has led to the development of degrees available nowhere else in Victoria.

Wherever you are on your career path, we have the courses, teachers, facilities and industry connections to ensure you reach your destination and are ready to make a difference from day one.

Courses span the areas of architectural, civil, electrical and electronic, and mechanical engineering, as well as building, science, and information technology. Each course is designed to ensure you graduate work ready with an understanding of the contemporary economic, environmental and social issues related to your industry.

We offer programs in postgraduate coursework and research – so you can pursue a career in an area of high demand, or tailor your study to a passion for a particular field.

Our future-focused research topics cover alternative energy, applied informatics and mathematics, biotechnology, chemical and analytical science, fire safety and risk engineering, sustainable building, water resources, and more.

Conducted in collaboration with high-profile industry and community partners, our courses are designed to provide practical and hands-on work experience, so you graduate with all the right skills to land your dream job.

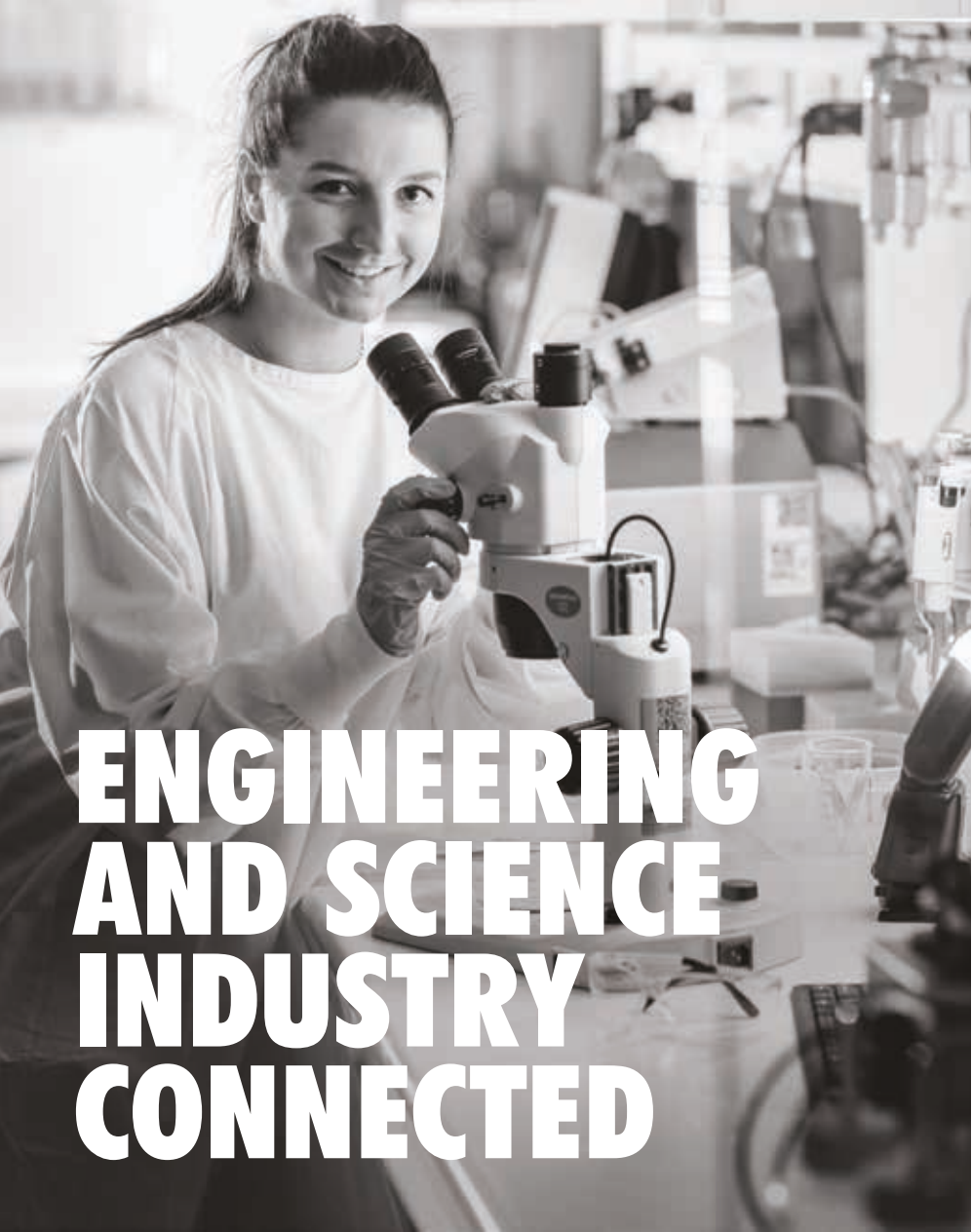
ENGINEERING AND SCIENCE COURSE AREAS

Courses are offered across a broad range of engineering and science specialisations, at vocational training (VE/TAFE), undergraduate and postgraduate levels.

Our range of specialisations includes:

- applied biology
- architectural engineering
- biotechnology
- building and construction
- building surveying
- chemical sciences
- civil engineering
- computer engineering
- computer science
- ecology and sustainability
- electrical and electronic engineering
- engineering
- engineering science
- engineering technology
- environmental management
- fire and risk engineering
- information technology
- network security
- mechanical engineering
- network and systems computing
- project management
- science
- sports engineering.

For detailed information about all engineering, science and IT courses visit vu.edu.au/engineering-science



ENGINEERING AND SCIENCE INDUSTRY CONNECTED

GAIN THE EMPLOYMENT EDGE

We prepare you for a career in engineering, information technology or science through strong partnerships with local and global engineering, informatics and scientific organisations.

We use these partnerships to inform our curriculum, provide shared resources, engage in multidisciplinary research, and give you opportunities for workplace learning so you can graduate with relevant and up-to-date skills sought by employers in your industry.

