

## Engineering

Engineers Dr Tim Fletcher and Dr Ana Deletic from the Monash Institute for Sustainable Water Resources are busy creating cutting-edge, sustainable solutions and technologies such as porous paving, to combat the twin hazards of drought and flood.



### What makes Engineering at Monash special?

- **Outstanding reputation:** Monash Engineering is a leading research faculty with an exceptional national and international reputation.
- **Research strengths:** The faculty boasts more than a dozen research institutes and centres and cross-institutional centres focused on key technologies.
- **Impressive facilities:** Engineering provides a range of facilities and support services for postgraduate students, including a dedicated science and technology library, and spacious work environments with 24-hour access to computer laboratories.
- **New horizons:** Monash has received \$89.9 million from the Federal Government's Education Investment Fund toward future manufacturing research and teaching. The New Horizons initiative will partner staff from Monash and the CSIRO for a global research collaboration through state-of-the-art ICT.

### Research strengths

The research strengths of the faculty include:

- Asset performance improvement and maintenance
- Biomedical-engineering
- Bio-process and bio-materials engineering
- Chemical engineering science and design
- Civil engineering
- Clean energy technologies
- Electronics and communications
- Electronic, magnetic and ionic materials and properties
- Engineering alloys
- Fluid dynamics research
- Geotechnical engineering
- Intelligent robotics
- Micro-nano mechanical and optical engineering
- Materials characterisation
- Nanomaterials
- Polymer engineering
- Power electronics
- Railway engineering
- Structural engineering
- Structural integrity and safety
- Sustainable transport
- Sustainable water engineering

## Contact

For further information, talk to one of our advisers:

Faculty of Engineering

Coursework enquiries: +61 3 9905 3404

Email: eng.info@eng.monash.edu.au

Research enquiries: +61 3 9905 4635

Email: eng.info@eng.monash.edu.au

International enquiries: 1800 181 838 (free call from within Australia)

+61 3 9627 4852 (outside Australia)

Email: study@monash.edu



### Graduate profile

## Dr Michael Danquah

### Early Career Engineering Alumni of the Year in Chemical Engineering

*Dr Michael Danquah, is currently a Postdoctoral Research Fellow in the Department of Chemical Engineering. During his PhD studies Michael distinguished himself as a student who was passionate and enthusiastic about his work and this resulted in his publication of numerous journal papers and a patent. Aside from his doctoral research, Michael was actively involved in tutoring different undergraduate courses including Biochemical Engineering and Process System Analysis as well as various extracurricular activities organized by the Department.*

*Michael conducted his doctoral dissertation under the supervision of Dr. Gareth Forde on the topic "Rapid Production of Therapeutic Plasmid DNA via Pilot-scale Bacterial Fermentation and Monolithic Purification", research which has very eminent applications for the future use of DNA molecules as human therapeutic vectors. Michael completed his PhD in three years with 12 internationally recognised first-authored journal papers, a filed patent application and conference papers.*

## Research excellence

- The Monash Wind Tunnel is capable of creating winds in excess of 180km/h, it is used in the engineering of wind structures and turbines, unmanned air vehicles, ground transportation and optimising the aerodynamic efficiency of facing vehicles.
- A Monash research team is currently working on fossil fuel and renewable energy technologies. The team made a successful and direct conversion of waste plastics into diesel.
- Monash Engineering is involved in collaboration between government, industry and research bodies in China to develop a lighter, cheaper aluminium alloy to cater for a changing market. Monash University and the Indian Institute of Technology in Bombay (IITB) have opened a new chapter in Australian-Indian relations with the formal launch of a joint-venture research academy. Doctoral students undertake research projects and receive a dual, accredited PhD degree from both Monash University and IIT Bombay.
- Water engineers are developing new solutions to capture rain water off hard surfaces using a water harvesting system that requires no moving parts, no chemicals and no energy.
- The next generation of hybrid cars could be more reliable and cheaper to build thanks to a discovery by Monash Engineering, using the design of a fuel cell in which a specially coated form of GoreTex is the key component.



