2012
DEGREE AND
DIPLOMA
ENGINEERING

IMPROVE
THE WORLD
WE LIVE IN
‘The degree teaches you teamwork and develops great problem solving skills. We have to design projects and work together, and the lecturers really encourage you to actively learn. ‘My biggest achievement so far has been creating a traffic light system. It was really satisfying to create something from scratch, using wires, chips, programming, and using all the knowledge you have to create something that actually works!’

Danielle Browne (cover image)
Bachelor of Engineering (Electrical Engineering)/Bachelor of Business (Management)

IMPROVE THE WORLD WE LIVE IN

As an engineer you will be solving complex problems and finding ways to turn scientific discoveries into practical applications. RMIT’s wide range of specialised programs allows you to focus your skills in the area that interests you most:
» aerospace and aviation
» automotive and mechanical engineering
» biomedical engineering
» chemical engineering
» civil engineering
» computer and network engineering
» electrical engineering
» electronic and communication engineering
» environmental engineering
» mechatronics and sustainable systems engineering
» surveying and spatial information
» trades and technology.

All RMIT programs are work relevant and recognised by local and international industry leaders. Engineering degrees include 12 weeks of compulsory hands-on industry experience. You may also choose to take part in RMIT’s International Industry Experience and Research Program, which offers students the chance to work with some of the world’s leading companies in North America and Europe.

What will you contribute to the wider world?

WHETHER
DEVELOPING RENEWABLE ENERGY
OR SENDING PEOPLE TO MARS—ENGINEERS MAKE IT HAPPEN!

‘A highlight of my studies has been joining the Formula SAE team, which has taught me a lot, not only about engineering concepts, but how to work in a professional environment. ‘I would tell anyone considering a career in engineering to go for it! Engineering is challenging and fun, and leads to a very rewarding career. And it’s not just for boys.’

ROBYN LEE, BACHELOR OF ENGINEERING (AUTOMOTIVE ENGINEERING)
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**INTERACT WITH RMIT**

You can now interact with RMIT through several web, mobile and social networking tools listed at www.rmit.edu.au/interact

- www.facebook.com/RMITUniversity
- http://twitter.com/rmit
- www.youtube.com/user/rmitmedia
The Advanced Diploma of Engineering (Aeronautical) provides advanced technical and managerial training for technicians and engineers working in aerospace manufacturing, design and maintenance at a paraprofessional level. Aircraft maintenance engineers install, maintain and repair aircraft engines, airframes, airframe systems, electricity, instruments, radio systems and aircraft sheet metalwork. Specialist areas include aircraft design and layout, avionics (electrical, electronic, instrument and radio systems), mechanical (fault diagnosis of airframe and engine systems) and structures (producing, maintaining and repairing sheetmetal, bonded and non-metallic composite material and components on aircraft). You will develop the necessary industry skills to work in small, medium and large enterprises and the defense forces.

The program has been developed through extensive consultation with industry to address identified training needs and establish structured career pathways.

What you will study
The advanced diploma will extend your skills and knowledge of aerospace engineering. You will learn aerodynamics and stability analysis, problem solving and high-speed flight, as well as skills in aerospace mechanisms and power transmission devices.

Aircraft and control concepts and integrated control systems are introduced, covering areas including automatic flight controls, multi-axis stability and design and operation of power assisted controls.

Training in avionics systems includes the principles, purpose and operation of aircraft fluid power systems. Aerospace drawing is also covered.

You will learn how to undertake technical investigation, reporting and troubleshooting for the aerospace industry.

Career outlook
Graduates may find work in a range of roles including:
- avionics engineer
- production supervisor/planner
- maintenance supervisor/planner
- technical officer
- systems technician
- design supervisor
- quality supervisor
- drafting supervisor

Professional recognition
The advanced diploma is nationally accredited and is recognised by industry, defense forces and universities.

Prerequisite
There are no prerequisite studies.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered. Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates may be eligible to apply for exemptions of up to two years from the following degree:
- Bachelor of Engineering (Aerospace Engineering)

RACHEL ONG
Bachelor of Engineering (Aerospace Engineering)

'I have always been extremely interested in aerodynamics and the science involved in extracting every ounce of performance from a vehicle using aerodynamic styling and principles. However, I also had an interest in flight. How could you not wonder how planes fly in the air? Or how helicopters can carry tanks? In the end, what drew me to the aerospace degree was the broader career opportunities and the guarantee of overseas work experience.

'I chose to study at RMIT because of the University's industry contacts, well-established program and excellent reputation.

'Since beginning the degree, I have learned indispensable skills that enable me to work effectively as part of a team and the importance of time management. The people I have met and amazing friends I have made has been a real highlight.

'I was lucky enough to land a job as a student educator at the Victorian Space Sciences Education Centre (VSSEC) while volunteering for Siemen's Science Experience, where I was able to show kids how many opportunities there are in the field of space sciences. The way they became more involved as they day went on, asking a million questions and staying focused intently on the task at hand, was so satisfying.

'In April, I will embark on my first overseas trip for work experience with EADS in Manching, Germany. I can't wait! At the end of my internship, I hope to apply for and complete my thesis overseas before eventually returning to Melbourne to finish my degree. Living, studying or working overseas has always been high on my agenda and I am certain that my time overseas will contribute greatly to the quality of my degree and my career prospects.'
AEROSPACE ENGINEERING

BP069 Bachelor of Engineering (Aerospace Engineering)
Duration: FT4 or PTA — X
2011 ATAR: 88.40
www.rmit.edu.au/programs/bp069
CITY AND BUNDOORA CAMPUSES

Aerospace engineering is an exciting profession focusing on the analysis, design and operation of sophisticated aerospace hardware and software systems. The term ‘aerospace’ includes atmospheric and space flight.

As with all fields of engineering, aerospace engineering is complex and demanding, requiring talented, creative and highly motivated people. Those considering the aerospace engineering degree need well-developed skills in mathematics and physical sciences, as aerospace is a highly analytical field of engineering. In addition, you must have excellent communication skills.

The aerospace industry in Australia is international and export-oriented. The emphasis is firmly on value-added design and manufacture activities that are internationally competitive and that make effective use of RMIT’s excellent standard of aerospace education.

The degree equips you with the analytical, technological and managerial skills required to practise aerospace engineering. You will also learn to appreciate the wider social implications of the engineering profession, while generating innovative engineering concepts.

Working with industry
You are strongly advised to obtain a minimum of 12 weeks of vacation employment, allowing you to gain first-hand experience in an engineering practice environment in which professional engineers are involved. This employment is typically undertaken in the vacation prior to final year.

Opportunities also exist for an overseas work placement of between six and 12 months duration that satisfies the work experience requirement. These placements are normally taken during a one-year break in the middle or at the end of the third year of the degree.

You will also have the opportunity to work with industry leaders on real-world projects in your final year. Projects will use the theory and practical experience gained through the program to solve a problem.

What you will study
The degree is composed of core discipline areas covering essential material and elective studies. You may tailor your education to satisfy your developing interest in aerospace and enhance your career opportunities. Core discipline areas include engineering design, engineering practice, engineering professional development and engineering sciences courses. Sustainability issues are built in to multiple areas of the program in line with the increasing demand for long term solutions in this area.

These studies are contained within the aerospace disciplines of aerodynamics, aerospace materials and structures, aerospace systems, design, dynamics and control, mathematics, professional skill development, structural analysis, thermodynamics, aerospace propulsion and engineering project management. Specific aerospace focus commences in the first semester of the program.

Additionally, second and final year students will take part in a Micro Air Vehicle (MAV) Challenge where they will design, build and fly a MAV in a simulated search and rescue mission.

Career outlook
The most likely destinations for graduates are:
- design and manufacturing companies including Boeing Australia, EADS (Airbus), Hawker de Havilland, BAE Systems Australia, GKN Aerospace Engineering Services and Aerostructures and Australian Aerospace
- defense forces: Royal Australian Navy, Australian Army and Royal Australian Air Force
- Defence Science and Technology Organisation
- passenger transport airlines in Australia and internationally
- airworthiness organisations: Civil Aviation Safety Authority, Department of Defence
- general aviation.

Aerospace engineering graduates are also in high demand in non-aerospace organisations.

Professional recognition
The Bachelor of Engineering (Aerospace Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections
RMIT offers a range of excellent Study Abroad and exchange opportunities including an agreement with NUAA (Nanjing University of Aeronautics and Astronautics, China) providing aerospace engineering students with an opportunity to take part in an international exchange program. Each year second year students are selected to attend the program, which runs from early September to the middle of January the following year. Students will gain credit points for their studies, which will include: elementary Chinese, aerodynamics, experimental aerodynamics, project: design of aircraft, course: design of aircraft, optimisation design of structures.

Prerequisite
Units 3 and 4 — mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC PI form, available online at www.vtac.edu.au, if they wish other information to be considered.
Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Mechanical) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Aerospace Engineering).
Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.
Graduates of the following programs may also be eligible to apply for exemptions:
- Advanced Diploma in Engineering (Aeronautical)
- Advanced Diploma of Engineering (Aerospace—Mechanical)

You may also be interested in...
- Aerospace engineering/management (page 5)
- Aviation (page 7)

Legend: FT — Full-time (number of years); PT — Part-time (number of years); RC — A range of selection criteria applied; N/A — Not available; D — Degree program; T — TAFE program
See page 57 for application details: V — VTAC; X — RMIT Direct; D — RMIT School; X — Extra requirement
‘I chose RMIT because of its reputation of supplying great hands-on experience for its graduates. It also had a long-running aerospace program and a good record for aerospace students gaining employment after graduating.

‘A highlight of my studies has been an excursion to see the RMIT plane at Essendon airport. This visit helped me to see the particular components of a plane, its size and how each component worked. Being able to observe a plane at close range made it easier to learn about, and was both stimulating and enjoyable.’

Kariza Martin
Bachelor of Engineering (Aerospace Engineering)/Bachelor of Business (Management)
AEROSPACE ENGINEERING/ MANAGEMENT

BP071 Bachelor of Engineering (Aerospace Engineering)/ Bachelor of Business (Management)

Duration: FT5 — V X

Years one and two are conducted on the City campus and years three to five are shared between the City and Bundoora campuses. The management component is studied on the City campus for all five years.

2011 ATAR: 95.05
www.rmit.edu.au/programs/bp071

CITY AND BUNDOORA CAMPUS

Aerospace engineering is an exciting profession concerned with the analysis, design and operation of sophisticated aerospace hardware and software systems. The term ‘aerospace’ includes atmospheric and space flight. Aerospace engineering is complex and demanding, requiring talented, creative and motivated people. If you are considering entering the aerospace engineering degree you will need well-developed skills in mathematics and physical sciences, as well as good communication skills.

Management involves the planning, organising, coordination and direction of the resources of organisations. The manager draws on technical skills as diverse as accounting and organisational behaviour, and builds on personal abilities including analysis and leadership. Many graduates of this double degree move into management roles soon after graduating, as the double degree meets the needs of those who seek management education.

Working with industry

You are strongly advised to obtain a minimum of 12 weeks of vacation employment of a type that allows you to gain first-hand experience in an engineering practice environment in which professional engineers are involved. This employment is typically undertaken in the vacation prior to final year.

Opportunities also exist for an overseas work placement of between six and 12 months duration, which satisfies the work experience requirement. These placements are normally taken during a one-year break at the middle or end of the third year of the program.

You will also have the opportunity to work with industry leaders on real-world projects in your final year. Projects will use the theory and practical experience gained through the program to solve a problem.

What you will study

The double degree is composed of core courses that cover material essential for all students in the program, and elective courses through which you may tailor your degree.

Core discipline areas include engineering design, engineering practice, engineering professional development, engineering sciences and business courses. These studies are contained within the aerospace disciplines of aerodynamics, aerospace materials and structures, aerospace systems, design, dynamics and control, mathematics, professional skill development, structural analysis, thermodynamics, aerospace propulsion and engineering project management. Specific aerospace focus commences in the first semester. Sustainability issues are built in to multiple areas of the program in line with the increasing demand for long-term solutions in this area.

Additionally, second and final year students will take part in a Micro Air Vehicle (MAV) Challenge where they will design, build and fly a MAV in a simulated search and rescue mission.

Through the business management studies, you will investigate the themes of management skills, business skills, professional specialisations and business experience. Specialisations may include management, employment relations, management accounting and finance, human resource management and marketing.

Career outlook

The double degree gives graduates the opportunity to find work in management roles soon after graduation.

Graduates may find work in:

» design and manufacturing companies including Boeing Australia, EADS (Airbus), Hawker de Havilland, BAE Systems Australia, GKN Aerospace Engineering Services and Aerostuctures and Australian Aerospace
» defence forces: Royal Australian Navy, Australian Army and Royal Australian Air Force
» Defence Science and Technology Organisation
» Australian and international airlines
» airworthiness organisations: Civil Aviation Safety Authority, Department of Defence

Aerospace engineering students with an engineering background may be eligible to transfer to the aerospace engineering students with an engineering background may be eligible to transfer to Bachelor of Engineering (Aerospace Engineering) program and gain credit points for their studies, which will include: elementary Chinese, aerodynamics, experimental aerodynamics, project: design of aircraft, course: design of aircraft, optimisation design of structures.

Professional recognition

The Bachelor of Engineering (Aerospace Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord.

www.engineersaustralia.org.au
www.washingtonaccord.org

By selecting appropriate studies, graduates of the business program may be able to obtain professional membership of the Australian Human Resources Institute or CPA Australia.

www.ahri.com.au
www.cpaaustralia.com.au

Global connections

RMIT offers a range of excellent Study Abroad and exchange opportunities including an agreement with NUAA (Nanjing University of Aeronautics and Astronautics, China) providing aerospace engineering students with an opportunity to take part in an international exchange program. Each year second year students are selected to attend the program, which runs from early September to the middle of January the following year. Students will gain credit points for their studies, which will include: elementary Chinese, aerodynamics, experimental aerodynamics, project: design of aircraft, course: design of aircraft, optimisation design of structures.

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Aerospace engineering (page 3)
» Aviation (page 7)
AIRLINE PILOT

C6009* Diploma of Air Transport (Airline Pilot)  
Duration: FT1 —  
2011 ATAR: RC  
www.rmit.edu.au/programs/c6009  
* Program code is subject to change due to anticipated revision of the training package at a national level.  

POINT COOK AIRFIELD  
Looking for a career that really takes you places? The Diploma of Air Transport (Airline Pilot) is designed for those with little or no flying experience. You will be provided with the flight training necessary to obtain a Commercial Pilot's Licence, as well as the theory component to an Instrument Rating and Air Transport Pilot's Licence.  
The program has been designed in consultation with an industry advisory committee consisting of senior pilots/operations personnel from major airlines and aerospace organisations.  
The program is conducted at RMIT Flight Training, located at Point Cook Airfield, which offers various types of airspace, terrain and urban development to maximise variety in navigational experience.  

What you will study  
Single-engine Aircraft  
» Cessna 172S  
» Cessna 182T  
» Decathlon 8KCB  
» Frasca 242: Simulator  
Dual flight instruction inclusive of unlimited pre- and post-flight briefing time, Private Pilot Licence Theory, Commercial Pilot Licence Theory, Air Transport Pilot Licence Theory, and Instrument Rating Theory. Total syllabus is 160 hours flying.  
Optional Flying Programs (additional fees apply)  
Twin-engine endorsement  
Inclusive of ground school (tuition)  
» Piper Seminole PA44 (Twin Engine) — 7 hours  
» Frasca 242 Simulator — 3 hours  
Additional Pilot in Command (PIC) experience  
You may wish to undertake additional solo flying (particularly relevant to international students who may need to meet minimum hour requirements from overseas aviation regulators). For example, 30 hours additional flying as Pilot in Command (single-engine or twin engine following twin endorsement).  
Multi-engine/Command Instrument Rating (ME/CIR)  
Inclusive of unlimited pre- and post-flight briefing time, theory tuition and briefings.  
Forty hours* of dual flight instruction (twin-engine includes first attempt test fee) with a combination of:  
» Frasca 242 Simulator — 20 hours  
» PA44 Seminole (including flight test) — 20 hours  

Instructor Rating  
Includes all tuition, methods of instruction and flight training briefings.  
Fifty hours* of flight training (single-engine includes first attempt test fee) with a combination of:  
» Dual flying with instructor — 30 hours  
» Mutual flying (two students) — 20 hours  
* Hours quoted are CASA minimum requirements.  