Our partnerships include Australian and international universities and organisations such as Engineers Australia; the Department of Environment, Land, Water and Planning; Melbourne Water; VicRoads; Fosters; Clariant; Racing Analytical Services; Modern Olives Laboratories; and the National Measurement Institute. City West Water and Victoria University collaborate on several

projects, especially in the areas of water and sustainability; investigations into PH neutralisation; and salts, including their chemistry and use in industry.

vu.edu.au/engineering-science/industry

INDUSTRY ACCREDITED

Industry accreditation is awarded to courses that best meet the needs of employers, and provide graduates with an optimum set of skills and knowledge.

Many of our courses in engineering, science and IT are industry accredited including our engineering programs accredited by Engineers Australia. We also manage Course Advisory Committees (CACs) that meet regularly to provide expertise and advice on quality, currency and future-readiness of our courses to ensure they align with industry trends and anticipated skills shortages.

PRACTICAL LEARNING

Preparing you for a career in engineering, information technology or science means bringing the real world into our courses.

We do this in a range of ways, including unique work placements with Scienceworks Museum, industry-sponsored projects and problem-based learning (PBL).

Extensive hands-on experience using industry standard equipment and techniques in state-of-the-art facilities gives you a practical edge – the hallmark of a VU education.

vu.edu.au/work-ready

PROBLEM-BASED LEARNING

We champion problem-based learning (PBL) in our courses. PBL is a team-based teaching and learning approach that encourages you to become a self-directed and independent learner.

This is part of our emphasis on students developing lifelong learning skills. Units delivered in PBL are central to the curriculum in preparing you to be work ready upon graduation. PBL helps you develop:

- technical knowledge and skills
- problem-solving and critical thinking skills
- independent learning skills
- teamwork skills
- communication skills.

PBL uses problems as a stimulus for learning. Problems often come from industry or the community, providing a real-world context for learning and the development of 21st century skills.

GLOBAL LEARNING

You can take your studies global with a wide range of international study opportunities. We have the largest international exchange program in Victoria with an extensive network of partners.