## Microbot motors fit to swim human arteries

Researchers in the Micro/Nanophysics Research laboratory are harnessing piezoelectricity, the energy force most commonly used to trigger start a gas stove, to produce microbot motors just 250 micrometres or a quarter of a millimetre wide.

These micro-motors are small enough to be injected into the human bloodstream and could be used for a range of complex surgical operations necessary to treat stroke victims, confront hardened arteries or address blockages in the bloodstream.

The motor has been named the "Proteus motor" after the miniature submarine that travelled through the human body in the science fiction movie, "Fantastic Voyage."

Remote controlled miniature robots small enough to swim up arteries could save lives by reaching parts of the body, like a stroke-damaged cranial artery, that catheters have previously been unable to reach.

With the right sensor equipment attached to the microbot motor, the surgeon's view can be enhanced and the ability to work remotely also increases the surgeon's dexterity.

The team has produced prototypes of the motors and is now working on ways to improve the assembly method and the mechanical device which moves and controls the micro-motors.

## Professional recognition

Postgraduate coursework programs allow engineers to upgrade their skills or seek higher qualifications for targeted career advancement. Monash works closely with industry partners to provide training in the latest technical advancements and to offer well-rounded professional development programs. Engineering PhD graduates are highly sought after in research and development, strategic planning and senior management roles.

### Doctor of Philosophy

The PhD program in the Faculty of Engineering may be undertaken in the principal areas of research offered by the faculty, including chemical engineering, civil engineering, electrical and computer systems engineering, materials engineering, mechanical engineering, aerospace engineering and biological engineering.

Researchers have access to state-of-the-art laboratories and high tech research infrastructure.

#### Course Outline

The faculty normally admits all postgraduate research students initially to the Master of Engineering Science (Research) degree. Students can apply to transfer (with credit) to the PhD program after 12 months candidature.

Candidates are required to complete a thesis (normally not exceeding 100,000 words) in one of the principal areas of research listed above.

Students are encouraged to present research work at forums both locally, nationally and internationally through publishing and access to travel grants to present research findings. All students work under the guidance and supervision of experienced academics.

Some students may be required to undertake some coursework units depending on the program.

#### Career Outlook

A research degree in engineering provides a nexus between real world applications and a deeper interest in a particular field of engineering. Specially designed training seminars and special events will help students with their education, research and career goals, and help build a whole range of valuable skills – not only in research, but also in analysis and problem solving project and time management, interview techniques and presentation skills.

Students will have the opportunity to develop specialist knowledge in an area of research and have the potential to become a world expert in a field of engineering.

#### Course Details

**Course code:** 3291

**Duration:** Up to 4 years full-time, 8 years part-time

**Campus:** Clayton, Gippsland, Sunway

**Intake:** First semester, second semester

**Entry requirements:** Master of Engineering by research or; Bachelor of Engineering with honours 1 or 2A from Monash University or another recognised tertiary institution judged to be of equivalent standard to an Australian university. Other qualifications can be assessed for equivalence.

**2009 annual domestic fee:** Research Training Scheme

**2009 annual Sunway fee:** RM 30,000

### Master of Engineering Science (Research)

Monash Engineering research is at the front line in developing the technologies of the future, such as nano-structuring and nano-manufacturing, bioengineering technology, aerospace technology, fluid dynamics, engineering alloys, geotechnical engineering, sustainable transport, materials characterisation, polymer engineering, intelligent robotics, railway engineering, power electronics and sustainable water.

Monash Engineering supports gifted research students with state-of-the-art laboratories and research infrastructure, while also giving them access to supervisors with excellent reputations in their chosen fields.

Principal areas of research offered by the faculty includes biological engineering, chemical engineering, civil engineering, electrical and computer systems engineering, materials engineering, aerospace engineering and mechanical engineering.

#### Course Outline

Candidates are required to write a major thesis in one of the areas of specialisation including biological engineering, chemical engineering, civil engineering, electrical and computer systems engineering, materials engineering, and mechanical engineering.

The thesis must represent a significant contribution to the knowledge and understanding of the discipline concerned and should demonstrate the capacity to carry out independent research.