Career outlook  
You will graduate with a CASA Commercial Pilots Licence. Additional ratings or endorsements may be necessary in order to secure initial employment. Graduates should have researched and have an understanding of initial employment opportunities for newly graduated pilots. Initial job opportunities build pilot experience and may involve relocating to remote areas for charter or outback station flying, casual work locally for parachute dropping operations, sightseeing flights, seasonal fire spotting, seasonal beach patrols, or (with an Instructor Rating) instructing.  
With additional ratings and endorsements and experience gained it is possible to secure jobs in multi-engine charter operations flying higher performance aircraft, regional airlines, or high performance general aviation activities such as flying doctor or coast watch services.  
Employment opportunities in the role of First Officer exist in major airlines with experience gained over a period time in the situations described above.  
In some cases major airlines accept applications from pilots with limited experience for the position of Second Officer, sometimes known as a Cruise Pilot.  
With further experience and managerial qualifications, you may also seek employment with major airlines as a Chief Pilot, Fleet Manager, Flight Operations Manager, or with an aviation regulator as a Flight Operations Inspector.  

Professional recognition  
This program exceeds the minimum 150 hour CASA requirements. RMIT University is the holder of an Air Operators Certificate granted by CASA and authorising flight training activity.  
Prerequisite  
There are no prerequisite studies.  
Note: mathematics and physics are highly recommended.  
Extra requirements  
Students are required to undergo a CASA Class 1 Medical Examination performed by a medical practitioner known as a Designated Aviation Medical Examiner (DAME). For details please visit www.casa.gov.au/avmed  
Please refer to the 2012 VTAC Guide for full details on extra requirements.  
Pathway  
Graduates may be eligible to apply for exemptions from the Bachelor of Applied Science (Aviation).  
You may also be interested in…  
» Aviation (page 7)
AVIATION

BP070 Bachelor of Applied Science (Aviation)
Duration: FT3 or PTA—V
2011 ATAR: 80.35
www.rmit.edu.au/programs/bp070

CITY CAMPUS

Aviation is a dynamic and vibrant global industry which underpins enormous commercial and social benefits. The aviation industry is highly competitive and needs well-trained individuals capable of working effectively within a rapidly changing environment.

RMIT has been involved in aerospace and aviation education and training for over 60 years. RMIT’s suite of aerospace and aviation programs produces graduates who are equipped to be effective in their chosen industry in a wide range of roles and levels. RMIT graduates continue to be highly employable.

The Bachelor of Applied Science (Aviation) degree is designed to prepare you for employment in a range of operational management and planning roles within the aviation industry. These include airline operations management, airport land-side operations, airport air-side operations, airport planning, aviation safety management, airline maintenance management and supervision.

The degree offers a career development option for people who already hold a Commercial Pilot’s Licence. Commercial pilots also receive one year advanced standing credit towards this degree. You will gain a broad awareness of the aviation industry and a range of analytical skills that will enable you to work with a comprehensive appreciation of the operating environment for this special industry.

As a graduate, you will be able to demonstrate breadth and depth of thinking to be able to solve problems in the aviation industry workplace.

Working with industry

In the first year of the program, industry based professionals deliver guest lectures that are designed to enhance your understanding of the aviation industry.

What you will study

The Bachelor of Applied Science (Aviation) degree combines studies in core discipline areas with elective studies that enable you to tailor your degree and to enhance your career opportunities. Areas of study include:

» Technical studies through which you develop an understanding of aircraft and aviation systems.
» Professional development courses where project activities develop and integrate discipline-specific skills and generic capabilities that are widely used across any profession.
» Industry systems and processes through which you develop knowledge and skills in planning and management.
» The specifics of planning and management relevant to the aviation industry, taking account of risk, safety, human factors, the industry environment, and other key themes.

Career outlook

Graduates may choose to embark on professional careers in the following areas:

» airline management
» airline operations
» airport management
» airport operations
» airport planning
» aviation charter business
» aviation consulting
» aviation regulation and safety.

Prerequisite

Units 3 and 4—mathematics (any) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Qualified commercial pilots and others with experience in the aviation industry are particularly encouraged to apply.

Pathway

Graduates of the following program may be eligible to apply for exemptions:

» Diploma of Air Transport (Airline Pilot)

Students with relevant qualifications who are successful in gaining a place in the degree may apply for advanced standing. Applications for recognition of prior learning are considered on a case-by-case basis.

You may also be interested in…

» Aerospace engineering (page 3)
» Aerospace engineering/management (page 5)

JAMUNA BOODHRAM

Bachelor of Applied Science (Aviation)

‘My sister, who works for Emirates Airlines, inspired me to study aviation science. I have always wanted a challenging career and not just a nine-to-five job, and aviation seemed to be ideal. ’I chose RMIT because it is ranked among the best universities in Melbourne for engineering, and the aviation degree is really well structured. ’The aviation degree is great preparation for work. The assignments are challenging and emphasise case studies, so we apply what we are learning to real situations.

’A highlight of my studies so far has been researching my own project on the Emirates Airlines route network and product strategies in a global perspective. Applying theory to a practical problem will help me when applying for work in the future.

’I have enjoyed studying the human factors in aviation. Safety is crucial and I have learned how to ensure a safe workplace. I also liked the aircraft systems course because it contained a lot of engineering detail. I have also gained team leadership skills and have become more responsible and self-reliant. These are very useful attributes to have. ’Because I’m studying something that I enjoy, I know that whatever situation I face at work in the future, my job will be satisfying.’
What you will study
Automotive engineering courses include:

Vehicle power systems
An introduction to the development, design, specification, and operation of internal combustion engines for mobile applications with a focus on traditional spark-ignited and diesel engines. It also covers alternative power plants and fuels.

Sustainable vehicle design and Sustainable automotive manufacturing
Tackle and solve advanced engineering problems, particularly in the structural design and manufacturing of vehicles and automotive components. The course represents the basis for the analysis and solution of problems related to modern automotive sustainable design and manufacturing and advanced computer modelling techniques of real engineering problems.

Vehicle handling and control
Covers performance prediction relatively early in the design process and identifies the conflicts in designing for optimal performance in different modes.

Vehicle aerodynamics
Emphasis is placed on solving aerodynamic problems using a balance of computation and experimental techniques. The growing influence of styling on body shape is approached from both an artistic and a scientific viewpoint.

Vehicle noise and vibration
Understand the nature of sound, effectively document human non-linear response to sound, understand the automotive body structure design for improved noise and vibration, and characterise the relationship between noise and vibration. Appreciate the difference between structure-borne and air-borne sources.

Career outlook
Future vehicles will have extremely low or zero emissions, use less fossil-based fuels and be characterised by low levels of noise and vibration. Advanced computer-aided engineering (CAE) will further assist automotive engineers to optimise their design for lighter and high performance cars. Vehicles will feature advanced smart sensors and smart materials to offer higher levels of passenger safety and comfort. Automotive engineers are employed by major car, truck and bus companies, as well as racing teams and parts manufacturers.

Graduates from RMIT are working in F1 teams, Porsche, Ford, General Motors, Toyota, Audi, BMW, Daimler-Chrysler and Bosch.

Professional recognition
The Bachelor of Engineering (Aerospace Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord.

www.engineersaustralia.org.au
www.washingtonaccord.org

The degree also satisfies the requirements of the Society of Automotive Engineers, Australia for graduate membership.

www.sae.com.au

Global connections
One of the buzzwords in automotive engineering is ‘globalisation’. Car companies are linking up around the world, and mergers and takeovers are common. Many manufacturers produce vehicles for the world market. Engineers are increasingly expected to move around the world, and some manufacturers use Australia as the base for launching models into South East Asia. Reflecting this international theme, RMIT has strong links with universities and automotive companies worldwide.

You can elect to take some courses in European universities, and student exchanges and industrial placements have taken place with Germany, Switzerland, France, the UK and USA.

Prerequisite
Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Mechanical) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Automotive Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

Graduates of the following programs may also be eligible to apply for exemptions:

» Advanced Diploma of Engineering Technology (Mechanical and Manufacturing)
» Advanced Diploma of Engineering Technology (Principal Technical Officer)

You may also be interested in...

» Mechanical engineering (page 11)
» Mechanical engineering/management (page 12)
‘I chose the Associate Degree in Engineering Technology (Mechanical) because it provided a more one-to-one teaching method with lecturers as your guides, and offers practical courses with RMIT’s hands-on-approach.
‘The associate degree has tested my ability to think outside the box, solve real-life problems and make life-changing decisions.
‘I was promoted to degree halfway across my foundation studies year, thereby choosing associate degree. My RMIT lecturers have not only taught us what’s in the book, but also how our decisions and actions affect the people around us. So far learning about how a car works and modifying it has been a major part of my first year!
‘My favourite course was engineering materials—it’s not about the calculations or remembering the periodic table by heart, but learning about how you can shape a metal, plastic or any other materials and use it for different purposes. My lecturer created a friendly environment, which helped me to understand better what was being taught and what can be done through this knowledge.
‘I’d like to keep studying at RMIT and hopefully go on to be a successful automotive engineer by representing RMIT at big firms like BMW or Holden.’
Aakash Sachdev
Associate Degree in Engineering Technology (Mechanical)
MECHANICAL ENGINEERING

AD002  Associate Degree in Engineering Technology (Mechanical)

duration:  FT2—X

2011 ATAR: 52.95

www.rmit.edu.au/programs/ad002

CITY CAMPUS

The Associate Degree in Engineering Technology (Mechanical) provides training in the basic engineering skills, which can provide you with a pathway into degrees in aerospace engineering, automotive engineering and mechanical engineering.

Mechanical engineers apply their knowledge of materials, structures, energy and management to design, analyse and improve a range of products. These can include refrigerators, washing machines, solar water heaters, pumps, engines, compressors, wind turbines and air-conditioning systems.

The second year of the associate degree will allow you to specialise in aerospace engineering, which focuses on the design, development, manufacture and maintenance work of all types of flight vehicles.

Associate degrees are relatively new qualifications in Australia. The degrees are broad-based and allow you to develop employment-related skills relevant to your discipline/s.

Associate degree graduates will have diverse job opportunities in areas such as mechanical design, aircraft systems and automotive manufacturing.

Classes are taught through a combination of lectures, seminars, tutorials, online reading, workshop, practical and laboratory sessions.

Working with industry

In the final semester you will undertake an engineering project.

Projects topics are developed by you with industry partners and your lecturers. You will be required to design, develop and present a product. Past projects have included:

» Design and development of a miniature gas powered F1 racing car. This car was designed using CAD/CAM software to analyse, manufacture, test. At the completion of the project the vehicles are competitively raced.

» Using CAD/CAM processes you will design, build and fly an unmanned aerial vehicle (UAV). This project culminates in a competition focusing on time of flight and flight control.

The engineering project is carried out either in conjunction with industry or simulates a real engineering work environment.

What you will study

Year one

Year one covers basic engineering skills including drafting, use of hand and power tools, and machine processes and manufacture.

Electrical fundamentals, and the basic concepts of AC motors, electrical concepts and PLCs are covered, along with the use of CAD to produce complex drawings.

You are introduced to materials engineering, which includes metals, composites, plastics and adhesives. You will learn the processes used to construct objects from these materials and the external factors that can change the effectiveness of these materials.

Basic management techniques include organisational management, teamwork, leadership, and sustainability and environmental impacts.

You will build on your secondary school mathematics and lay the foundation for more advanced mathematics.

Year two

During second year, you will be able to specialise in either automotive/mechanical or aerospace engineering.

The automotive engineering/mechanical stream will include studies in thermo-fluids, while the aerospace stream introduces you to aerodynamics and aircraft systems and integration.

You will also be required to undertake an engineering project.

Career outlook

Graduates will have diverse job opportunities in areas including mechanical design, aircraft systems and automotive manufacturing.

Areas of employment include the automotive industry, computer design and manufacture, high-speed automation, aviation and biotechnology, engineering and management consultancy.

You will also be able to fill a diverse range of middle management positions.

Professional recognition

Graduates are eligible to seek membership of Engineers Australia at the engineering officer level.

www.engineersaustralia.org.au

Global connections

You have the opportunity to apply for a one semester exchange with VIA University College Denmark in the final year of the program.
MECHANICAL ENGINEERING

BP066 Bachelor of Engineering (Mechanical Engineering)

Duration: FT4 or PTA
2011 ATAR: 84.20
www.rmit.edu.au/programs/bp066
CITY AND BUNDOORA CAMPUS

Mechanical engineering involves the conversion and control of energy and motion in machinery and systems. Mechanical engineers apply knowledge of materials, structures, energy and management to the solution of technical problems. They design, analyse and improve products as diverse as refrigerators, washing machines, solar water heaters, pumps, engines, compressors, wind turbines and air-conditioning systems.

Working with industry
You are expected to complete a minimum of 12 weeks of relevant vacation employment that allows you to gain first-hand experience in an engineering practice environment in which professional engineers are involved. This is typically undertaken in the vacation prior to your final year. Australian students may choose to do a one-year industry placement position at the middle or end of third year either in Australia or overseas. This allows you the opportunity to gain academic credit, and is a valuable paid industrial experience which may lead to future employment. This optional industry placement may increase the time to graduate by six or 12 months. In the final year of your studies you will undertake a major project that is either industry based or simulates an industrial situation.

What you will study
In the first six semesters, you will study basic mechanical engineering and science courses aimed at developing competence in essential analytical problem-solving skills and design capabilities.

Courses dealing with professional practice include report writing and other communication skills, and work modules on organisations, ethics, design and build activities, project management, occupational health and safety, and sustainability. These courses support the development of leadership skills, initiative, self-reliance, personal and group organisation skills, and encourage a sense of group responsibility and accountability.

In the later stages of the degree, you are able to tailor your study program by specialising in the general field of mechanical engineering and other areas such as manufacturing, automotive, business, mathematics or computing.

The program offers specialisations centred on the following:
» computer-aided engineering and design
» industrial aerodynamics and computational fluid dynamics
» energy conservation and renewable energy
» mechatronics, dynamics and control.

The degree has strong design and analysis elements, applied to specific industry problems. The degree has a common core with the automotive engineering degree for the first four semesters and shares some specialist electives. The major project, normally undertaken in final year, and some engineering design courses are frequently linked with industry.

Career outlook
Job opportunities exist in the design, manufacture and testing of Australian-built cars; the design, specification and installation of large air conditioning systems; the design of materials handling systems in the packaging and mining industries; power generation; construction and maintenance in the petrochemical industry; the design of Victoria's trains; computerised control in the pharmaceutical industry; the aeronautical industry; the implementation of new manufacturing methods in the electronics industry; the development of engineering computer software; research and development in industry and other technical institutions; technical sales in the marketing divisions of engineering companies; and engineering management in large and small organisations, both in Australia and overseas.

Professional recognition
The Bachelor of Engineering (Mechanical Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be gained after a period of approved professional experience. As a graduate of this degree, you may also be eligible to join professional bodies relevant to your area of specialisation.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections
Opportunities are available to students to carry out a work placement overseas with industry partners. Additionally, the option to link with a multinational organisation is available for final year projects.

Prerequisite
Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC R1 form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Mechanical) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Mechanical Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

Graduates of the following programs may also be eligible to apply for exemptions:
» Advanced Diploma of Engineering Technology (Mechanical and Manufacturing)

You may also be interested in...
» Advanced manufacturing and mechatronics (page 45)

Legend: FT—Full-time (number of years); PT—Part-time (number of years); RC—A range of selection criteria applied; N/A—Not available; D—Degree program; T—TAFE program
See page 57 for application details: V—VTAC; X—RMIT Direct; R—RMIT School; X—Extra requirement
MECHANICAL ENGINEERING/ MANAGEMENT

BP068 Bachelor of Engineering (Mechanical Engineering)/ Bachelor of Business (Management)

Duration: FTS 5

Years one to three are conducted on the City campus and years four and five are shared between the City and Bundoora campuses. The management component is studied on the City campus for all five years.