For example, architectural engineering students can take advantage of six-month placements at the University of Nebraska in Omaha, home to some of the largest engineering and construction companies in the US. These unique experiences enrich study and prepare you for the global workplace.

vu.edu.au/study-overseas

FLEXIBLE PATHWAYS TO SUCCESS

We are the University of Opportunity and Success. Our courses are designed to offer students from diverse backgrounds the opportunity to achieve success on their own terms. This includes flexible pathways and alternative entry programs to help you pursue your dream career, regardless of your prior experience.

With one of the broadest ranges of scholarships of any university in Australia, we are renowned for providing educational opportunities to a wide range of students of all ages, cultures, and socioeconomic and educational backgrounds.

We offer a range of work-integrated study options, academic and personal support programs, and various entry and exit points between courses, including:

- vocational education programs
- bachelor degrees across a wide range of subject areas for those who may be unsure about which specialisations to follow, or require additional support while transitioning from vocational education
- specialist professional degrees
- industry-relevant postgraduate programs.

ENGINEERING AND SCIENCE PATHWAYS

We are one of the few universities in Australia to offer both vocational training (VE/TAFE) and higher education. Our study pathways connect courses between vocational training and higher education, including postgraduate studies. This means that you can start your education journey at certificate level and proceed to a diploma, degree or even a PhD. You may also exit the pathway when you achieve your immediate study goal, and re-enter if, and when, you choose to further your studies.

Pathways are designed to suit all types of students, including those seeking career advancement, those wanting to develop their skills, and those seeking a career change or personal development.

vu.edu.au/pathways

FROM DIPLOMA TO DEGREE

We offer a streamlined pathway from some one-year diplomas straight into the second year of a bachelor degree, with full credit for the first year of the degree.

CREDIT FOR SKILLS AND PAST STUDY

VU is committed to recognising previous studies and the life and work experiences that you bring with you when you decide to study with us. You can receive credit by matching your previous experiences and studies with the skills and knowledge covered in course units, allowing you to complete your studies sooner.

vu.edu.au/credit

SAMPLE PATHWAYS

Below are samples of our many engineering and science course pathways to give you an idea of how pathways work. Note: unless otherwise indicated, these are not guaranteed pathways but suggested study journeys.

SCHOLARSHIPS

We offer one of the most comprehensive ranges of undergraduate student scholarships of any university in Victoria.

vu.edu.au/scholarships

POSTGRADUATE COURSEWORK SCHOLARSHIPS

Visit our website for VU and externally-funded postgraduate scholarships.

vu.edu.au/scholarships
researchscholarships@vu.edu.au

POSTGRADUATE RESEARCH SCHOLARSHIPS

We offer many living stipend scholarship programs for postgraduate research students.

vu.edu.au/research-scholarships
gradresearch@vu.edu.au

EQUAL OPPORTUNITY

We offer a range of special entry schemes for applicants who have been unable to reach their full educational potential or who may have restricted access to the courses of their choice because of their life circumstances.

vu.edu.au/access

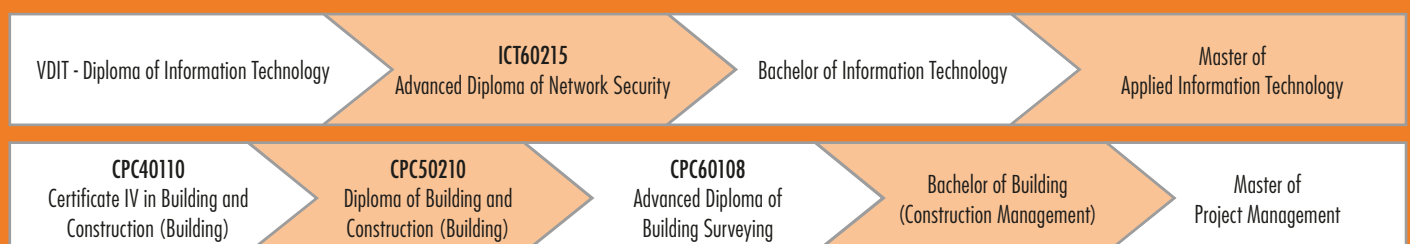
We aim to ensure that students with a disability or medical condition are able to actively participate in all aspects of university life.