On successful completion of the first 12 months of the Master of Engineering Science (Research), students may apply to transfer to the PhD program.

#### Career Outlook

Australia is facing a critical shortage of engineers and graduates with advanced degrees are in high demand. As a result engineering is among the highest paid graduate sectors.

Research students have the opportunity to explore new engineering applications and participate in research vital to meeting the environmental, technological and social challenges of the 21st century.

#### Course Details

**Course code:** 3292

**Duration:** Up to 2 years full-time, 4 years part-time

**Campus:** Clayton, Gippsland, Sunway

**Intake:** First semester, second semester

**Entry requirements:** A Bachelor of Engineering degree with honours 1, 2A or 2B from Monash University or any other recognised tertiary institution.

**2009 annual domestic fee:** Research Training Scheme

**2009 annual Sunway fee:** RM 30,000



#### Student profile

### Rawaa Al Safy

#### PhD student Civil Engineering

*"I came from Iraq to study a PhD in civil engineering. Studying in Australia is really interesting, I find the people here are really friendly. Studying here has helped me to discover myself and many friendships. Living on campus has been a really good experience for me because it has helped me to discover other cultures. Melbourne is a really multicultural city, I encourage everyone to visit Melbourne and continue their studies in Melbourne. In the future I hope to continue my career as a lecturer and researcher. Monash opened the knowledge gate for me to be a good researcher and I want to continue along this path."*

## Coursework degrees

### Master of Engineering Science (Coursework and Minor Thesis)

Australia's pulp and paper industry over the next few years will invest more than \$3 billion in major projects, including pulp mills, paper machines, upgrades and rebuilds. The massive capital injection, combined with market globalisation, will create many new employment opportunities for engineers and scientists in pulp and paper.

The Master of Engineering Science, offered by the Australian Pulp and Paper Institute in the Department of Chemical Engineering, is designed to give students an understanding of the industry's more advanced areas of engineering theory, application and technology. The degree is suitable for students from a range of engineering and scientific backgrounds, including chemical and mechanical engineering as well as chemistry, forestry and mathematics.

#### Course Outline

Students will complete core coursework units from the following areas:

- Process engineering of pulping
- Unit operations of papermaking
- Paper production, properties and use
- Management and control in the pulp and paper industry
- Environmental aspects of pulp and paper making
- Pulp and paper laboratory
- Industrial visits

Students will also complete an elective unit from another engineering department or faculty at Monash. Following completion of the coursework, students must complete a three-month minor thesis project in industry. Students are expected to attend the annual APPITA conference and six mill and plantation visits during their candidature.

#### Career Outlook

The course will prepare graduates for a career in the pulp and paper industry, and enhance the performance of those already in the industry, by providing them with a detailed understanding of the properties of paper and paper products, of the science and engineering behind the production of pulp and paper, and of issues related to their manufacture.

#### Course Details

**Course code:** 0036

**Duration:** 1.5 years full-time, 3 years part-time

**Campus:** Clayton

**Intake:** First semester, second semester

**Entry requirements:** Bachelor of Engineering or Science degree with honours. In certain circumstances, students may apply for admission if they hold a pass degree of Bachelor of Engineering or another appropriate degree from Monash University or another university together with honours equivalent work experience. This program is only available in pulp and paper technology and offered by the Australian Pulp and Paper Institute within the Department of Chemical Engineering.

**2009 annual domestic fee:** \$24,000 AUD

### Graduate Diploma in Pulp and Paper Technology

This course is designed primarily for science graduates currently employed in the pulp and paper industry and is offered by the Australian Pulp and Paper Institute within the Department of Chemical Engineering.

#### Course Outline

Students will complete core coursework units from the following areas:

- Process engineering of pulping
- Unit operations of papermaking
- Paper production, properties and use
- Management and control in the pulp and paper industry
- Environmental aspects of pulp and paper making
- Pulp and paper laboratory
- Industrial visits

Students are expected to attend the annual APPITA conference and six mill and plantation visits during their candidature

#### Career Outlook

The course will prepare graduates for a career in the pulp and paper industry, and enhance the performance of those already in the industry.