2011 ATAR: 90.05

www.rmit.edu.au/programs/bp068

CITY AND BUNDOORA CAMPUSES

Mechanical engineering involves the conversion and control of energy and motion in machinery and systems. Mechanical engineers design, analyse and improve products as diverse as refrigerators, washing machines, solar water heaters, pumps, engines, compressors, wind turbines and air-conditioning systems. They apply knowledge of materials, structures, energy and management to the solution of technical problems.

Management involves the planning, organising, coordination and direction of the resources of organisations. The manager draws on technical skills as diverse as accounting and organisational behaviour, and builds on personal abilities including analysis and leadership.

Working with industry

You are expected to complete a minimum of 12 weeks of relevant vacation employment that allows you to gain first-hand experience in an engineering practice environment in which professional engineers are involved. This is typically undertaken in the vacation prior to your final year.

In the final year of your studies you will undertake a major project that is either industry based or simulates an industrial situation.

What you will study

The degree consists of core mechanical engineering and management courses, and elective courses from the two disciplines. The electives on offer enable you to develop specialist skills in areas of particular interest to you.

Electives within mechanical engineering offer specialisations centred on the following main areas of project work, research and staff expertise:

» computer-aided engineering and design
» industrial aerodynamics and computational fluid dynamics
» energy conservation and renewable energy
» mechatronics dynamics and control.

Career outlook

Job opportunities exist for graduates within the automotive and transport industries; petrochemical and mineral processing industries; energy supply; building services; defence forces; government; or general engineering and consultancy organisations.

This double degree gives graduates the opportunity to propel themselves into management roles soon after graduation.

Global connections

The option to link with a multinational organisation is available for final year projects.

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

» Advanced manufacturing and mechatronics (page 45)
» Aerospace engineering (page 3)
» Automotive engineering (page 8)
» Mechanical engineering (page 11)

Past projects have included the design and development of a miniature gas-powered F1 racing car.

extra requirements
Biomedical engineering is a new degree for 2012. Graduates of this degree will be able to apply their skills in the health and community services fields. People in medical roles use increasingly complex technology. There is growing demand for people who can work on the technical side of technology, to design and improve devices, as well as to understand how it relates to the needs of clinical medicine.

Biomedical engineers design systems ranging from cardiac monitors to clinical computers, artificial hearts to contact lenses, wheelchair to artificial tendons and limbs.

The degree covers several areas of engineering, including electronics, mechanical, chemical and materials engineering, as well as biomedical sciences.

The degree also focuses on problem-solving and communication skills. These skills, combined with the technical knowledge you will learn, will help you to think critically and independently. You will be able to come up with innovative ways to apply science and engineering to biomedical and health care.

**Working with industry**

In addition to the compulsory 12 weeks of work experience required, students will have the opportunity to complete industry-sponsored projects.

Final year students can apply for summer research scholarships.

**What you will study**

In this degree you will study courses from many areas of RMIT University. This will provide you with knowledge in a number of different fields, including physics, mathematics, biochemistry and medical science.

In the first years of the degree you will study the fundamentals of engineering, along with the basics of biology, anatomy and physiology.

In the engineering field, you will learn about electronics in relation to biomedical applications, as well as nano-electronics. You will also study fundamental sciences including biomechanics, biomaterials and human physiology.

You will study both compulsory and elective courses. The range of choice will help you select courses according to your own interest and chosen specialisation.

You will also complete major design projects in third and fourth year that are very similar to the work of practising engineers. These projects are designed to make you industry-ready.

**Career outlook**

One of the biggest industries in Australia in terms of research and government funding is biotechnology. This vibrant, expanding industry produces devices for medical electronics, clinical and rehabilitation engineering and biomaterials.

There are wide-ranging employment opportunities for graduates, including work in hospitals (servicing and optimising equipment), medical device manufacturing, nanotechnology and biotechnology.

Graduates are employed as regulators in government organisations, or as researchers for government, universities or private companies.

You can also work in private medical and pathology laboratories.

**Professional recognition**

Accreditation is being sought with Engineers Australia. Once fully accredited, graduates of the program will be recognised as professional engineers in all member countries of the Washington Accord.

www.engineersaustralia.org.au

www.washingtonaccord.org

**Global connections**

RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

**Prerequisite**

Units 3 and 4—mathematics (any) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

**Extra requirements**

All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Electrical and electronic engineering (page 31)

» Electronic and communication engineering (page 37)

See the science brochure for more information on:

» Biological science

» Biotechnology
### APPLIED CHEMISTRY/ CHEMICAL ENGINEERING

**BP225 Bachelor of Science (Applied Chemistry)/ Bachelor of Engineering (Chemical Engineering)**

**Duration:** FT5—

**2011 ATAR:** N/A

**www.rmit.edu.au/programs/bp225**

**CITY CAMPUS**

This program combines the studies in applied chemistry and chemical engineering and gives you the skills to help you deliver processes that could change the world.

The program includes in-depth studies in chemistry and analytical science, along with the full range of chemical engineering courses that will put you at the forefront of developing new and established technologies.

**Why double-up?**

As a graduate with a multidisciplinary qualification, you will be highly employable as you will have a better understanding of the requirements of team members from both specialties. You will interact with a wide range of relevant industries and broaden your career prospects.

**Working with industry**

Many courses are designed in collaboration with industry partners and people working in the industry are often invited to talk about their jobs and the opportunities available to you.

Industry field trips will allow you to see first-hand how the industry works.

You may also complete 12 weeks of professional engineering work experience, giving you the opportunity to put what you have learnt into practice and discover the career you would like to pursue when you graduate.

Final year projects will give you the opportunity to work on industry-based problems. In addition, selected students travel to the Alcoa mines and refineries in Western Australia to see large-scale mineral extraction and processing.

### What you will study

**Year one**

You will be introduced to the fundamentals of chemical engineering design, combined with chemistry theory and laboratory skills. Sustainable engineering is also introduced.

**Year two**

An example of courses studied include:

- Analytical spectroscopy
- Biochemical engineering
- Fluid flow and particle mechanics
- Heat and mass transfer
- Instrumental and environmental analysis
- Mathematics for engineers
- Process thermodynamics
- Reaction engineering.

**Year three**

You will select your chemical engineering specialisation:

- Chemistry theory and laboratory
- Process control and simulation
- Process principles.

**Year four**

An example of courses studied include:

- Advanced instrumental analysis
- Engineering experimental investigation
- Environmental and hazard analysis
- Process plant design and economics.

**Year five**

The focus in your final year is on your design and research projects, which will depend on your specific area of interest. These projects give you the edge in a wide range of industry roles.

### Career outlook

As a graduate of a multidisciplinary qualification, you will be highly employable. Graduates are employed in a range of chemical industries in Australia, typically in the areas of oil and gas, food, biotechnology, pharmaceuticals, agricultural chemicals and polymers. In the process design sector, RMIT graduates typically work on developing production processes from the lab to large-scale. You will be well placed to take leading roles in the development and commercialisation of new chemical products.

### Professional recognition

This double degree is recognised by the Royal Australian Chemical Institute, the Institute of Engineers (Australia) and the Institution of Chemical Engineers (IChemE), UK.

### Global connections

You may take one or more semesters at an overseas institution through the RMIT Education Abroad program at more than 120 partner universities.

### Prerequisite

Units 3 and 4—chemistry and one of mathematical methods (CAS) or specialist mathematics, and a study score of at least 30 in English (ESL) or at least 25 in any other English.

### Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

- Chemical engineering/biotechnology (page 17)
- Chemical engineering/management (page 18)
- Food technology and nutrition/chemical engineering (page 19)

See the environment and planning brochure for more information on:

- Environmental science/management

See the science brochure for more information on:

- Applied chemistry/management
CHEMICAL ENGINEERING

BP049 Bachelor of Engineering (Chemical Engineering)

Duration: FT4 — V X
2011 ATAR: 77.35
www.rmit.edu.au/programs/bp049

CITY CAMPUS

Chemical engineering is diverse. You may be involved in water purification, food production and processing, or developing products such as cosmetics or soap. You will design and develop ways in which raw materials, such as minerals and oil, are converted into useful products including composites, petrol, plastics and paper. As a chemical engineer, you can work in diverse fields including petroleum production and refining, mineral processing, water purification, wastewater treatment, oil production, research and development, process design and consulting, and environmental management and pollution control. Chemical engineering is also important to health and wellbeing, as technology is applied to make vaccines and drugs.

RMIT’s approach is well recognised by industry and brings together engineering science with engineering practice and design. The University’s well-equipped laboratories prepare you for the workplace and the degree encourages project planning, critical thinking, interpersonal, leadership and teamwork skills. Problem-solving using a sustainability approach is applied in many project-based courses, so you learn how to improve the efficiency of process industries and how to minimise their environmental and social impact.

Working with industry

There are opportunities for you to spend a week in a process industry in third year and learn about the roles of chemical engineers. Twelve weeks of professional engineering work experience is also recommended, usually between third and fourth years. Work experience gives you the chance to polish workplace skills and evaluate the kind of industry and employer you would like to work for. Work experience is a great motivator for success and RMIT students have worked for organisations, such as Basell, BP, Cadbury, Cryovac, CSL, CUB, ExxonMobil, Kraft, Moldflow and Rio Tinto.

What you will study

The chemical engineering program covers the application of chemical, physical and biological sciences and technology for the improvement of industrial processes.

The first year of the program further develops your skills in chemistry and mathematics, and introduces you to biochemistry, fundamentals of chemical engineering (mass and energy balance) and the design of chemical processes.

The second year of the program develops your knowledge of core chemical engineering areas such as fluid flow, reaction engineering, thermodynamics, and heat transfer.

The third year of the program develops your skills in environmental, safety and economic analysis of processes, design of process equipment and control schemes.

The final year of the program helps you to consolidate your core chemical engineering skills and apply them in a major process design project. You will specialise in major chemical engineering industry areas such as environmental, metallurgical, petroleum, and fluids engineering in third and final years. Each semester in this program involves project-based courses which have been designed to develop your generic skills such as teamwork, project management, sustainability analysis, and communication.

Career outlook

Chemical engineering is a truly international career. The RMIT degree is recognised around the world, and many Australian companies provide the opportunity for engineers to travel.

In Australia, the major areas of employment are chemical, petroleum, and petrochemical industries; food industry; water; environmental management and pollution control; mineral and metallurgical industries; plastics/polymer; biomaterials and diagnostic agents; pharmaceuticals and vaccines; cosmetics; electricity and gas utilisation; research and development; and project design and consulting.

Chemical engineers can work in a variety of areas, from process and project engineering to marketing or research.

Approximately half of all graduates will hold senior management positions at some stage in their careers.

Professional recognition

The Bachelor of Engineering (Chemical Engineering) degree is accredited by Engineers Australia. Graduates are eligible for graduate membership of Engineers Australia as a professional engineer.
www.engineeraustralia.org.au

The Institution of Chemical Engineers (IChemE), based in the UK, is the primary international professional society for the chemical engineer. The Bachelor of Engineering (Chemical Engineering) degree is accredited by IChemE, UK, at the MEng level.

Global connections

You can spend one or two semesters in universities in Canada, USA, Mexico, Denmark, Germany, Sweden, China and Korea. You can also undertake industry work experience with some of the world’s leading companies in Europe.

Prerequisite

Units 3 and 4 — chemistry and mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Applied chemistry/chemical engineering (page 14)
» Chemical engineering/biotechnology (page 17)
» Chemical engineering/management (page 18)
» Food technology and nutrition/chemical engineering (page 19)
‘RMIT was my choice because of its reputation for producing industry-ready engineers and its location in the centre of Melbourne.

‘I chose chemical engineering because employment is high and the degree will give me opportunities to work overseas.

‘When I graduate, work really will have no boundaries for either location or industry. I will be able to work anywhere.

‘RMIT has a good reputation because of the hands-on approach. I am not just in lectures, but also in the lab. Carrying out industry-based experiments is effective preparation for when we graduate and start working.

‘Group assignments are also good preparation and a highlight of studying at RMIT. I have learned another level of communication and realised that teamwork is important to industry.

‘By far the most rewarding thing about RMIT is making lifelong friends. Because the classes are smaller than at other universities, this is easy to do. I have made friends who will be in the same industry as me and this will be valuable when we graduate.

‘My goal is to have a career in petroleum and hopefully travel overseas. I have just started applying for internships and I am contemplating doing further studies after I graduate, but in the meantime I just need to keep working towards graduation day.’

Anthony Drew
Bachelor of Engineering (Chemical Engineering)
CHEMICAL ENGINEERING/BIOTECHNOLOGY

BP159 Bachelor of Engineering (Chemical Engineering)/Bachelor of Science (Biotechnology)

Duration: FT5 — V X
Year one is conducted on the City campus and years two to five are shared between the City and Bundoolaa campuses.

2011 ATAR: 76.25
www.rmit.edu.au/programs/bp159

CITY AND BUNDOORA CAMPUSES

Chemical engineering brings together science with engineering practice and design.
Biotechnology uses knowledge at the molecular level of living systems to devise strategies to solve important practical problems, for example, controlling disease and making the environment safer. Chemical engineers apply biotechnology to make products on a large scale. These integrated skills can be applied to environmental management, agriculture and natural resource management, as well as a range of biological-based products and processes. Chemical engineers also make the processing industries work more efficiently and minimise their environmental impact by using less energy and producing less waste.

Why double-up

The double degree program at RMIT covers the application of chemical engineering and biotechnology methodologies and technologies for better management of the environment; preventing, diagnosing and curing disease; improving crop plants and livestock; detecting pollutants and contaminants; and using organisms to produce chemicals, including drugs and food, and agrochemicals.

Working with industry

There are opportunities for you to spend a week in a process industry in third year and learn about the roles of chemical engineers. Twelve weeks professional engineering work experience is a recommendation, usually between fourth and fifth years. Work experience gives you the chance to polish workplace skills and evaluate the kind of industry and employer you would like to work for. Work experience is a great motivator for success and RMIT students have worked for organisations such as Basell, BP, Cadbury, Cryovac, CSL, CUB, ExxonMobil, Kraft, Moldflow and Rio Tinto.

What you will study

The program builds on the basic sciences of chemistry and mathematics studied in Year 12, and goes on to cover chemical, physical and biological sciences and technology.

It introduces microbiology, immunology and genetics, as well as fluid flow, particle mechanics, heat and mass transfer, process thermodynamics, and sustainable engineering. Cell and tissue culture and molecular biology are also included at third year, together with engineering process principles.

You will develop knowledge in the fundamentals of chemical engineering and biotechnology as well as developing generic skills such as team building. Project work is a feature of each year.

Career outlook

Chemical engineering is a truly international career. The RMIT degree is recognised around the world, and many Australian companies provide the opportunity for engineers to travel. A chemical engineering graduate can work in a variety of areas, from process and project engineering to marketing or research.

Graduates from this program are employed in research; production and testing; positions in government and commercial laboratories; and in industry. Graduates from the program are currently employed by government departments (local, state and Commonwealth), CSIRO, medical research institutes, hospitals, universities, secondary teaching, and private industry such as CSL Ltd and other employers. Options include forensics and food processing, and with experience or further qualification graduates are employed at higher levels of responsibility.

Professional recognition

Graduates qualify for professional membership of scientific societies such as the Australian Institute of Biology, the Australian Society for Microbiology, and the Australian Biochemical Society. Graduates are also eligible for graduate membership of Engineers Australia and the Institution of Chemical Engineers (IChemE), UK. IChemE is the primary international professional society for the Chemical Engineer. The double degree is accredited by IChemE (UK) at the MEng Level.

Global connections

You can spend one or two semesters in universities in Canada, USA, Mexico, Denmark, Germany, Sweden, China and Korea. You can also undertake industry work experience with some of the world’s leading companies in Europe.