vu.edu.au/disability
disability@vu.edu.au
03 9919 5400

We encourage Indigenous Australians to apply for any of our courses. Our Moondani Balluk Academic Unit provides Indigenous students with support services.

vu.edu.au/moondani-balluk
moondani.balluk@vu.edu.au
03 9919 2836

PATHWAY EXAMPLES



A man in a blue button-down shirt is smiling and pointing at a control panel in a server room. The control panel has a small screen and several buttons. In the background, there are server racks with various components and cables. The lighting is dim, with some lights from the equipment providing illumination.

"Research being conducted at VU is based on the latest industry requirements."

"My PhD research involves working with a team to design and install the Victoria Zone Substation Simulator Centre at VU. This project is a real industry project, which helps me to attain a high level of skills and experience related to my field.

VU has very good collaborations with industry and other universities, which has been an important contributing factor in helping me to get involved with these kinds of industrial research projects.

Research being conducted at VU, particularly in the area of electrical and electronic engineering, is based on the latest industry requirements.

All supervisors and students not only try to choose the hottest and most demanding topics for their research projects, but also add value to their research output by publishing high impact journals."

SAJAD AMJADI

Doctor of Philosophy

ENGINEERING AND SCIENCE RESEARCH

Our engineering, science and IT researchers are renowned for research excellence which means you have access to progressive thinkers, excellent facilities and award-winning academics when you undertake your degree.

Many of our researchers enjoy international recognition for their contribution to the fields of engineering, science and IT. Through partnerships and collaborations, the work of our dynamic research community benefits students and staff across the University, as well as industry, the community and government.

RESEARCH FOCUS

Our engineering, science and IT research was ranked highly in the 2015 Excellence in Research for Australia (ERA) ratings. We received the highest rating of 5 (well above world standard) in:

- electrical and electronic engineering.

We also achieved a rating of 4 (above world standard) in:

- mathematical sciences
- applied mathematics
- engineering
- mechanical engineering.

And a rating of 3 (world standard) in:

- artificial intelligence and image processing
- distributed computing
- information systems.

Our research is future-focused and covers a diverse range of areas including:

- applied informatics
- applied mathematics
- biotechnology
- chemical and analytical science
- energy
- telecommunications, electronics, photonics and sensors
- sustainable buildings
- fire safety and risk engineering
- water resources
- applied ecology
- engineered packaging and distribution
- structural mechanics and materials
- membrane technology
- 21st century telecommunication systems and networks.

vu.edu.au/graduate-research

INSTITUTE FOR SUSTAINABILITY AND INNOVATION

The Institute for Sustainability and Innovation (ISI) promotes and enables sustainable outcomes for industry and the community, based on environmental and innovative technologies. It provides industry and community solutions in water treatment technology, resource management, asset management, social and behavioural research, environment, e-research, smart energy, alternative energy and packaging.

vu.edu.au/isi

CENTRE FOR APPLIED INFORMATICS

The Centre for Applied Informatics (CAI) is a leading research group in computing and information technology, and IT applications. The aim of the Centre is to engage computer scientists, experts from application domains (including health, community, business and environments), industry and government partners to develop innovative information technology applications to benefit society.

vu.edu.au/cai

CENTRE FOR ENVIRONMENTAL SAFETY AND RISK ENGINEERING

The Centre for Environmental Safety and Risk Engineering (CESARE) carries out research on the spread of smoke and fire in buildings, fire extinguishment and the way structures respond to fire. The Centre's academic and research staff has experience in areas of structural behaviour and design, heat transfer, mechanical systems, human behaviour in fire, risk assessment, management and detection systems, and environmentally sustainable building design.

vu.edu.au/cesare

SPECIALISED ENGINEERING AND SCIENCE FACILITIES

Many of our engineering and science courses are delivered at our Footscray Park and Werribee Campuses, as well as our 'Construction Futures' hub – a \$44 million specialised building and construction vocational training facility at our Sunshine Campus.