#### Course Details

**Course code:** 0151

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Clayton

**Intake:** First semester, second semester

**Entry requirements:** Bachelor of Engineering or other appropriate degree.

**2009 annual domestic fee:** \$24,000 AUD

**CSP available**

### Master of Aerospace Engineering

The development of new aircraft and spacecraft is rapidly moving towards the utilisation of highly advanced technologies and processes in their design and manufacturing. This has created a global shortage of highly-qualified engineers. This degree is designed to meet this demand.

Aerospace vehicles are very complex systems which combine aerodynamic design, advanced materials and lightweight aerostructural design, more environmentally-friendly powerplants and sophisticated on-board electronic systems.

This new course, a unique award program from Monash University is taught in collaboration with the Department of Aerospace Engineering at the University of Glasgow. It is ideally suited to students with a background in Mechanical Engineering who may want to develop their careers in the Aerospace industry. A Master of Aerospace Engineering also equips graduates with the knowledge and skills to assume senior positions within this industry.

#### Course Outline

Students complete a major aerospace project and coursework units around the following study areas:

- Aerodynamics
- Aircraft structures
- Composite airframes
- Airworthiness
- Avionics
- Computational fluid mechanics
- Computational structural mechanics
- Spaceflight dynamics

#### Career Outlook

The rapidly expanding aerospace industry is seeking qualified postgraduates, with highly specialised skills, to help develop the next generation of aerospace vehicles. New inter-government imposed targets, to minimise the environmental impact of flight, has created a grand challenge for the aerospace industry which can be addressed through the provision of highly-qualified aerospace engineers.

#### Course Details

**Course code:** 3285

**Duration:** 1 year full-time

**Campus:** Clayton

**Intake:** First semester, second semester

**Entry requirements:** A high-quality degree in mechanical engineering or related disciplines.

**2009 annual domestic fee:** \$24,000 AUD

## Master of Maintenance and Reliability Engineering

With industry demanding that its physical production assets work longer and better, professional asset management has become a powerful need in improving profitability and even ensuring survival.

Studied off-campus, the Master of Maintenance and Reliability Engineering is designed for engineers and other staff involved in the design, operation, maintenance and improvement of industrial, public sector or defence assets.

### Course Outline

Students must complete a maintenance and reliability engineering project.

Students select seven units of study from the following areas:

- Terotechnology and lifecycle costs
- Maintenance management
- Industrial techniques in maintenance management
- Asset management techniques
- Quantitative techniques for asset management
- Machine condition monitoring and fault diagnosis
- Risk engineering
- Basic quantitative skills for reliability engineering
- Understanding reliability
- Advanced reliability
- Reliability applications

### Career Outlook

Most students are working in this field where there is a strong demand from companies for qualified people.

### Course Details

**Course code:** 2319

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Off-campus (Gippsland)

**Intake:** First semester, second semester

**Entry requirements:** Applicants require a Bachelor of Engineering degree, or have completed the Graduate Diploma in Engineering Maintenance Management with an average result of 65 per cent.

**2009 annual domestic fee:** \$16,600 AUD

**CSP available**

## Graduate Diploma in Engineering Maintenance Management

With industry demanding that its physical production assets work longer and better, professional asset management has become a powerful need in improving profitability and even ensuring survival.

Studied off-campus, the Graduate Diploma in Engineering Maintenance Management is designed for staff involved in the design, operation, maintenance and improvement of industrial, public sector or defence assets who do not hold a 4-year degree in engineering, but are tertiary-qualified in engineering, science, mathematics or other fields, or who articulate via either Graduate Certificate.

### Course Outline

Students must complete a maintenance and reliability engineering project.

Students select seven units of study from the following areas:

- Terotechnology and lifecycle costs
- Maintenance management
- Industrial techniques in maintenance management
- Asset management techniques
- Quantitative techniques for asset management
- Machine condition monitoring and fault diagnosis
- Risk engineering
- Basic quantitative skills for reliability engineering
- Understanding reliability
- Advanced reliability
- Reliability applications

### Career Outlook

Students who complete this course to a satisfactory standard may apply to continue their studies to master's level.