Prerequisite

Units 3 and 4 — chemistry and one of mathematical methods (CAS) or specialist mathematics and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC PI form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in:
» Applied chemistry/chemical engineering (page 14)
» Chemical engineering (page 15)
» Chemical engineering/management (page 18)
» Food technology and nutrition/chemical engineering (page 19)

See the science brochure for more information on:
» Biotechnology
CHEMICAL ENGINEERING/ MANAGEMENT

BP052  Bachelor of Engineering
(Chemical Engineering)/ Bachelor of Business (Management)

Duration:  FTS—✓
2011 ATAR:  N/A
www.rmit.edu.au/programs/bp052

CITY CAMPUS

Chemical engineering and management at RMIT brings together engineering science, practice and design with core management competencies. RMIT focuses on industrial applications and links fundamental courses in engineering and management to real situations. RMIT’s practical and vocational focus is well recognised by industry. Problem-based learning courses encourage the development of your interpersonal, leadership and teamwork skills.

The management degree provides a thorough core of knowledge related to the roles and functions of business management. Clear judgement, working well with people, ethical behaviour, leadership and problem solving are all key attributes of a good manager. Managers deal with a range of complex issues, including wider economic and social factors.

Flexibility and the ability to work with others, effectively prioritise tasks, and operationalise financial, marketing and human resource aspects of an organisation are essential. In short, a good manager will be able to effectively coordinate a range of activities, process information to realise business outcomes, and resolve problems with well-considered solutions.

Why double-up?

Many engineers quickly move into positions of management within organisations. This double degree will give you an advantage, allowing you to progress into positions of responsibility and influence. A business degree will prepare you to operate in a complex financial system normally found in large engineering projects.

Working with industry

There are opportunities for you to spend a week in a process industry in third year and learn about the roles of chemical engineers. Twelve weeks professional engineering work experience is recommended, usually between fourth and fifth years. Work experience gives you the chance to polish workplace skills and evaluate the kind of industry and employer you would like to work for. Work experience is a great motivator for success and RMIT students have worked for organisations, such as Basell, BP, Cadbury, Cryovac, CSL, CUB, ExxonMobil, Kraft, Moldflow and Rio Tinto.

What you will study

Building on the sciences of chemistry and mathematics you will develop skills in the fundamentals of chemical engineering. You will be also able to specialise in major chemical engineering industry areas such as environmental, metallurgical, petroleum, and fluids engineering in your final years.

The management degree introduces core business concepts and analysis skills, which you build on in the areas of organisational behaviour, leadership, governance, ethics, microeconomics and commercial law.

Later you can specialise in management areas including employment relations, health services management, management accounting, finance, marketing, international business or logistics and supply chain management.

Career outlook

The RMIT degree is recognised around the world, and many Australian companies provide the opportunity for engineers to travel. In Australia, the major areas of employment are chemical, petroleum and petrochemicals; food industry; water; environmental management and pollution control; mining; plastics/polymer; biomaterials and diagnostic agents; pharmaceuticals; vaccines; cosmetics; electricity and gas; and project design and consulting.

A chemical engineering graduate can work in a variety of areas, from process and project engineering to marketing or research.

Nearly two-thirds of all double degree graduates will hold senior management positions at some stage in their careers.

With appropriate experience your management degree will prepare you for a range of additional roles in commercial, industrial and not-for-profit organisations.

Professional recognition

The Bachelor of Engineering (Chemical Engineering)/Bachelor of Business (Management) double degree is accredited by Engineers Australia. Graduates are eligible for graduate membership of Engineers Australia as a professional engineer.

www.engineersaustralia.org.au

The Institution of Chemical Engineers (IChemE), based in UK, is the primary international professional society for the chemical engineer. The double degree is accredited by IChemE (UK) at the MEng level.

www.icheme.org

Students may also be able to obtain professional membership of the Australian Human Resources Institute (AHRI) and CPA Australia by selecting appropriate minor studies.

Global connections

You can spend one or two semesters in universities in Canada, USA, Mexico, Denmark, Germany, Sweden, China and Korea. You can also undertake industry work experience with some of the world’s leading companies in Europe.

Prerequisite

Units 3 and 4—chemistry and mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

»  Applied chemistry/chemical engineering (page 14)
»  Chemical engineering (page 15)
»  Chemical engineering/biotechnology (page 17)
»  Food technology and nutrition/chemical engineering (page 19)
FOOD TECHNOLOGY AND NUTRITION/ CHEMICAL ENGINEERING

BP236 Bachelor of Science (Food Technology and Nutrition)/Bachelor of Engineering (Chemical Engineering)

Duration: FT5 — V X
2011 ATAR: N/A
www.rmit.edu.au/programs/bp236

CITY CAMPUS

A double degree in food technology and nutrition and chemical engineering is a unique program offered by RMIT that opens up a world of possibilities. You will learn how to design the plant, the process and the product.

As a food industry professional, you will have the advantage of both food science and engineering skills, giving you an edge in developing competitive products.

This degree is ideal if you are interested in:
» developing new products, design processes and packaging
» a broader range of roles in the food processing industry
» making food processing industries work more efficiently.

Why double-up

This program allows you to complete two awards in a reduced amount of time and increases your employment prospects. You will interact with a wide range of relevant industries and broaden your career prospects.

Working with industry

RMIT prioritises practical learning environments. Throughout the program you will undertake several industry visits to learn about production processes.

Twelve weeks professional engineering work experience is recommended and usually undertaken between years four and five. This will give you the opportunity to put what you have learnt into practice and network with industry.

Industry-based design or science projects are also a feature. In the final year you will undertake two major projects which are designed to put you in direct contact with the industry and industry-related problems such as equipment performance problems or production efficiency and output.

What you will study

This degree provides you with in-depth studies of selected food science and chemical engineering courses. The first year of the double degree develops your skills in chemistry, mathematics and fundamentals of chemical engineering. The second year develops your knowledge on core chemical engineering and food science courses. The third year further develops your knowledge in food science, and process design and control skills. The fourth year develops your skills in environmental, safety, and economic analysis of processes and design of process plant. The final year of the program helps you to consolidate your chemical engineering and food science skills and apply them in major process design and science projects.

A design project and a science project will be the focus of your final year. These projects will give you important practice skills and the competitive edge in a wide range of industry roles.

Career outlook

Double degree graduates with multidisciplinary qualifications are highly employable as professionals who have a better understanding of the requirements of other team members. Industry recognises this, and statistics show that 90–100% of RMIT double degree graduates have found jobs in the first few months after completing their double degree.

Food processing is Victoria’s largest manufacturing industry and offers excellent employment opportunities for food and chemical engineers. RMIT graduates typically find employment in large food processing companies such as Nestlé, Cadbury, Simplot or Kraft. Many work in research and development; others move into marketing or quality assurance. Graduates have also secured managerial roles.

Professional recognition

Graduates are eligible for membership of the Australian Institute of Food Science and Technology (AIFST).

The Bachelor of Engineering (Chemical Engineering) degree is accredited by Engineers Australia and graduates are eligible to apply for graduate membership.

www.engineeraustralia.org.au

The Institution of Chemical Engineers (IChemE), based in London, is the primary international professional society for the chemical engineer. All RMIT chemical engineering degrees fully satisfy the (UK) requirement for accreditation at the MEng level.

www.icheme.org

Global connections

RMIT offers student exchange scholarships for student exchange programs with USA and Canada. Many students also spend a semester or two in food science and technology programs in England, Germany and other European countries.

Prerequisite

Units 3 and 4—chemistry and mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Applied chemistry/chemical engineering (page 14)
» Chemical engineering (page 15)
» Chemical engineering/biotechnology (page 17)

See the science brochure for more information on:
» Food technology and nutrition

Legend: FT—Full-time (number of years); PT—Part-time (number of years); RC—A range of selection criteria applied; N/A—Not available; D—Degree program; T—TAFE program
See page 57 for application details: V—VTAC; X—RMIT Direct; R—RMIT School; X—Extra requirement
I chose to study civil engineering at RMIT because of its emphasis on hands-on learning and teamwork—I liked the idea that it would not be all textbook learning. Also, my father and uncles all studied engineering at RMIT, so I suppose it’s a bit of a tradition in my family.

Building a bridge out of paddle pop sticks in first semester was a highlight. I really enjoy learning by doing and seeing each bridge being tested and how each failed was really interesting and gave what we had been learning all semester some context.

My favourite course in my first year was statics. It was mostly maths that I loved, but it was also interesting and the projects were fun. The lecturer we had was fantastic—he made classes funny and interesting.

I think one major way RMIT prepares us for the work environment is through team projects. Working in groups throughout the year has taught me a lot about teamwork and how succeed as a group.

Engineers work in teams, so I think it makes sense that there are a lot of team projects in the course. As a group, we have oral presentations where we treat the rest of our tutorial and our tutor as our client. These presentations not only improve our team skills but also help us become accustomed to the idea and method of pitching an idea to a client.

At the moment, I am not sure what field of engineering I will specialise in but I am sure in the next few years I will figure it out.

I know that whatever I end up doing it will involve structures. Hopefully, years from now, I can look back on a building or a bridge or other structure and be proud of what I have helped to create.’

Maree Dalakis
Bachelor of Engineering (Civil and Infrastructure Engineering)
CIVIL AND INFRASTRUCTURE ENGINEERING

BP198 Bachelor of Engineering (Civil and Infrastructure Engineering)

Duration: FT—V X
2011 ATAR: 87.45
www.rmit.edu.au/programs/bp198

CITY CAMPUS

Civil and infrastructure engineers plan, design, construct, supervise, manage and maintain the essential infrastructure of our modern community.

Civil and infrastructure engineering works with the environment and uses natural resources for the benefit of the community. Civil and infrastructure engineers aim to be responsive to wider community needs and reflect key values, particularly in relation to the economic, environmental and social impacts of projects.

The civil and infrastructure engineering degree at RMIT is at the forefront of engineering education and designed to satisfy current industry demand.

Sub-disciplines include construction/project management; geotechnical; structural; transport; and water resources.

RMIT’s civil and infrastructure engineering program aims to provide innovative learning experiences with a strong emphasis on communication, teamwork and leadership.

The program emphasises work experience and project-based learning. The broad range of electives makes the degree more flexible and lets you customise your studies to suit your interests.

Graduates acquire good interpersonal skills, a solid understanding of engineering theory and the ability to apply learning and knowledge to a wide range of situations.

Working with industry

You will be required to undertake 12 weeks of professional engineering work experience usually between years three and four. Students have been placed in workplaces including VicRoads, Maunsell, Ove Arup, and local councils. In addition to this you will have the opportunity in year one to take part in an industry project run through Engineers Without Borders.

Approximately 50% of final year students will undertake industry-based projects as part of their studies.

What you will study

Years one and two introduce key graduate capabilities in sustainability, problem solving, engineering analysis, teamwork, leadership and communications. In first year you will extend your mathematical skills to engineering applications and gain some basic concepts around engineering applications. Year two concentrates on the big theoretical ideas around practical engineering, including site investigation, geotechnical, water and transport engineering, and more structural engineering and mathematical modeling.

Years three and four cover the application areas of structures, water resources, geomechanics and transport. Specialisation and diversification in these years is also possible.

Sub-disciplines include:

» Construction/project management: civil infrastructure projects.
» Geotechnical: earthworks, tunnels, dams and ground improvement.
» Structural: bridges, power stations, sports stadiums, towers, factories and other large buildings.
» Transport: roads, railways, airports, canals and harbours.
» Water resources: water supply, wastewater treatment, protection of coasts and river banks.

The program has strong links with industry, organisations and departments concerned with civil engineering, and relationships are established between students and their entities through project-based teaching modes used in a number of courses.

The program also maintains an environmental sustainability focus, in line with continuing trends in the global engineering profession.

Career outlook

Graduates are employed as project managers, design engineers, construction managers, environmental engineers and engineering asset managers.

The majority of 2010 graduates are employed in either a full-time or part-time capacity.

Professional recognition

The Bachelor of Engineering (Civil and Infrastructure Engineering) degree is accredited by Engineers Australia and graduates are eligible to apply for graduate membership.

www.engineersaustralia.org.au

Global connections

RMIT has agreements with a number of universities in America, Canada, Europe and Asia on civil and infrastructure engineering student exchange programs.

Optional tours are organised to Paris to study practical applications related to sustainable cities of the future.

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Completing specialist mathematics and/or chemistry/physics will earn selection credits.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC PI form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates of the Associate Degree in Engineering Technology (Civil Engineering) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with up to two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Civil and Infrastructure Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

Graduates of the following programs may also be eligible to apply for exemptions:

» Advanced Diploma in Engineering Design

You may also be interested in...

» Environmental engineering (page 43)
CIVIL AND INFRASTRUCTURE ENGINEERING/MANAGEMENT

BP202  Bachelor of Engineering (Civil and Infrastructure Engineering)/Bachelor of Business (Management)

Duration: F5 — X
2011 ATAR: 93.75
www.rmit.edu.au/programs/bp202

CITY CAMPUS
The double degree combines studies from the civil and infrastructure engineering and management degree programs. Civil and infrastructure engineers plan, design, construct, supervise, manage and maintain the essential infrastructure that services communities. The civil and infrastructure engineering degree at RMIT is at the forefront of engineering education and is designed to meet industry demands in Australia and globally.

Sub-disciplines include construction/project management; geotechnical; structural; transport; and water resources. (For more information on civil and infrastructure engineering please see page 21).

The management degree provides a thorough core of knowledge related to the roles and functions of business management. Clear judgement, working well with people, ethical behaviour, leadership and problem solving are all key attributes of a good manager. Managers deal with a range of complex issues, including wider economic and social factors.

Flexibility and the ability to work with others, effectively prioritise tasks, and operationalise financial, marketing and human resource aspects of an organisation are essential. In short, a good manager will be able to effectively coordinate a range of activities, process information to realise business outcomes, and resolve problems with well-considered solutions.

Working with industry
The double degree has strong links with industry, and offers opportunities for project-based and work-integrated learning.

You will be required to undertake 12 weeks of professional engineering work experience, usually between years three and four.

Approximately 50% of students in their final year will undertake industry-based engineering projects.

What you will study
The early stages of the engineering degree introduce key capabilities in sustainability, problem solving, engineering analysis, teamwork, leadership and communications.

Years three, four and five cover the application areas of structures, water resources, geomechanics and transport. Specialisation and diversification in these years are also possible. Throughout the five years of engineering study, students develop an in-depth understanding of the theory and practice of project management.

The management degree introduces core business concepts, analysis skills, and encourages you to apply business theories and models. Specialist courses in areas including employment relations are also available.

You will build on fundamental business theory in the areas of organisational behaviour, leadership, management and governance, ethics, microeconomics and commercial law. In addition, you will begin specialist studies in areas including employment relations, health services management, management accounting, finance, marketing, international business or logistics and supply chain management.

The final stages enable you to improve your management skills in a practical context. Studies in strategic management are supplemented by further specialist courses.

Career outlook
Graduates have a wide range of career opportunities in Australia and overseas. There is a growing demand for engineering managers capable of providing leadership and decision-making across both technical and financial business systems. Engineering managers are involved in large scale capital investment projects as well as infrastructure policy and planning.

After gaining professional experience, double degree graduates typically move more quickly into middle and senior management or consultant positions.

Your management degree will prepare you for a range of additional roles, and with appropriate experience you can expect to advance to management positions in commercial, industrial and not-for-profit organisations.

Professional recognition
The Bachelor of Engineering (Civil and Infrastructure Engineering) degree is accredited by Engineers Australia and graduates are eligible to apply for graduate membership.

www.engineersaustralia.org.au

The Bachelor of Business (Management) students may be able to obtain professional membership of the following bodies by selecting appropriate studies:

» Australian Human Resources Institute (AHRI) (employment relations specialisation)

» CPA Australia (management accounting and finance specialisation)

Global connections
RMIT has agreements with a number of universities in America, Canada, Europe and Asia on civil and infrastructure engineering student exchange programs.

Optional tours are organised to Paris to study practical applications related to sustainable cities of the future.

The civil and infrastructure engineering degree is also offered through Vocational Training Council in Hong Kong.