LABORATORY FACILITIES

We operate a number of laboratory facilities for teaching professional engineering, science and IT courses, as well as for research activities. These facilities offer extensive training in analytical applications, theory of operation, optimisation, maintenance and troubleshooting.

Computer workstations are freely available with access to a wide range of generic and discipline-specific software for numerical simulation and modelling, and experimental analysis.

ENGINEERING LABORATORIES

- **Architectural/civil/mechanical engineering:** materials laboratory, statics/dynamics laboratory, mechanics laboratory, and a fluid and environmental engineering laboratory with fluid mechanics and hydraulics facilities, including pluviometers, flowmeters and water quality monitoring equipment.
- **Architectural/civil engineering:** concrete laboratory, survey laboratory and geomechanics laboratory.
- **Architectural engineering:** architecture laboratory.
- **Mechanical engineering:** thermodynamics laboratory and engine laboratory.
- **Electrical/sports engineering:** communications laboratory, microelectronics laboratory and soldering/construction laboratories for integrated circuit design and construction.
- **Electrical engineering:** power systems laboratory.

SCIENCE LABORATORIES

Our Shimadzu Analytical Laboratory at Werribee Campus gives undergraduates, researchers and the community ready access to state-of-the-art chemical instrumentation. Along with a supercritical nuclear magnetic resonance spectrometer at Footscray Park Campus, these two laboratories enable complete chemical analyses to be performed, such as of pesticides in waste water, impurity profiling in pharmaceutical products, structure determination and heavy metal analysis.

Advanced food systems research laboratories offer you resources for advanced food research, including food processing, shelf-life enhancement, microbial and enzyme technology and engineering, and functional foods and nutraceuticals.

INFORMATION TECHNOLOGY FACILITIES

IT facilities for students in both higher education and vocational education include computing and networking resources that enable the study and practice of a wide range of technologies. This prepares you for future professional practice, as well as IT industry certifications in networking and systems administration.

For example, you will have access to:

- a full set of Cisco routers and switches
- virtualisation platforms to create and manage virtual servers
- the latest software packages and resources, including net and Java integrated development environment, software development kits, and graphics and video authoring tools.

FIRE-TESTING FACILITIES

Facilities for our fire and risk engineering students include fire-test furnaces, a four-storey building scale model, cone calorimeter and 3MW calorimeter, and an ISO room for fire safety applications.

GENERAL FACILITIES

FOOD AND CAFÉS

Our city campuses have easy access to cafés and food outlets. All other campuses have on-campus cafés and food outlets for students, staff and the wider community.

CLASSROOMS OF THE FUTURE

VU's classrooms are being transformed into creative and technology-rich environments.

The multi-platform learning space at Footscray Nicholson Campus – known as the Terrain Room – is one of a growing number of the University's rejuvenated physical spaces that have transformed classrooms, libraries and lecture theatres into creative learning and teaching environments.

LIBRARIES

Our campus libraries are known as 'learning commons' – integrated hubs that offer career advice, learning and IT support, and academic resources, all in a relaxed, lounge-like setting. Our learning commons provide access to photocopying, computing and printing facilities, electronic and print resources, and a comprehensive information skills training program.

vu.edu.au/library

COMPUTER FACILITIES

We have more than 4000 computers spread across all our campuses and in all campus libraries. PCs and Apple Macs are provided in teaching laboratories and open access facilities. A central IT helpdesk is available to provide assistance.

You will have access to a rich collection of online resources, 24 hours a day, seven days a week. These include databases or material housed within the library, student email, e-learning content for courses, student software packages and innovative social networking tools.

vu.edu.au/student-tools

SPORT AND FITNESS

As Australia's leading sports university, we offer extensive sport services and facilities to all students, including:

- sport clubs, campus sport programs and representative sport opportunities
- quality fitness centres at Footscray Park, St Albans and Werribee Campuses
- a heated 25-metre swimming pool at Footscray Park Campus
- multi-purpose sports halls at Footscray Park Campus
- tennis courts at Werribee, Footscray Park and St Albans Campuses.

vu.edu.au/sport

CHILDCARE

We operate multi-purpose childcare centres at the following campuses:

Footscray Park 03 9919 4578
Footscray Nicholson 03 9919 8698
Werribee 03 9919 8098.