### Course Details

**Course code:** 1753

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Off-campus (Gippsland)

**Intake:** First semester, second semester

**Entry requirements:** A recognised degree or diploma in Engineering or a related area, together with at least two years of work experience, or completion of the Graduate Certificate in Maintenance Management or the Graduate Certificate in Reliability Engineering with a 65 per cent average.

**2009 annual domestic fee:** \$16,600 AUD

**This course is not available to international student visa holders.**

**CSP available**

## Master of Traffic

Monash has been offering transport education and research programs for 30 years, during which time it has developed a national and international reputation in the field.

This course offers students an opportunity to explore traffic operation issues such as traffic congestion, traffic management, road safety and intelligent transport systems.

The program has been designed for those who work in traffic engineering, road safety, and civil and environmental engineering.

### Course Outline

Students complete core units around the following study areas:

- Traffic engineering fundamentals
- Traffic engineering and management
- Quantitative methods
- Intelligent transport systems
- Road safety engineering
- Parking policy and design
- Transport planning and policy

Students also select one elective from the following areas:

- Transport modelling
- Case studies in transport
- Transport economics
- Fundamentals or urban public transport

### Career Outlook

Graduates of the Master of Traffic typically work as senior traffic engineers in local government, state road authorities, private sector transport operators and consulting.

### Course Details

**Course code:** 3271

**Duration:** 2 years part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A Bachelor of Engineering degree, a three-year science or applied science degree with an honours year, or a three-year degree with appropriate postgraduate studies. Students can also articulate from the Postgraduate Diploma in Transport and Traffic.

**2009 annual domestic fee:** \$16,600 AUD

**This course is not available to international student visa holders.**

## Master of Transport

The Master of Transport was developed in response to the growing need for engineers with awareness of the characteristics and significance of transport, including its technological, economic, environmental and social impact.

Monash offers expert studies in intelligent transport systems, transport network models, road safety engineering and case studies in transport.

The Monash Institute of Transport Studies, a key Australian centre for teaching and research in transport management, conducts the program.

### Course Outline

Students complete core units around the following study areas:

- Traffic engineering fundamentals
- Quantitative methods
- Intelligent transport systems
- Transport modelling
- Infrastructure project and policy evaluation
- Transport planning and policy
- Transport economics

Students select one unit from the following areas:

- Road traffic: engineering and management
- Road safety engineering
- Parking policy and design
- Case studies in transport
- Fundamentals of urban public transport

### Career Outlook

Graduates of the Master of Transport work in the public and private sectors as senior transport engineers and planners on large scale planning projects.

### Course Details

**Course code:** 3272

**Duration:** 2 years part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A Bachelor of Engineering degree, a three-year science or applied science degree with an honours year, or a three-year degree with appropriate postgraduate studies. Students can also articulate from the Postgraduate Diploma in Transport and Traffic.

**2009 annual domestic fee:** \$16,600 AUD

**This course is not available to international student visa holders.**

## Postgraduate Diploma in Transport and Traffic

This course is designed for graduate engineers who wish to pursue advanced study in transport and traffic engineering previously studied as part of their undergraduate training.

Students who complete the Postgraduate Diploma in Transport and Traffic to a satisfactory standard may apply to continue their studies to masters level.

### Course Outline

Students complete core units around the following study areas:

- Traffic engineering fundamentals
- Road traffic: engineering and management
- Transport planning and policy

Depending on previous studies, students select one to three units from the following areas:

- Quantitative methods
- Intelligent transport systems
- Transport modelling
- Road safety engineering
- Parking policy and design
- Case studies in transport
- Infrastructure project and policy evaluation
- Asset management
- Transport economics
- Fundamentals of urban public transport

### Career Outlook

This postgraduate diploma is designed for engineers and skilled professionals who wish to pursue advanced study in transport and traffic engineering, previously studied as part of their undergraduate training.

### Course Details

**Course code:** 2863

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A Bachelor of Engineering degree, a three-year science or applied science degree with an honours year, or a three-year degree with appropriate postgraduate studies. Students may also articulate from the Graduate Certificate in Transport and Traffic.