Prerequisite
Units 3 and 4 — mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Completing specialist mathematics and/or chemistry/physics will earn selection credits.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

» Civil and infrastructure engineering (page 21)

» Environmental engineering (page 43)
CIVIL AND STRUCTURAL ENGINEERING

C6093 Advanced Diploma of Engineering Design

Duration: FT2 or PT4—✓ X
2011 ATAR: 37.65
www.rmit.edu.au/programs/c6093

Civil and structural engineering involves the design and construction of roads, airports, railways, buildings, bridges, dams and drainage systems.

The advanced diploma will give you the practical and technical skills to work with civil engineers in the research, design and construction of infrastructure projects.

This can include:
» using computer aided drafting (CAD) software to produce detailed drawings, plans and designs for construction work
» carrying out cost estimates and preparing material specification
» liaising with construction workers and project managers
» undertaking inspection of completed works to ensure they meet specifications and regulations
» conducting laboratory and/or field testing of materials, soil and water quality.

Working with industry

You will complete an engineering project in the second year of the program. As part of this you will design a simulated project that involves a design brief, including communication strategies and teamwork. You will be encouraged to seek an industry mentor to oversee the project.

What you will study

Year one

In the first year you will focus on computer-aided drafting (CAD). A large proportion of the CAD courses are included in the first year of the program specifically to provide you with the skills to enter employment at an early stage.

Core elements of the program include mathematics, structural mechanics, materials science, computer-aided drafting (CAD), site investigation, concrete and timber technology, environmental issues, computer applications, surveying, and estimating.

Year two

During second year you will focus more on the design of roads, drains, sewers, and concrete/steel structures.

Complementary studies in areas such as hydrology and the mechanics of structures, fluids and soils (including laboratory testing) provide you with a well-rounded education across a broad spectrum of civil and structural topics.

Career outlook

Graduates may work in the public or private sector in positions such as laboratory technician, research assistant, construction supervisor or CAD draftsperson working under the supervision of a professional engineer.

Many Melbourne consulting organisations visit RMIT to provide seminars about their operations and advise students to contact them about job prospects. Companies who have visited to date include GHD, SKM, Kingston City Council and a variety of civil contracting companies.

Professional recognition

Upon completion of the program, graduates are eligible to apply for membership of Engineers Australia as an engineering officer.

www.engineersaustralia.org.au

Global connections

In line with a commitment to provide you with a global passport, you are given the opportunity to undertake your engineering project for a period of at least six months at a reputable company.

Prerequisite

Units 1 and 2—two units (any study combination) mathematics (any).

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates, who are successful in gaining a place, are eligible to apply for exemptions from the Bachelor of Engineering (Civil and Infrastructure Engineering).

You may also be interested in...
» Civil and infrastructure engineering (page 21)
The Associate Degree in Engineering Technology (Civil Engineering) gives you the skills to move into a wide range of paraprofessional positions in the civil and structural engineering fields, and also provides a pathway into the civil and infrastructure engineering degree.

Civil engineers plan, design, draft, construct, and maintain infrastructure such as roads, bridges, dams, water supply schemes, sewerage systems, harbours, canals, dockyards, airports, railways, factories and large buildings.

Civil and structural engineering associates provide technical support to civil engineers.

Associate degrees are relatively new qualifications in Australia. The degrees are broad-based and allow you to develop employment-related skills relevant to your discipline/s.

Classes are taught through a combination of lectures, seminars, tutorials, online reading, workshop, practical and laboratory sessions.

Working with industry

In the final semester you will undertake an engineering project.

Project topics are developed by you with industry partners and your lecturers. You will be required to design, develop and present a product. The project requires the full development of a simulated civil engineering problem, such as:

» designing a water supply for a rural township
» designing a sub-development for a real estate project including road and channel design.

Projects require analysis of environmental impact and mitigation as well as full working drawings and materials sourced and costed.

The engineering project is carried out either in conjunction with industry or simulates a real engineering work environment.

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 25 in English (ESL) or at least 20 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates of the Associate Degree in Engineering Technology (Civil Engineering) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with up to two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Civil and Infrastructure Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

You may also be interested in…

» Electrical/electronics (page 35)
» Mechanical engineering (page 10)
» Network engineering (page 29)
COMPUTER AND NETWORK ENGINEERING

BP263 Bachelor of Engineering (Computer and Network Engineering)

Duration: FT4 or PT8—V X
2011 ATAR: 74.10
www.rmit.edu.au/programs/bp263

CITY CAMPUS

Computer and network engineers devise engineering solutions that make businesses more productive and competitive. They can design and install new products and computer systems, work with organisations to improve an existing product, or integrate more than one system so that the whole works more efficiently. They can also provide ongoing support as technology is updated.

By driving new technologies, computer engineering creates new opportunities for businesses. It can assist businesses to develop robotics and multimedia systems such as speech and image processing. Computer engineers work with embedded computer systems, such as the control system for a car’s electrics.

Network engineers also design, implement and maintain digital communication networks, which are used everywhere around us. In this degree, network engineering looks at VOIP technology (internet telephony), optimising network performance and network security.

The degree focuses on work in the laboratory, conducting experiments and designing your own projects.

The opportunity to specialise in both computer and network engineering is unique to this degree.

Working with industry

In addition to the compulsory 12 weeks of work experience required, you will have the opportunity to complete industry-sponsored projects.

As a final year student you can apply for summer research scholarships.

What you will study

In the first two years of the degree you will learn about the basic principles of computer and network engineering and how they work. You will also study areas of mathematics and physics that are important for engineers.

Through your project work, you will gain teamwork and communication skills and learn how to be an effective leader.

In the second two years of the degree you will study your chosen specialist area in more depth. There are four compulsory courses. The rest of your courses will come from electives in computer or network engineering, or a combination of both.

You will complete individual and team-based projects that are similar to the work of practising engineers. This will provide you with the skills to work in the industry.

Career outlook

Computer and network engineering graduates can work in industry and business to design and build computer and communication networks.

They are also sought after by universities and research organisations to improve their computer technologies. Job opportunities exist with governments to improve defence, security and emergency services.

Telecommunication operators such as Telstra and Optus employ a large number of network engineers. Similarly, many opportunities exist with equipment manufacturers such as Cisco and Huawei, and the IT departments of various organisations.

With the skills from this course you could also run your own business, providing computer or network services.

Professional recognition

The Bachelor of Engineering (Computer and Network Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord.

Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections

RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Studies in specialist mathematics and physics or chemistry will earn selection credit.

Extra requirements

All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Legend: FT—Full-time (number of years); PT—Part-time (number of years); RC—A range of selection criteria applied; N/A—Not available; D—Degree program; T—TAFE program See page 57 for application details: V—VTAC; R—RMIT Direct; S—RMIT School; X—Extra requirement

Network and computer engineers devise solutions to make businesses more productive and competitive.
You will gain hands on experience by undertaking a large amount of laboratory work ensuring you are industry ready when you graduate.

What you will study
The first topics you will study in the degree are programming basics, circuit theory and database concepts. You will also study engineering methods, mathematics and physics subjects that are essential for engineers.

The second year is more technical and looks at electronics, design, embedded systems and more advanced programming, including for the web.

The third year features a mix of compulsory and elective courses. From here you have the chance to specialise in a particular area of computer and network engineering or computer science by choosing electives that will deepen your technical knowledge.

The focus in these final years is on making you industry ready. You will do a lot of project work, which will help you develop teamwork, management and communication skills. Your study will closely resemble the work of practising engineers.

Career outlook
Graduates of this degree can work in many industries. These include defence, health and science, business, communication and security.

Graduates can work in industry and business to design and build computer and communication networks. Telecommunication operators such as Telstra, equipment manufacturers such as Cisco, and IT departments of all organisations employ network engineers to carry out design, implementation and maintenance tasks.

Universities and research organisations also seek computer scientists and engineers to improve their computer technologies. Job opportunities exist with governments to improve defence, security and emergency services.

Businesses will spend more on software and computer systems in the years to come, so the demand for graduates with both engineering and computer science expertise is expected to be very high.
COMPUTER AND NETWORK ENGINEERING/MANAGEMENT

BP075 Bachelor of Engineering
(Computer and Network Engineering)/
Bachelor of Business (Management)

Duration:  FT5 — V  X
2011 ATAR: N/A
www.rmit.edu.au/programs/bp075

CITY CAMPUS

Computer and network engineers devise technologies that will improve information, electronics and renewable energy industries in the future.

Engineers in these fields work with professionals in project teams in manufacturing, automation, agriculture, transport, education, medicine and environmental monitoring.

This degree will help you find creative solutions to problems. RMIT has consulted with industry to develop a degree that is strong in theory and practice.

Graduates may work on international telecommunications networks or environmental monitoring projects.

Why double-up?

Big engineering projects have big responsibilities. By doubling up with a business degree, you will be more confident tackling complex financial systems. You will develop innovative approaches to projects and the ability to succeed in positions with more influence and responsibility.

Working with industry

In addition to the compulsory 12 weeks of work experience required, students will have the opportunity to complete industry-sponsored projects. Final year students can also apply for summer research scholarships.

What you will study

This degree has a strong technical focus and integrates its practical orientation with personal and business skills development.

The first three years of the degree look at the fundamentals of computer and network engineering, mathematics, physics and business management.

All courses emphasise professional and personal development, allowing you to build your skills in communication, decision-making and team leading.

In the last years of the degree you can specialise in computer or network engineering.

You will complete individual and group design projects that relate closely to industry.

Career outlook

After completing this degree you can look for work in many industries. These include aerospace, automotive, biomedical, micro-technology, manufacturing, power generation and distribution, electronics, computing, networks, communications, resources, defence and primary industries.

Computer and network engineers are critical to technology companies such as Intel and telecommunications companies such as Telstra.

Many engineers quickly move into management roles. This double degree gives you a business qualification, which will help you manage organisations effectively.

You may also choose to start your own business, delivering services in your specialist area of study.

Professional recognition

The Bachelor of Engineering (Computer and Network Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections

RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

In addition to completing 12 weeks work experience, you will also undertake industry sponsored projects giving you greater industry insight before you graduate.

Prerequisite

Units 3 and 4 — mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Computer and network engineering (page 25)
» Computer and network engineering/computer science (page 26)
» Electrical and electronic engineering (page 31)
» Electronic and communication engineering (page 37)
» Electrical and communication engineering/computer science (page 38)
The blend of practical experience of computer hardware and software applications is combined with a strong theoretical foundation ensuring you are job ready.

COMPUTER SYSTEMS ENGINEERING

C6110 Advanced Diploma of Computer Systems Engineering

Duration: FT2 or PT4–6
2011 ATAR: N/A
www.rmit.edu.au/programs/c6110

CITY CAMPUS

Computer systems engineers work with personal computers (PCs) and computer networks in positions such as technical officers or service supervisors.

The Advanced Diploma of Computer Systems Engineering gives you a blend of practical experience with computer hardware and software applications, as well as a strong theoretical foundation.

You will achieve competencies in assembly, installation, testing and maintenance of office personal computers and computer networks. This program provides the opportunity to gain knowledge and skills towards numerous industry certifications, e.g. Cisco's CCNA (Exploration), CCNA Security, CWNA, and Microsoft's MCITP which are highly valued by employers. It distinguishes itself from similar IT courses by putting emphasis on the underlying hardware platforms and engineering aspects of computer systems and networks. It also offers a specialised articulation stream if you decide to undertake a degree.

It is based on the nationally-accredited electrotechnology training package and includes a number of core and elective competency units in the major study areas.

Working with industry

RMIT is committed to providing you with an education that strongly links formal learning with professional or vocational practice.

You will complete a structured activity of work-integrated learning providing you with job seeking skills and industrial work experience.

What you will study

Areas of specialised study include:

» Administer unix-based computers
» Assemble and test personal computers
» Client-server networks
» Commission computer systems
» Design and implement internetworking systems
» Electrical principles
» Embedded systems
» Engineering applications
» Engineering mathematics
» Enterprise networks
» Install and configure internetworking systems
» Local area networks
» Microprocessors
» Network operating systems
» Network security
» Network services
» Object oriented coding
» Project management
» Web services
» Wireless local area networks
» Work-integrated learning (industrial work experience)

Career outlook

Computer systems officers are responsible for administering and upgrading networking facilities in small, medium or large enterprises. The program is well structured to support future technical officers in the installation, maintenance and administration of large computer networks and computer infrastructure. You will be able to apply your skills to a wide range of business, manufacturing and operational occupations.

Professional recognition

Graduates are eligible to seek membership of Engineers Australia at the engineering officer level. www.engineersaustralia.org.au

Industry certification training for Cisco Certified Network Associate (CCNA), Microsoft Certified IT Professional (MCITP), CCNA Network Security, Wireless (CWNA) and CompTia A+ certificates are integrated into the course. To enhance your employability, you are encouraged to sit for the external examinations associated with these qualifications.

Prerequisite

There are no prerequisite studies.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates, who are successful in gaining a place, may be eligible to apply for exemptions of up to two years from the following degree:

» Bachelor of Engineering (Computer and Network Engineering)

You may also be interested in…

» Electrical (page 30)
» Electronics and communications engineering (page 39)
» Telecommunications engineering (page 41)
You will gain the theoretical and practical skills to work in networking, internetworking, IP telephony, network design and security.

**NETWORK ENGINEERING**

**AD008  Associate Degree in Engineering Technology (Network Engineering)**

**Duration:**  
FT2 — *V X*  
2011 ATAR: 51.40  
www.rmit.edu.au/programs/ad008

**CITY CAMPUS**

Network engineers are involved in the design, installation and analysis of computer systems and networks. They can also work with an existing network to ensure it remains effective and capable of meeting new requirements.

The Associate Degree in Engineering Technology (Network Engineering) will give you the theoretical and practical skills to work in networking, internetworking, IP telephony, network design and network security as a technical officer, network engineer or network support officer.

Industry certification skills are highly valued and as part of the network engineering program you will be trained for certification exams including MCITP, A+, CCNA, CCNP, CWNA, CCNA security and Cisco unified communication.

The associate degree also provides you with a pathway into a relevant bachelor degree, to further strengthen your analytical and practical skills.

An associate degree is a two-year higher education qualification that can be undertaken after Year 12 or following a certificate III or IV. They are broad-based and help you develop employment-related skills and provide a pathway to further study in higher education.

**Working with industry**

In the final semester you will undertake an engineering project.

Project topics are developed by you with industry partners and your lecturers. You will be required to design, develop and present a product. Past projects have included a network infrastructure upgrade and rollout operation of enhanced computer system.

The engineering project is carried out either in conjunction with industry or simulates a real engineering work environment.

**What you will study**

**Year one**

Year one introduces you to computer architecture and the concepts and application of computer systems.

Networking fundamentals, internetworking technologies and transmission media teach you skills in the application and design of local area networks (LAN) and wide area networks (WAN); different types of transmission media.

You will also develop skills in embedded systems, including digital logic analysis and design techniques, C programming techniques and microprocessor fundamentals.

The installation, configuration and administration of network operating systems are also covered.

**Year two**

In second year you will start to specialise in a number of areas including scalable internet architecture, network infrastructure, network security, embedded internetworking and voice and video over IP.

Network security introduces you to the concepts of network security, including cryptography, network traffic monitoring and intrusion detection systems, firewalls, IP spoofing protection and wireless security.

Embedded internetworking gives you the knowledge to connect embedded systems to the internet.

Voice and video over IP networks covers the delivery mechanism of voice and video streams over IP networks.

You also undertake an engineering project.

**Career outlook**

Graduates will have job opportunities in many areas, including computer systems, network design, network management, manufacturing and design.

Graduates will be well equipped with the practical and theoretical skills to access careers as computer hardware specialists, network engineers, network professionals, network system analysts, network security specialists, IP telephony specialists. You may also find employment in a diverse range of middle management positions.

**Professional recognition**

Graduates are eligible to seek membership of Engineers Australia at the engineering associate level.

www.engineersaustralia.org.au

**Prerequisite**

Units 3 and 4 — mathematical methods (CAS) and a study score of at least 25 in English (ESL) or at least 20 in any other English.