ACCOMMODATION

We own and operate a range of student accommodation, including the brand new UniLodge @ VU. This 500-bed complex offers luxury apartment living for our students. Situated across the street from the Footscray Park Campus and close to the vibrant creative arts precinct in Footscray, this complex is just a short walk to shopping and public transport that provides easy access to our other campuses.

vu.edu.au/residences
unilodge.com.au/lodge/vu

HOUSING SERVICES

Our Student Housing Service provides free advice and assistance to students looking for housing as well as general tenancy advice.

housing@vu.edu.au

HOW MUCH WILL MY COURSE COST?

COURSE FEES AND FINANCIAL ASSISTANCE

Course costs vary between VE/TAFE and higher education courses, depending on whether you are a government-funded student or full-fee paying student, and the units you select.

Below you will find some important information and a general guide to costs.* The latest information and a specific guide to study costs, including VU's Unit Fee Schedule, is available at:

vu.edu.au/fees

VE/TAFE FEES

The fees you pay as a VE/TAFE student depend on a number of factors, including:

- whether the course is government-funded
- your citizenship status
- when you commence the course
- your age
- your prior qualifications
- the units and course that you enrol in.

Some (VE/TAFE) students may be eligible for a government subsidy (such as the Victorian Training Guarantee) to support tuition fees, depending on:

- citizenship status
- age at time of enrolment
- prior study completed.

VE/TAFE students are also required to pay an annual Student Services and Amenities Fee. In 2016 this amounted to \$204 for full-time government funded students, \$102 for part-time government-funded students, \$42 for students studying off campus and \$84 for concession card holders. Students studying less than 25 hours are exempt from the fee.

Visit vu.edu.au/ssaf for more information on the Student Services and Amenities Fee.

VET FEE-HELP is available to assist eligible students studying higher level vocational education and training (VET) qualifications to pay their tuition fees. Higher-level VET qualifications are at the diploma level and above. VET FEE-HELP can be used to pay all or part of an eligible student's tuition fees, but cannot be used for additional study costs such as accommodation or text books.

Visit studyassist.gov.au for further information and to check eligibility.

HIGHER EDUCATION FEES

The options available to students enrolled in higher education courses are:

- Commonwealth Supported Place (CSP) – course fees are shared between students and the Australian Government, which subsidises your course fees.
- Full-Fee Place (FFP) – you must pay the full cost of your course.

All domestic undergraduate students at Victoria University are enrolled in a Commonwealth Supported Place (CSP).

This table (below) shows the maximum student contribution and full-fee amount for 2016 admissions, per year of full-time study.

STUDENT CONTRIBUTION BAND	MAXIMUM STUDENT CONTRIBUTION PER 1 YEAR OF FULL-TIME STUDY (2016)
BAND 1 Humanities, behavioural science, social studies, education, clinical psychology, foreign languages, visual and performing arts, nursing	\$6,256
BAND 2 Mathematics, statistics, computing, built environment, other health, allied health, science, engineering, surveying, agriculture	\$8,917
BAND 3 Law, accounting, administration, economics, commerce, dentistry, medicine, veterinary science	\$10,440

*All fee information provided here was correct at the time of printing. For the latest guide to fees and payment information, please refer to our website at vu.edu.au/fees

Note: Students are required to pay additional amenities fees annually. This information was extracted from the Australian Government's Study Assist website, studyassist.gov.au

Higher education students are also required to pay an annual Student Services and Amenities Fee. In 2016 this amounted to \$290 for full-time students and \$145 for part-time students.

POSTGRADUATE COURSEWORK DEGREE FEES

The University does not receive any government funding for postgraduate coursework student places, and students pay the full cost of their course. This is called a fee-paying place. Tuition fees are based on the units studied, rather than a fixed price for each course. Different units have different costs.