**2009 annual domestic fee:** \$16,600 AUD

There is no direct entry into this diploma program; students can only articulate to it from the Graduate Certificate in Transport and Traffic or exit from the Master of Transport or Master of Traffic.

**This course is not available to international student visa holders.**



### Student profile

## Andrey Molotnikov,

### PhD student in Materials Engineering

*"My research interests are focusing on modelling the mechanical response of metals by using fundamental concepts of plasticity and dislocation theory.*

*This research, which combines theoretical and experimental analysis, aims at simplifying the production of small parts used in a variety of devices like mobile phones and laptop computers and make it more cost efficient for various industries.*

*I am particularly interested in gaining greater knowledge in microforming as this project requires combined knowledge from mathematics, physics and chemistry and allows me to be a part of new research area.*

*I work in a multidisciplinary team composed of Prof. Yuri Estrin, Dr. Rimma Lapovok and Associate Professor Chris Davies who combine extensive experience in areas of modelling the mechanical response, characterisation of new materials and production of small parts.*

*Working with such leading researchers is a great honour and is a very inspiring experience. Their support and input in my research help me to develop and advance my skills in my research area.*

*The best thing about my research experience was to be able to attend international conferences around the globe and work with excellent researchers from Monash and other universities."*



## Graduate profile

### Dr Richard Mills

#### Early Career Alumni of the Year in Mechanical and Aerospace Engineering

*Dr Mills received the Monash Engineering Dodds award, the top Mechanical Undergraduate student in 1991 and went on to do a PhD graduating in 2008. Since then he has held various key international positions. He now runs the Fluids Research Dynamics Group as part of the Schlumberger Cambridge Research Centre in Cambridge UK.*

## Graduate Certificate in Transport and Traffic

### Course Details

**Course code:** 2864

**Duration:** 0.5 years full-time, 1 year part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A three-year degree in engineering, science, applied science or appropriate degree program or at least three years of high-level experience and successful completion of two units from the program on a non award basis with a 65 per cent average.

**2009 annual domestic fee:** \$16,600 AUD\*

**This course is not available to international student visa holders.**

## Master of Infrastructure Engineering and Management

Civil engineering presents a vital challenge for Australia in the 21st century. As the infrastructure grows older, the need for a strategic maintenance plan to prolong its use becomes greater.

The planning, design, construction and maintenance of infrastructure are crucial to the economic viability of Australia. Skilled professionals are required to maintain ageing infrastructure, integrate new infrastructure into existing systems, and expand infrastructure. And it must be done in a way that is socially, environmentally and financially sustainable.

The Master of Infrastructure Engineering and Management will equip students to meet these important challenges. The program was developed in response to the growing need for engineers aware of the characteristics and significance of infrastructure, including its technological, economic and social impact.

### Course Outline

Students complete core units around infrastructure project policy evaluation and management, and asset management.

They also select up to three engineering electives from the following areas:

- Flood management in urban and rural environments
- Planning and design of urban stormwater management measures
- Hydraulics and sewerage systems
- Management of water resources and related infrastructure
- Traffic engineering fundamentals
- Road traffic engineering and management
- Intelligent transport systems
- Road safety engineering
- Parking policy and design
- Case studies in transport and traffic

### Career Outlook

This off-campus course is aimed at managers, engineers and technical staff who undertake asset management in local and state governments. It is also for those who are involved in the management of infrastructure such as roads, railways, buildings, bridges, tunnels, dams and pipelines.

### Course Details

**Course code:** 3262

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A four-year degree in an engineering discipline, a four-year (honours) science/applied science degree or a three-year degree and an appropriate postgraduate qualification. Students can also articulate from the Postgraduate Diploma in Infrastructure Engineering and Management.

**2009 annual domestic fee:** \$16,600 AUD

**This course is not available to international student visa holders.**

**CSP available**

## Postgraduate Diploma in Infrastructure Engineering and Management

### Course Details

**Course code:** 3263

**Duration:** 2 years part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** Normal admission will be allowed for students completing the Graduate Certificate in Infrastructure Engineering and Management with a 65 per cent average.