**Extra requirements**

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

**Pathway**

Graduates of the Associate Degree In Engineering Technology (Network Engineering) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Computer and Network Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

**You may also be interested in...**

» Civil engineering (page 24)

» Electrical/electronics (page 35)

» Mechanical engineering (page 10)
ELECTRICAL

C6112 Advanced Diploma of Engineering Technology—Electrical
Duration: FT2 or PT4–6
2011 ATAR: N/A
www.rmit.edu.au/programs/c6112

CITY CAMPUS

This program provides you with the skills and knowledge to monitor/validate/evaluate automated equipment and electrical systems, manage risk, develop and manage maintenance programs, and provide technical advice.

You will learn about electrical control systems, including programmable logic controllers (PLC) structured in an industry-based network called supervisory control and data acquisition (SCADA); electrical design; motor control; stand-alone renewable energy systems; computer programming; computer-aided design (CAD); and other software applications.

The program is based on the nationally-accredited Electrotechnology Training Package. It includes a number of core and elective competency units in the major study areas.

Working with industry
RMIT is committed to providing you with an education that strongly links formal learning with professional or vocational practice.

You will complete a structured activity of work-integrated learning providing you with job seeking skills and industrial work experience.

What you will study
Areas of specialised study include:
» Analogue electronics
» Computational solutions
» Computer-aided design (CAD)
» Digital electronics
» Electrical design
» Electrical drafting
» Electrical installations
» Electromagnetic circuits
» Engineering software
» Industrial control systems
» Microprocessor control systems
» Motor control
» Occupational health and safety
» Poly-phase power circuits
» Programmable logic controllers (PLC’s)
» Programming using C and C++
» Project management
» Stand-alone renewable energy systems
» Supervisory control and data acquisition systems (SCADA)
» Technical leadership skills
» Work-integrated learning (industrial work experience)
» Workshop practice

Career outlook
Employment options range from mining, manufacturing and transport to industrial renewable energy, instrumentation and control, automation, robotics and mechatronics.

Roles at a paraprofessional (technical officer) level will involve development, design, installation, commissioning, operations, and/or maintenance of engineering equipment, plant or instrumentation and control systems.

Please note: This program will not prepare students for work in electrical trades, and will not lead to an electrical (A grade) licence.

Professional recognition
Graduates are eligible to seek membership of Engineers Australia at the engineering officer level.
www.engineersaustralia.org.au

Prerequisite
There are no prerequisite studies.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates, who are successful in gaining a place, may be eligible to apply for exemptions of up to two years from the following degrees:
» Bachelor of Engineering (Electrical and Electronic Engineering)
» Bachelor of Engineering (Electrical Engineering)

You may also be interested in…
» Computer systems engineering (page 28)
» Electronics and communications engineering (page 39)
» Telecommunications engineering (page 41)
ELECTRICAL AND ELECTRONIC ENGINEERING

BP262 Bachelor of Engineering (Electrical and Electronic Engineering)
Duration: FT4 or PT8—72.10
2011 ATAR: 72.10
www.rmit.edu.au/programs/bp262
CITY CAMPUS

Electrical engineers devise solutions to generate and use electrical power efficiently and cleanly. This is very important in the energy and resources sectors. Electronic engineers design and maintain a huge range of electronic devices and systems, from amplifiers and stereos to scanning equipment used in hospitals.

Electrical and electronic engineers deliver products and services that improve quality of life for individuals and whole communities. By improving drive and control systems in transport, or designing robots and automated tools, you can improve productivity in industries such as agriculture and manufacturing.

You will learn how electricity and electronics work, and how to build and maintain devices. A large amount of time will be spent on experimenting in the laboratory and designing projects to build.

Working with industry
In addition to the compulsory 12 weeks of work experience required, you will have the opportunity to complete industry-sponsored projects.

Final year students can also apply for summer research scholarships.

What you will study
In the first two years of this degree you will learn the fundamental ideas and activities related to electrical and electronic engineering, including mathematics and physics subjects that are essential for engineers. Through your project work, you will learn high-level technical and design skills. You will gain communication and teamwork skills, and how learn how to become a good leader.

The last two years of the degree offer flexibility in your areas of study. In third year you choose courses from four main study areas: electrical; electronic; communication; and computer and network engineering. In the fourth year you can choose to specialise in one area. Alternatively, you can pick electives from several of these areas for a more generalist degree.

In both of these options you will become industry ready as well as learning skills in communication, management and teamwork.

Career outlook
As a graduate of electrical and electronic engineering, you can look for work in lots of different areas. You could design and make electrical and electronic products, or install and maintain systems for businesses. Universities and governments also require engineers to maintain and improve their electrical and electronic technologies.

Suitable roles for graduates exist at power plants in the energy sector, working in auto-electronics for the car industry, in defence and in the higher education sector conducting research.

You could also choose to run your own business, delivering services in your chosen specialisation.

Professional recognition
The Bachelor of Engineering (Electrical and Electronic Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections
RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

Prerequisite
Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Studies in specialist mathematics and physics or chemistry will earn selection credits.

Extra requirements
All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Electrical/Electronics) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the Bachelor of Engineering (Electrical and Electronic Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

Graduates of the following programs, who are successful in gaining a place, may also be eligible to apply for exemptions:

» Advanced Diploma of Computer Systems Engineering
» Advanced Diploma of Engineering Technology—Electrical
» Advanced Diploma of Electronics and Communications Engineering

You may also be interested in...

» Computer and network engineering (page 25)
» Electrical engineering (page 32)
» Electrical engineering/commerce (page 33)
» Electrical engineering/management (page 34)
» Electronic and communication engineering (page 37)
» Electronic and communication engineering/computer science (page 38)
ELECTRICAL ENGINEERING

BP261  Bachelor of Engineering (Electrical Engineering)

Duration:  FT4 or PT8
2011 ATAR:  74.30
www.rmit.edu.au/programs/bp261
CITY CAMPUS

Electrical engineers design and operate electrical devices and systems that generate and use electrical power efficiently and cleanly. This is very important to the energy and resource sectors.

Studying this degree is about more than learning the theories behind electrical engineering. You will put these theories into practice and solve problems by spending a lot of time on experiments in laboratory classes and designing projects. You will also complete 12 weeks of full-time work experience. This is a requirement for accreditation by Engineers Australia.

Graduate opportunities can include developing new technologies to improve transportation, taking part in the renewable energy revolution, or developing new technologies and products for industries and communities of the future.

Career outlook

As an electrical engineering graduate, you can work in many different industries. These include automotive, manufacturing, mining, power generation and distribution, consumer product design, resources and defence. Work opportunities will be available both in Australia and overseas.

Graduates are suitable for roles designing and supervising projects to implement new technologies in small and large organisations. The leadership skills you learn from project work in this degree can also help you prepare you for management roles in industry.

You could also choose to run your own business, delivering services in your chosen specialisation.

Professional recognition

The Bachelor of Engineering (Electrical Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections

RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIERP).

You may also be interested in...

» Computer and network engineering (page 25)
» Electrical and electronic engineering (page 31)
» Electrical engineering/commerce (page 33)
» Electrical engineering/management (page 34)
» Electronic and communication engineering (page 37)

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Studies in specialist mathematics and physics or chemistry will earn selection credits.

Extra requirements

All applicants must complete and submit a VTAC PI form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates of the Associate Degree in Engineering Technology (Electrical/Electronics) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with 192 credit points exemption (equivalent to two years) into the Bachelor of Engineering (Electrical Engineering).

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

Graduates of the following programs, who are successful in gaining a place, may also be eligible to apply for exemptions:

» Advanced Diploma of Computer Systems Engineering
» Advanced Diploma of Engineering Technology—Electrical
» Advanced Diploma of Electronics and Communications Engineering

You will put theory into practice and solve problems by spending a lot of time on experiments in laboratory classes and designing projects.

Working with industry

In addition to the compulsory 12 weeks of required work experience, you will have the opportunity to complete industry-sponsored projects.

Final year students can also apply for summer research scholarships.

What you will study

In the first two years of this degree you will learn the fundamental ideas and activities related to electrical engineering. You will also study mathematics and physics courses that are essential for engineers. Through your project work, you will gain communication and teamwork skills, and learn how to become a good leader.

In the second two years of the degree you will study high-level technical and design skills and focus on your specialist area more closely. Specialisations include energy conversion, power systems and high-voltage equipment.

You will complete major design projects, both team-based and individual, in years three and four. By completing these projects you will practise the communication, management and teamwork skills you have learned. The projects are similar to the ones practising engineers work on, and will help you become an industry-ready graduate.
ELECTRICAL ENGINEERING/COMMERCE

BP246 Bachelor of Engineering (Electrical Engineering)/Bachelor of Commerce

Duration: FT5 or PTA—V X
2011 ATAR: N/A
www.rmit.edu.au/programs/bp246

CITY CAMPUS

Electrical engineers design systems to generate and use electrical power efficiently. This is very important to the resource sector, and increasingly in demand for the renewable energy sector.

This degree will help you find creative solutions to engineering problems and provide the business expertise required to implement them.

Graduates can become business leaders in the revolution that is producing new technologies and products for industries and communities of the future.

Why double-up?

To effectively manage large infrastructure projects, employers increasingly look for engineers who have a solid understanding of business concepts in addition to their technical expertise.

With the combined skills of this double degree you can employ your technical skills to design solutions, and understand the business incentives driving these projects.

Working with industry

In addition to the compulsory 12 weeks of work experience required, you will have the opportunity to complete industry-sponsored projects.

Final year students can apply for summer research scholarships.

What you will study

This degree adds business skills to technical learning.

The first three years introduce fundamentals of electrical engineering, including mathematics, physics, and commerce.

The last two years specialise in electrical energy and power systems, along with finance and management.

A lot of study is based around practical work in laboratories and work on computers, including design and problem-solving tools.

Career outlook

Graduates can work in many different industries. The skills and project-based assessments in your degree will make you industry ready. You will be able to offer employers technical skills, an innovative approach and the confidence and ability to manage large projects.

Work opportunities for graduates exist in government organisations and private companies, both in Australia and overseas. You could work in the fields of renewable energy, power generation and distribution, industrial and retail automation or developing new technologies for transportation.

Suitable roles for graduates include designing and supervising projects to implement advanced technologies.

You could also choose to start your own business.

Professional recognition

The Bachelor of Engineering (Electrical Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections

RMIT encourages students to participate in Study Abroad and other centrally run opportunities.

You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

Prerequisite

Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Computer and network engineering (page 25)
» Electrical and electronic engineering (page 31)
» Electrical engineering (page 32)
» Electrical engineering/management (page 34)
» Electronic and communication engineering (page 37)
Electrical engineers design systems and equipment to generate and use electrical power more efficiently. This is very important to the resource sector and increasingly in demand to provide renewable energy. This degree will help you find creative solutions to engineering problems and provide you with the strategic skills to implement them. Graduates can be part of the revolution that is producing new technologies.

Why double-up?
Engineering solutions often involve project work, and the combined skills of this double degree provide you with an edge in being able to competently manage projects. You can employ your technical skills in a wide range of industries to design solutions for controlling electrical energy, and your operational skills to plan and supervise projects.

Working with industry
In addition to the compulsory 12 weeks of work experience required, you will have the opportunity to complete industry-sponsored projects. Final year students can apply for summer research scholarships.

What you will study
The first three years will introduce you to the fundamentals of electrical engineering, including mathematics and physics. The business management component of your studies will include marketing, economics and logistics. In the last two years you will specialise in electrical energy and power systems and complete two major design projects. A large portion of your study is based around practical work in laboratories and on computers, utilising design and problem-solving skills.

Career outlook
Graduates of this double degree can work in many different industries. You will be able to offer employers technical skills, an innovative approach and the confidence and ability to lead. The skills and project-based assessments in your degree will make you industry ready. Work opportunities also exist in government organisations and private companies, both in Australia and overseas. You could design and supervise projects in the fields of renewable energy, power generation and distribution, industrial and retail automation or developing new technologies for transportation.

You could also choose to start your own business, delivering services in your specialist area.

Professional recognition
The Bachelor of Engineering (Electrical Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

Prerequisite
Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements
All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

You may also be interested in...
» Computer and network engineering (page 25)
» Electrical and electronic engineering (page 31)
» Electrical engineering (page 32)
» Electrical engineering/commerce (page 33)
» Electronic and communication engineering (page 37)
ELECTRICAL/ELECTRONICS

AD005  Associate Degree in Engineering Technology (Electrical/Electronics)

Duration:  FT2 — X
2011 ATAR:  51.65
www.rmit.edu.au/programs/ad005

The Associate Degree in Engineering Technology (Electrical/Electronics) will develop your skills in the design, installation, maintenance, analysis, troubleshooting and management of electrical and electronic devices and systems. It provides a pathway into relevant degrees offered at RMIT to further develop your analytical and practical skills, or can lead to employment as an engineering officer.

Electrical engineering involves the planning, design, installation and maintenance of electrical systems. These systems focus on the generation, distribution and control of electric power, and also include electronic systems used for computing, communications and other industrial applications.

Electronics engineering focuses on the design, manufacture, repair and maintenance of advanced electronic equipment and systems. This includes radio, television, computer systems, robotic systems, and other electronic systems.

Combining lectures and seminars with practical laboratory and workshop sessions, including simulation and animation tools, will enhance your learning.

An associate degree is a two-year higher education qualification that can be undertaken after Year 12 or following a certificate III or IV education qualification that can be undertaken in conjunction with industry or simulates a real engineering work environment.

What you will study

First year
First year introduces basic AC motors, electronic concepts and PLC operation.
You learn CAD programming and how to create and interpret basic electrical and mechanical engineering drawings.
The study and use of engineering materials including metals, composites, plastics and adhesives are introduced. There is a strong focus on suitability and the environmental impact of materials.

Year two
Second year extends electrical theory, and includes RC, RL and RLC, circuit analysis, AC fundamentals, coupled circuits and DC and AC motor control principles.
The design and installation of wired and wireless local area network (LAN) and wide area networks (WAN) links is introduced. You will also develop practical skills in testing and problem solving.

Electrical/electronic design digital and analogue interfacing, microprocessor programming and automation are covered.
Programming language and how to problem solve scenarios related to the development of computer programs are also covered, along with an understanding of embedded systems including the design, implementation, testing and fault-finding of microprocessor based systems.

You also undertake an engineering project.

Career outlook
Electrical and electronic technology is part of daily life and graduates are in demand. Graduates have diverse job opportunities in areas including:
» electrical/electronics design
» electronic communications
» microprocessor programming
» interfacing, automation and process control.

Employment can be found in the following industries:
» automotive
» computer design and manufacture
» aviation and biotechnology
» middle management engineering roles.

Professional recognition
Graduates are eligible to seek membership of Engineers Australia at the engineering officer level. www.engineersaustralia.org.au

Global connections
You have the opportunity to apply for a one-semester exchange with VIA University College Denmark in the final year of their program.

Prerequisite
Units 3 and 4 — mathematical methods (CAS) and a study score of at least 25 in English (ESL) or at least 20 in any other English.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Electrical/Electronics) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with two years exemption (equivalent to 192 credit points) into the following degrees:
» Bachelor of Engineering (Electrical and Electronic Engineering)
» Bachelor of Engineering (Electrical Engineering)
» Bachelor of Engineering (Electronic and Communication Engineering)

Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.

You may also be interested in...
» Civil engineering (page 24)
» Mechanical engineering (page 10)
» Network engineering (page 29)
Electronic and communication engineering appealed to me as a fantastic foundation for my career. I chose RMIT because of its opportunities for articulation from TAFE to university.

Since beginning my degree I have gained many transferable skills such as leadership, teamwork, problem solving, research and study skills, and amazing technical skills. We are taught the skills needed in the workforce and how to approach difficult tasks with confidence.

Design 3 has been my favourite course as it gave us the opportunity to propose a project, plan, design and build it over the year, before showcasing it at a prestigious trade fair.

My advice to anyone considering this degree is GO FOR IT! Make the most of university by joining clubs and committees. It’s a whole lot of hard work but a whole lot of fun!