You can calculate your own individual course fees at vu.edu.au/fees

POSTGRADUATE RESEARCH DEGREE FEES

If you qualify for an Australian government-funded place under the Research Training Scheme you will not be required to pay course fees.

If you are offered a full-fee paying place you can apply for FEE-HELP government assistance as outlined below.

INTERNATIONAL STUDENTS

For information on course fees as an international student, select your course from the list at:

vu.edu.au/courses/international

PAYING YOUR FEES

There are several options available to help you with the costs involved in studying at university.

HECS-HELP

The Australian Government's Higher Education Loan Program, HECS-HELP, allows Australian citizens and Humanitarian Visa holders to borrow the amount of their student contribution and pay it back once in the workforce and earning a specified amount. You also have the option of paying some or all of your student contribution up-front and receiving a discount.

FEE-HELP

FEE-HELP is a government loan program that enables eligible students to defer the payment of their tuition fees.

studyassist.gov.au

FINANCIAL ADVICE

We offer free financial advice and information on all study-related costs. This includes information about government assistance (such as HECS-HELP, Centrelink Youth Allowance and Austudy), household expenses, financial planning, student loans and tax.

vu.edu.au/financial-advice

*"Industry experience is vital
in giving students a first-hand
appreciation of opportunities."*

"It assists them in identifying and pursuing a career path that best aligns with their technical and personal attributes.

We have taken on a number of graduates who previously completed their 12 weeks of industry-learning with Maribyrnong City Council.

The VU graduates that we have employed have displayed a good work ethic and a genuine interest in local government engineering, with a focus on customer service. They have an eye for detail and solid technical skills."

MARY DALLAS

Manager, Civil Design and Transport
Maribyrnong City Council



HOW TO APPLY

There are several ways to apply for courses at VU, based on:

- your chosen course study level
- your residency status
- the time of year
- whether you are a current or recent student of VU (within the last six months).

UNDERGRADUATE AND TAFE

Applications for undergraduate and vocational education (VE/TAFE) courses are either made through the Victorian Tertiary Admissions Centre (VTAC), or by direct application to the University.

Information about all VU courses offered through VTAC can be accessed on the VTAC website at:

vtac.edu.au

Applications for courses not available through VTAC are made directly to VU. These include some undergraduate degrees, and vocational and further education (VE/TAFE) programs. Details on how to apply for these courses are provided on our website at:

vu.edu.au/apply

POSTGRADUATE

Applications for most postgraduate research and coursework programs are made direct to the University. Course indexes and Direct Entry Application forms can be downloaded from our website at:

vu.edu.au/apply

WANT TO KNOW MORE?

COURSE ADVICE

Phone 03 9919 6100 or 1300 VIC UNI
gotovu.custhelp.com
vu.edu.au/courses

The Victorian Tertiary Admissions Centre (VTAC) website provides information on courses and how to apply for them:

vtac.edu.au

VU OPEN DAY

Come to VU Open Day at Footscray Park Campus on Sunday 28 August 2016.

vu.edu.au/openday

POSTGRADUATE COURSEWORK AND RESEARCH

vu.edu.au/postgraduate

COURSES FOR INTERNATIONAL STUDENTS

vu.edu.au/courses/international

QUESTIONS?

Ask us a question by visiting vu.edu.au/gotovu

GOTOVU gives answers to common questions on anything from admission to graduation, including applications, enrolment, fees, exams and all other aspects of student life.

askvu.vu.edu.au

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CRICOS Provider NO. 00124K (Melbourne)
CRICOS Provider NO. 02475D (Sydney)
RTO Code: 3113

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OPEN DAY

28.08.16

vu.edu.au/openday

Footscray Park Campus
Ballarat Road, Footscray

For further course information:
phone 03 9919 6100
or 1300 VICUNI
gotovu.custhelp.com



vu.edu.au/engineering-science

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**VICTORIA
UNIVERSITY**

MELBOURNE AUSTRALIA