**2009 annual domestic fee:** \$16,600 AUD

There is no direct entry into this diploma program; students can only articulate to it from the corresponding graduate certificate or exit from the masters program.

This course is not available to international student visa holders.

**CSP available**

## Graduate Certificate in Infrastructure Engineering and Management

### Course Details

**Course code:** 3264

**Duration:** 1 year part-time

**Campus:** Off-campus (Clayton)

**Intake:** First semester, second semester

**Entry requirements:** A three-year degree in an engineering discipline, a three-year science/ applied science degree, or a three-year degree in an appropriate area. Admission will be allowed for students with three years of high-level experience who have completed two units, including one core unit from the program, with a 65 per cent average.

**2009 annual domestic fee:** \$16,600 AUD\*

**This course is not available to international student visa holders.**

**CSP available**

## Graduate Diploma in Materials Engineering

This on-campus course offers people employed in professional or management positions within materials technology an opportunity to acquire training in the fundamentals of this industry.

It is designed for graduates in engineering, science, mathematics or other fields who wish to study materials engineering to a level equivalent to the Bachelor of Engineering (Honours).

### Course Outline

Students complete core units around the following study areas:

- Materials durability
- Microstructural design
- Microstructure to applications: the mechanics of materials
- Management and practice in materials engineering
- Functional materials
- Polymers and ceramics
- Materials characterisation and modelling
- Materials engineering design and practice
- Polymer and composite processing and engineering
- Processing and engineering of metals and ceramics
- Materials modelling
- Advanced ceramics and applications
- Materials and the environment
- Engineering alloys processing, design and selection
- Corrosion – mechanisms and protection methods

### Career Outlook

This course is primarily aimed at graduates in science, applied science, metallurgy, or in branches of engineering other than materials engineering who, having been in employment for some time, are interested in further training in the materials area.

### Course Details

**Course code:** 0033

**Duration:** 1 year full-time, 2 years part-time

**Campus:** Clayton

**Intake:** First semester, second semester

**Entry requirements:** Bachelor of Engineering degree or other appropriate degree.

**2009 annual domestic fee:** \$24,000 AUD

**This course is not available to graduates in materials engineering from the Clayton campus.**

**CSP available**

## Doctor of Philosophy



The **Monash University Accident Research Centre (MUARC)** is a truly multi-disciplinary research organisation and one of the leading injury prevention research centres in the world. Based at the Clayton campus of Monash University (with offices at Sunway, South Africa and Prato), MUARC has well established links with a large number of Monash faculties. Indeed one of the defining features of research at MUARC is that it reaches across traditional discipline boundaries.

### Course Outline

As a PhD student you will study in an energising and collaborative environment with a diverse range of highly skilled researchers and injury prevention practitioners.

The major component of the program consists of research work presented in the form of a thesis, in accordance with Monash University guidelines. The thesis must represent a significant contribution to the knowledge and understanding of injury prevention and should demonstrate the capacity to carry out independent research. Students also undertake a minor study program designed to provide a broader understanding of the field of injury prevention beyond the chosen thesis topic.

### Career Outlook

Through their research MUARC candidates contribute to the reduction in road fatalities, play a role in workplace safety and improve home and recreational safety. Our PhD candidates are highly sought after and have moved in to successful careers in injury prevention locally, nationally and internationally, in industry, government and research centres, including careers at MUARC.

### Course Details

**Course code:** 2602

**Duration:** 4 years full-time, 8 years part-time

**Campus:** Clayton

**Intake:** Throughout the year

**Entry requirements:** All applicants must meet the minimum academic requirements for entry into a higher degree by research at Monash University.

**2009 annual domestic fee:** Research Training Scheme

[www.monash.edu/muarc/postgraduate](http://www.monash.edu/muarc/postgraduate)

\* Domestic fee per 48 credit points. 48 credit points represents a standard full-time course load for a year. Courses with fewer or more credit point values, such as part-time courses, will attract a proportionate amount. For more information see Page 144.