In the next few years I look forward to finishing up the final year of my degree, undertaking my officer training with the RAAF, and learning the skills required to undertake my role as an electronics engineer.

I am lucky enough to have secured my dream career whilst undertaking my degree, and I look forward to the challenges and heights it will take me!

Arjun Xavier
Bachelor of Engineering
(Electronic and Communication Engineering)
What you will study
Along with laboratory work, lectures and tutorials will help you with technical theory. You will add to this with self-directed learning, undertaking your own research and investigation. In the first two years of this degree you will learn the fundamental ideas and activities related to electronic and communication engineering. You will also study mathematics and physics subjects that are essential for a career in engineering.
In the last two years, the focus is on making you industry ready. You will specialise in the electronic and communication fields and complete major design projects, both individually and in teams. Design projects are similar to assignments undertaken by practising engineers.
You will learn high-level technical and design skills, as well as skills in communication, management, leadership and teamwork.

Career outlook
As a graduate of electronic and communication engineering, you can look for work in many diverse areas. You could design and make electronic and communication products, or install and maintain systems for businesses.
Universities and governments also require engineers to maintain and improve their electronic and communications technologies. You could also choose to run your own business, delivering services in your chosen specialisation.

Professional recognition
The Bachelor of Engineering (Electronic and Communication Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections
RMIT encourages students to participate in Study Abroad and other centrally run opportunities.
You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

Prerequisite
Units 3 and 4—mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.
Studies in specialist mathematics and physics or chemistry will earn selection credits.

Extra requirements
All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.
Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
Graduates of the Associate Degree in Engineering Technology (Electrical/Electronics) who achieve a grade point average (GPA) of 2.0 or greater are guaranteed entry with 192 credit points exemption (equivalent to two years) into the Bachelor of Engineering (Electronic and Communication Engineering).
Graduates with a GPA of less than 2.0 may apply, and if successful in gaining a place, may be eligible for exemptions.
Graduates of the following programs, who are successful in gaining a place, may also be eligible to apply for exemptions:
» Advanced Diploma of Computer Systems Engineering
» Advanced Diploma of Engineering Technology—Electrical
» Advanced Diploma of Electronics and Communications Engineering

You may also be interested in...
» Computer and network engineering (page 25)
» Electrical and electronic engineering (page 31)
» Electrical engineering (page 32)
» Electronic and communication engineering/computer science (page 38)
» Physics/electronic and communication engineering (page 40)
This double degree in electronic and communication engineering/computer science will give you the skills to design electronic devices that are smaller, portable and more adaptable, as well as the software to control them. Industry demands devices that are quicker, like Google maps; smarter, like touch-sensitive iPods; and more secure, for defence communication and satellite applications.

The double degree combines skills that match rapid developments in both hardware and software. You will be familiar with the physical parts of a communications system, such as its design, and the software that it uses. These combined skills are in increasing demand for quicker, more secure communications technologies.

Working with industry
You will be required to undertake 12 weeks of professional engineering work experience, usually between years three and four. There is also the opportunity to complete an industry-sponsored design project in your final year. Final year students can apply for summer research scholarships.

What you will study
This double degree has a strong technical focus and integrates practical skills with business and elective studies. In the first three years, you will study the fundamentals of electronic and communication engineering, computer science, and relevant mathematics and physics. All courses emphasise professional and personal development. Essential leadership, team organisation, communication and decision-making skills are fostered to facilitate a smooth transition into industry.

In the final three years, you will specialise in both the engineering and computer science fields. You can focus on one type of engineering or take electives from both areas. Combining practical experience with business and specialist studies in later years will allow you to transition smoothly to industry.

Career outlook
Graduates design and build electronic and communication networks. Work can be found in a range of industries including; defence, health and science, business, technology development, communication and security.

Universities and research organisations also employ computer scientists and engineers to improve their computer technologies. Businesses will spend more on software and computer systems in the years to come, so the demand for graduates with both engineering and computer science expertise is expected to be very high.

Professional recognition
The Bachelor of Engineering (Electronic and Communication Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be obtained after an appropriate period of professional practice.

www.engineersaustralia.org.au
www.washingtonaccord.org

The computer science component of this double degree program is accredited at professional level by the Australian Computer Society which accredits information and communication technology related programs in Australia.

www.acs.org.au

Global connections
RMIT encourages students to participate in Study Abroad and other centrally run opportunities. You also have the opportunity of undertaking an industry placement for six or 12 months either locally as advertised by local businesses, or internationally through the RMIT International Industry Experience and Research Program (RIIERP).

www.rmit.edu.au/riierp

Prerequisite
Units 3 and 4—one of mathematical methods (CAS) or specialist mathematics, and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements
All applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au. If they wish other information to be considered. Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

» Computer and network engineering (page 25)
» Computer and network engineering/computer science (page 26)
» Computer and network engineering/management (page 27)
» Electrical and electronic engineering (page 31)
» Electronic and communication engineering (page 37)
ELECTRONICS AND COMMUNICATIONS ENGINEERING

C6108 Advanced Diploma of Electronics and Communications Engineering

Duration: FT2 or PT4–6 — V X
2011 ATAR: 32.20
www.rmit.edu.au/programs/c6108

CITY CAMPUS

This qualification will provide you with the skills and knowledge to design and validate/evaluate electronics and communications equipment and systems, manage risk, estimate and manage projects and provide technical advice.

You will develop knowledge and skills in computer-aided drafting and electronic design; computer interfacing; microprocessor programming; design; testing and commissioning of analogue and digital electronics systems; and computer programming, and perform simulations using various engineering software packages.

The program is based on the nationally-accredited Electrotechnology Training Package. It includes a number of core and elective competency units in the major study areas.

Working with industry

RMIT is committed to providing you with an education that strongly links formal learning with professional or vocational practice.

You will complete a structured activity of work-integrated learning providing you with job seeking skills and industrial work experience.

What you will study

Areas of specialised study include:

- Analogue integrated circuit design
- Circuit simulation
- Communications and networks
- Computational solutions
- Computer programming
- Digital and analogue electronics and applications
- Electronic interfacing
- Electronic technology and instrumentation
- Gate array technology
- Microelectronics
- Microprocessor control systems
- Microprocessors
- Object-oriented programming
- Occupational Health and Safety
- Principles of Global Positioning System (GPS)
- Principles of mobile phones, AM, FM
- Printed circuit board design
- Project management
- Technical leadership skills
- Telecommunications
- Work-integrated learning (industrial work experience)

Career outlook

You will have employment opportunities in a range of industries, such as manufacturing, telecommunications, radio communications, electronics equipment and services, security systems, scientific instruments, and sales.

Roles at paraprofessional (technical officer) level may include, but are not limited to, electronics technician, technical officer, engineering associate, draughtsperson and sales engineer.

Professional recognition

Graduates are eligible to seek membership of Engineers Australia at the engineering officer level.

www.engineersaustralia.org.au

Prerequisite

There are no prerequisite studies.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates, who are successful in gaining a place, may be eligible to apply for exemptions from the following degrees:

- Bachelor of Engineering (Electrical and Electronic Engineering)
- Bachelor of Engineering (Electronic and Communication Engineering)

You may also be interested in...

- Computer systems engineering (page 28)
- Electrical (page 30)
- Telecommunications engineering (page 41)
PHYSICS/ELECTRONIC AND COMMUNICATION ENGINEERING

BP007  Bachelor of Science (Physics)/Bachelor of Engineering (Electronic and Communication Engineering)

Duration:  FTS or PTA—Y
2011 ATAR:  N/A
www.rmit.edu.au/programs/bp007

CITY CAMPUS

Engineers design and implement products and services for people, business, industry, and governments. These products help to enrich people’s quality of life, improve profits, and enhance community health, safety and security. The combined double degree boosts problem-solving abilities by using the dual skills of scientific and engineering approaches. The program provides hands-on, practical experience through extensive laboratory studies and design projects.

Why double-up?
The Bachelor of Science (Physics)/Bachelor of Engineering (Electronic and Communication Engineering) program at RMIT is designed to produce physicists and engineers that have the potential to be leaders in their professions. Graduates of this double degree are keenly sought after by business, industry and government organisations.

Working with industry
In addition to the compulsory 12 weeks of work experience required, students will have the opportunity to complete industry-sponsored projects.

Final year students can apply for summer research scholarships.

What you will study
The earlier years of this degree cover the fundamentals of electronic and communication engineering and develop basic teamwork and leadership skills. The physics courses cover scientific fundamentals and applications of natural phenomena. The later years include team and individual projects and advanced courses in a specialisation. These focus on consolidating teamwork, leadership, management, communication and professional skills.

Career outlook
Graduates of this double degree are keenly sought after due to their extensive range of knowledge and skills and their excellent problem solving skills, which combine both scientific and engineering approaches.

Graduates may be employed in:
» Industry to design and manufacture electronic, communication and scientific products.
» Business to implement and maintain electronic, communication and scientific systems and services.
» Education, research and development organisations to advance technologies.
» Government organisations to provide health, education, environment, transport, defense, trade, security and emergency services.

Professional recognition
The Bachelor of Engineering (Electronic and Communication Engineering) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections
RMIT encourages students to participate in Study Abroad and other centrally run educational opportunities.

You may also be interested in…
» Computer and network engineering (page 25)
» Electrical engineering (page 32)
» Electronic and communication engineering/computer science (page 38)
» Electronic and electrical engineering (page 31)

See the science brochure for more information on:
» Applied sciences
TELECOMMUNICATIONS ENGINEERING

C6080* Advanced Diploma of Telecommunications Engineering

Duration: FT2 or PT4–6 — V X
2011 ATAR: N/A
www.rmit.edu.au/programs/c6080

* Program code and name are subject to change due to anticipated revision of the telecommunications training package at a national level.

CITY CAMPUS

This program provides you with the knowledge and skills relating to the principles of telecommunication signalling; the concepts to evaluate the telecommunication network, design and optical communication; and the development of diagnostic skills associated with network cabling.

It includes Cisco CCNA (exploration) and IT essentials which lead to international recognition.

The program covers internet cloud, circuit and packet switching, wireless communications, copper and fibre cabling, customer access networks, customer premises equipments, broadband networks, and network functional groups.

Graduates become technical officers or engineering technicians, specialising in the fields of telecommunication systems and communication networks.

The program is based on the nationally-accredited Telecommunications Training Package. It is sequenced—meaning you are required to progress through the various levels to the highest qualification.

Working with industry

RMIT is committed to providing you with an education that strongly links formal learning with professional or vocational practice.

You will complete a structured activity of work-integrated learning providing you with job seeking skills and industrial work experience.

What you will study

The program has significant emphasis on all aspects of local area networks (LAN) and wide area networks (WAN), with a special focus on solving complex network faults. Areas of specialised study include:

» Circuit theory and calculation
» Digital project
» Engineering communication
» Engineering mathematics
» Internetworking
» Network design principles
» Photonics devices
» Principles of telephony
» Radio networks
» Software tools
» Telecommunication fault analysis
» Telecommunication networks
» Telecommunication systems
» Telephony
» Work-integrated learning (industrial work experience)

Career outlook

Telecommunications technical officers typically work in the operations departments of telecommunications carriers. However, with the growing use of telecommunications infrastructure in large business enterprises, they may also find work providing system administration and system support in large business enterprise networks that interconnect with the public telecommunications infrastructure.

Technical officers may also be responsible for maintaining complex telecommunications equipment, systems and facilities at a station. They may perform works associated with maintenance, testing, alignment, modification and operation of station electronic equipment.

Professional recognition

Graduates are eligible to seek membership of Engineers Australia at the engineering officer level. www.engineersaustralia.org.au

Industry certification training for Cisco certified network associate (CCNA) and Cisco certified network professional (CCNP)—implementing secure conversed wide area networks—is integrated into this program.

Prerequisite

There are no prerequisite studies.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates, who are successful in gaining a place, may be eligible to apply for exemptions from the Bachelor of Engineering (Computer and Network Engineering).

You may also be interested in...

» Computer systems engineering (page 28)
» Electrical (page 30)
» Electronics and communications engineering (page 39)
‘I had previously completed a Bachelor of Applied Science at another university but it didn’t give me what I wanted, so I looked around and found environmental engineering at RMIT. I had heard they had a pretty good reputation in this area and it ticked all the boxes.

‘I think the best thing about RMIT is that it is hands-on, but still backed by theory. The lecturers try very hard to ensure the degree is guided by industry needs.

‘I have really enjoyed the site investigation, land contamination and geohazard courses. They take you through the process of assessing land, which is about to be either rezoned or used in an alternative way.

‘Being part of the Environmental Engineering Student Association (EESA) is a great part of uni life. It’s a group of students that come together to facilitate networking opportunities with the professional community.

‘I currently have a job in a consultancy firm, which primarily deals with contaminated land, and I love it. I am going to keep on working in Australia until I’m a chartered engineer. After this I hope to become a professional engineer and then head overseas. Hopefully I can get into wetland design somewhere down the track.’

Brad Clay
Bachelor of Engineering (Environmental Engineering)
Environmental engineers develop skills in applying engineering concepts and technical skills to preserve the environment, minimise water, soil and air pollution, assess environmental impact of engineering projects, develop remediation measures for environmental degradation and deliver sustainable solutions through engineering processes.

Environmental engineering at RMIT offers you the opportunity to specialise in civil engineering, groundwater or chemical engineering. Environmental engineers design systems to improve water quality, develop cleaner production technologies in agriculture, undertake rehabilitation of mining sites and contaminated land, work on land salinity problems, and prepare environmental impact studies.

You are encouraged to take initiative with your learning and engage in multi-disciplinary projects. Strong groundwater and hydrogeology is a focus of the RMIT environmental engineering program, providing employment opportunities in the resources industry and land remediation areas.

Working with industry
You will undertake 12 weeks vocational work as a component of your final year workplace project. A special feature of the RMIT environmental degree is the integration of learning activities with many site visits. This includes visits to Queenscliff for observing the geo-marine environments, Hazelwood Mines for land contamination courses, Western Water Treatment Plant to observe water treatment and recycling, and geological site investigation visits to Studley Park.

Laboratory-based activities cover mini-research projects, developing innovative solutions for waste products such as generating bio-gas from waste from water treatment plants, and using fly ash in water treatment. There is also an opportunity to undertake a team research project in Vietnam (see page 15 for details).

What you will study

Year one
In the first year, you are introduced to the basic skills in mathematics, environmental science, chemistry and engineering practices. Two of the engineering practice courses offer you the opportunity to engage in a multidisciplinary project offered by Engineers Without Borders, whereby you work in teams to learn about environmental principles and sustainable design. Basic computer aided design mapping skills, and other basic computing skills are also introduced in year one. Geology courses offer skills in basic site investigations, undertaken through a number of site visits.

Year two
In year two, a basic grounding in environmental engineering is offered through courses such as water engineering, urban systems of water supply, geological site investigations and pollution control. From year two, you will also select courses from your chosen major.

Year three
In third year you will learn about groundwater, land contamination and remediation, waste water treatment and recycling and urban systems, which explores environmental design aspects of selected urban systems.

Year four
In the fourth and final year, you will engage in an integrated workplace project, undertaken as an individual project sourced from industry. The relationship of ethics and law in professional practice will also be explored.

Career outlook
Environmental engineering graduates have a great opportunity to make a real difference to our world by introducing sustainable practices to preserve the environment, remediate environmental disasters, and prepare the community for adverse effects of climate change. Recent graduate destination data indicates 100% employment for RMIT environmental engineering graduates. Graduates are currently employed in senior positions in VicRoads, Department of Sustainability and Environment and in many other organisations. Many environmental engineers work as consultants on a variety of different projects in Australia and overseas.
ENVIRONMENTAL SCIENCE/ENVIRONMENTAL ENGINEERING

BP235 Bachelor of Environmental Science/ Bachelor of Engineering (Environmental Engineering)

Duration: FTS or PTA – V X
2011 ATAR: N/A
www.rmit.edu.au/programs/bp235

This double degree combines the essential elements of environmental science (understanding the interactions in the environment) with environmental engineering (designing solutions to environmental problems). You will gain a thorough understanding of environmental processes and the ability to develop and implement waste minimisation and remediation strategies. You will also develop and implement environmental management systems, allowing you to contribute at the science/engineering interface.

The program offers:
» considerable hands-on experience with laboratory and field equipment
» field trips as an integral part of the learning process
» the opportunity to work on collaborative projects with industry.

Why double-up?

A graduate of the double degree in environmental science and environmental engineering is uniquely placed to obtain work in a variety of workplaces, having the understanding of the science together with the ability to design solutions.

Working with industry

Regular field trips involving teamwork and the use of instrumentation are often carried out in association with industry.

You will also be required to undertake 12 weeks of professional engineering work experience, usually between years three and four, which will give you a better understanding of workplace practices and is a great opportunity to identify specific areas that interest you.

There is also an opportunity to undertake a team research project in Vietnam.

What you will study

Year one
You will concentrate on fundamentals in environmental science, chemistry, biology, mathematics and engineering practices.

Year two
In the environmental science component of the degree, you will specialise in one of two core disciplines, either environmental biology or environmental chemistry.

Engineering practice courses give you the opportunity to engage in a multidisciplinary project. Working in teams you learn about environmental principles and sustainable design.

Year three
A basic grounding in environmental engineering is offered through courses in water engineering, urban systems of water supply, geological site investigations and pollution control. Geology courses develop skills in basic site investigations through site visits.

Year four
You will undertake an environmental engineering project, and develop an understanding of groundwater resources, land contamination and wastewater treatment and recycling.

The impact of human activities on the biosphere, atmosphere, hydrosphere and lithosphere is also explored. You will continue to study your environmental science specialisation.

Year five
Final year concentrates on advanced topics in environmental analysis and engineering, including infrastructure planning.

You will complete an independent science project, along with studies in environmental ethics, policies and law. A work-integrated engineering project is also undertaken as an individual project sourced from industry.

Career outlook

The training and the experiences provided at RMIT are modelled on the type of work likely to be required after graduation. This makes RMIT graduates in environmental science/environmental engineering highly employable. A graduate in both science and engineering stands in a unique place, straddling both worlds, which makes them very much in demand.

Graduates can work in corporate or industrial sectors, or in government agencies. They can work as consultants designing innovative environmental products as well as resolving existing environmental problems though the application of both their environmental science and engineering skills.

Professional recognition

All graduates will be eligible for membership of Engineers Australia and the Environment Institute of Australia and New Zealand. Those with sufficient chemistry may apply to the Royal Australian Chemical Institute for membership.

www.engineersaustralia.org.au
www.eianz.org

Global connections

Students may spend one semester or one year at an overseas institution through the Education Abroad program at more than 120 partner universities. Recent students have studied in Denmark (Technical University of Denmark), Canada (Concordia), Sweden (Lund University), Holland (Delft University of Technology) and the USA (Buffalo State University).

Prerequisite

Units 3 and 4—one of mathematical methods (CAS) or specialist mathematics and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in…

» Environmental engineering (page 43)
See the environment and planning brochure for more information on:
» Environment
» Environmental science
» Environmental science/environment
» Environmental science/management

VIETNAM PROJECT

Environmental programs

Since 2002, the Vietnam project has sent a team of 12 students from RMIT’s environmental degrees to work on a relevant environment project in Ho Chi Minh City.

The students are drawn from environmental engineering, environmental science and environment (social science) degrees and form the nucleus of a small multidisciplinary environmental consultancy.

Working in consultation with architects, site engineers and industry specialists, you will investigate development issues in a around the city.

Practical involvement in an international project gives you an understanding of professional interaction in a cross-cultural context, an appreciation of working within an interdisciplinary team, and a general initiation into a skilled working environment. You will learn to liaise with professionals representing various fields, and the importance of teamwork skills.

RMIT | 2012 DEGREE AND DIPLOMA | ENGINEERING
ADVANCED MANUFACTURING AND MECHATRONICS

BP013 Bachelor of Engineering (Advanced Manufacturing and Mechatronics)

Duration: FT4 or PTA —

Years one and two are conducted on the City campus and years three and four are conducted on the Bunyoro campus.

2011 ATAR: 80.10
www.rmit.edu.au/programs/bp013

CITY AND BUNDOORA CAMPUSES

Are you interested in developing robots and high-speed automated machines? As a manufacturing and mechatronics engineer, you can work in many industries, including the automotive, aerospace, marine, food and beverage, logistics, mining and service industries. You will be at the heart of designing systems and equipment that turn raw material into finished products. Mechatronics is a multidisciplinary engineering area that involves mechanical, hydraulic, pneumatic, electrical, electronics, computer systems and information technology.

Manufacturing engineering examines the development and planning of processes and equipment. Mechatronics engineering involves the development of hardware such as robots and high-speed automated machines to carry out the plan.

The advanced manufacturing and mechatronics engineering degree specialises in all aspects of advanced manufacturing processes, from system design and quality control to the actual building of automatic systems. You will be able to design and build manufacturing systems that are environmentally sustainable while also meeting customer needs.

Working with industry

You are expected to obtain a minimum of 12 weeks of relevant vacation employment that allows you to gain first-hand experience in an engineering practice environment in which professional engineers are involved. Australian students may also choose to take part in a one-year industry placement position. This normally occurs at the middle or at the end of third year. It not only provides the opportunity for you to gain academic credit, but also valuable paid industrial experience, which may lead to an industry-linked final year project or even full-time employment. You can apply to join companies within Australia or overseas. In the final year of your studies you will undertake a major project that is either industry based or simulates an industrial situation.

What you will study

RMIT’s advanced manufacturing and mechatronics engineering degree has a multidisciplinary core curriculum designed for four years of study, with three elective courses in the final years. The first four semesters are aimed at developing general, analytical problem-solving skills, design capabilities, professional practice and introductory mechatronics skills and knowledge.

In the third and fourth years, you will deepen your knowledge in mechatronics engineering by studying advanced robotics systems and performing computer analysis of manufacturing systems, process design and inventory control.

Advanced manufacturing and mechatronics engineering studies are designed to reflect current industry requirements and include:
» mechatronics, including robotics and control
» high-speed automation
» manufacturing management
» advanced material and properties.

The degree has an analytical focus with opportunities to work in design and development teams, as expected in many industries. Emphasis is placed on the need to view a manufacturing system as a system made of people, machines and information, the flow of which must be controlled to produce internationally competitive solutions. Specialised studies include computer-aided manufacturing, quality management, mechatronic design and advanced robotics.

The degree shares many elective studies with mechanical, automotive and aerospace engineering, allowing you to undertake specialist electives if desired.

Career outlook

Opportunities for advanced manufacturing and mechatronics engineers are as diverse as the manufacturing industry itself. Areas of employment include the automotive industry; the aerospace industry; computer manufacturing; high-speed automation in the process industry; food and beverage manufacturing; and engineering and management consultancy.

You will also be qualified to take up a diverse range of positions as a product design engineer and process engineer; facilities manager; production planner and quality engineer, or automation specialist.

Professional recognition

The Bachelor of Engineering (Advanced Manufacturing and Mechatronics) is accredited by Engineers Australia. Graduates are eligible to apply for graduate membership of Engineers Australia and are recognised as professional engineers in all member countries of the Washington Accord. Corporate membership may be gained after the required period of professional experience. Admission to Engineers Australia can allow membership of comparable professional institutions in the UK and the USA without examination.

www.engineersaustralia.org.au
www.washingtonaccord.org

Global connections

Opportunities are available for final year students to carry out a work placement overseas with industry partners. Additionally, the option to link with a multinational organisations such as ABB, Festo, Ford, Holden, Toyota, Cadbury, Nil and SAGE is available for final year projects.

Prerequisite

Units 3 and 4 — mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC PI form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates of the Advanced Diploma in Engineering Technology (Mechanical and Manufacturing) may also be eligible to apply for exemptions.

You may also be interested in…
» Automotive engineering (page 8)
» Mechanical and manufacturing (page 51)
» Mechanical engineering (page 11)
» Principal technical officer (page 52)
SUSTAINABLE SYSTEMS ENGINEERING

BP265  Bachelor of Engineering (Sustainable Systems Engineering)
Duration:  FT4 or PT8 — V
2011 ATAR: —
www.rmit.edu.au/programs/bp265

CITY CAMPUS

Sustainable systems engineering covers new technologies and engineering approaches required for global sustainable development. It is based on teamwork and project-based systems, and using these in a range of areas including development and production.

Sustainable engineering practices are based upon the ability to meet society’s needs within economic and ecological constraints. The program prepares students to protect, restore and create engineered and natural systems that are socially, environmentally and economically sustainable.

Sustainable systems engineering covers a range of engineering areas and explores ways of combining capabilities to solve technical challenges. The program offers three specialisations:
- Sustainable energy systems
- Sustainable transport systems
- Sustainable logistics systems.

Working with industry
You will take part in specific courses that focus on work-integrated learning (WIL). Professional projects part 1 and 2 will connect you directly with industry. You will be assessed on the professional or vocational tasks in your workplace setting (real or simulated) and receive feedback from relevant industry partners. You will also be expected to undertake at least 12 weeks of work experience in a professional engineering environment. Most students do this in the third and fourth year of study.

What you will study
The first two years of the program are focused on the development of a sustainable systems approach and bring together the fundamentals of engineering sciences, mathematics, engineering design, and engineering professional practice.

In the later years of the program, specialist elective courses are offered in transport, energy or logistics. The program is designed to provide you with a number of opportunities for industry interaction, including with the academic teaching staff whose experienced engineering practitioners with expertise in the above mentioned specialisations.

RMIT is committed to providing you with an education that strongly links formal learning with workplace experience. This program is designed with a unique program structure, incorporating a continuous thread of systems thinking and sustainable design.

The program aims to produce engineers that are not only able to design, implement and operate increasingly diverse processes, but are also able to minimise the overall costs of industrial activities to society and the natural environment.

Career outlook
With climate change a matter of national and international importance, more emphasis is being placed on sustainability in human-developed systems. Meeting these needs and associated challenges in the future will require a comprehensive sustainable design approach, with a focus on whole-of-system requirements and the lifecycle context. Therefore the need for engineering graduates with the ability to handle sustainable systems development is growing rapidly.

You will approach industry problems from a holistic point of view and develop engineering solutions that are optimised as a system and comply with regulatory guidelines. You will also take up leading roles in the building of new business opportunities that demand sustainable systems solutions.

Graduates will be employable and effective sustainable systems engineers in a national and international context.

Professional recognition
Accreditation is being sought from Engineers Australia. Once fully accredited, graduates of the program will be eligible for graduate membership of Engineers Australia.

www.engineersaustralia.org.au

The School of Aerospace, Mechanical and Manufacturing Engineering has a Program Advisory Committee for the sustainable systems engineering program, which is an important link to industry. Membership includes senior engineers from a number of major national companies and government and non-government organisations. The committee provides comments and advice on the contents of this program.

Global connections
The program will introduce significant use of a work-integrated learning environment and experiential learning. Industry placement will be built into the program, including international placement and exchanges with similar overseas programs.

Prerequisite
Units 3 and 4 — mathematical methods (CAS) and a study score of at least 30 in English (ESL) or at least 25 in any other English.

You may also be interested in...
- Advanced manufacturing and mechatronics (page 45)
- Aerospace engineering (page 3)
- Automotive engineering (page 8)
- Aviation (page 7)
- Mechanical engineering (page 11)
Spatial Information Services

C5237 Diploma of Spatial Information Services
C6098 Advanced Diploma of Spatial Information Services

Duration:  
Diploma: FT1 — X
Advanced Diploma: FT1

2011 ATAR: 68.90
www.rmit.edu.au/programs/c6098

City campus

Spatial information services are based on the collection, management and presentation of information related to surveying, mapping and geographical information systems. These services are an integral part of local, state and national land management programs, building and construction projects, environmental studies, navigational systems and monitoring of emergency situations.

These programs provide you with the educational and practical training for a career in the surveying, mapping, and geographical information systems (GIS) industries.

The full-time program is delivered over three days per week. Giving you the opportunity to undertake part-time employment in industry as a paraprofessional outside of class.

Working with industry

You will be exposed to industry through regular seminars with guest speakers, as well as taking part in simulated spatial science and survey activities at RMIT’s Yarra Bend workstation.

What you will study

You will develop and further your knowledge in drafting, project management, detailed surveying equipment use, remote sensing and quality control.

Areas of study include surveying practice and computing GIS and global positioning systems (GPS), photogrammetry, legislation and cadastral surveying (title surveying), business management, land management, communication skills, and occupational health and safety.

The emphasis is on practical experience using industry-standard equipment.

You will use various surveying technologies and software for electronic data capture, processing and presentation. You will take part in exercises in land development, and cadastral surveying will be demonstrated and taught in a project environment.

Career outlook

Following graduation, you may be employed in the spatial information industry as an assistant to a land surveyor, survey technician, GIS/GPS operator, or computer draftsperson.

Graduates can initially work in areas such as land management, civil and structural engineering, or asset management for local government or mining companies.

RMIT’s strong links with surveying and spatial information industry associations mean graduates are highly sought after.

Professional recognition

Students are eligible to apply for membership of the Spatial Sciences Institute.
Graduates of the Advanced Diploma of Spatial Information Services, who have essential practical experience, are eligible to apply for professional certification with the Spatial Sciences Institute.
www.spatialsciences.org.au

Prerequisite

There are no prerequisite studies.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates may be eligible to apply for exemptions of up to two years from the following degrees:

» Bachelor of Science (Geospatial Science)
» Bachelor of Applied Science (Surveying)

You may also be interested in:

» Surveying (diploma) (page 48)
» Surveying (degree) (page 50)

See the science brochure for more information on:

» Geospatial science
SURVEYING

C5236 Diploma of Surveying
Duration: FT1—X
2011 ATAR: 67.65
www.rmit.edu.au/programs/c5236
CITY CAMPUS

Surveying is based on the collection, management and presentation of information related to land surveying and mapping. Surveying is used in a wide range of circumstances and is an integral part of local, state and national land management programs, building and construction projects, environmental studies, navigational systems and monitoring of emergency situations.

With the development of digital technologies, surveying tools that map and display information stored in multiple databases are becoming widespread.

The diploma prepares you for employment in a range of industry sectors and provides you with the educational and practical training you will need for a career in the surveying and mapping industries.

Working with industry
You will undertake 10 to 20 days of work experience with an industry employer as arranged by RMIT.

During the two-year program, there are also extensive fieldwork studies undertaken on various areas of public land in collaboration with Melbourne Water, Friends groups and other organisations.

What you will study
In the first half of the year you will learn to:
» develop and use complex spreadsheets
» ensure a safe workplace
» perform geodetic surveying computations
» plan spatial data collection and validation
» surveying computations
» undertake a civil site survey
» undertake site surveys and set out procedures.

During the second semester, you will learn to:
» conduct a GPS survey
» conduct an engineering survey
» conduct an engineering surveying project
» conduct geodetic surveying
» create engineering drawings
» design roads and railways
» produce maps.

Career outlook
Graduates find paraprofessional work in the surveying industry as land and engineering surveyors or as surveying or drafting technicians.

Employment can be found in the spatial information industry as an assistant to land surveyors, survey technicians, GIS/GPS operators, or computer draftspersons.

Graduates can also work in areas such as land management, civil and structural engineering, or asset management for local government or mining companies.

Professional recognition
Students are eligible to apply for membership of the Spatial Sciences Institute.
www.spatialsciences.org.au

Prerequisite
There are no prerequisite studies.

Extra requirements
Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway
If you successfully complete the diploma, you may choose to continue in the Advanced Diploma of Spatial Information Services which provides further pathways to degree level programs.

You may also be interested in…
» Spatial information services (page 47)
» Surveying (page 50)

See the science brochure for more information on:
» Geospatial science
I always enjoyed mathematics as well as the outdoors. When I heard about surveying at a careers night, I realised I could combine both in one degree.

I chose RMIT after hearing people in the industry speak highly of the surveying degree. It is well structured, very hands-on and involves fieldwork. For surveying, fieldwork is absolutely essential, as it puts the theory into practice.

With the frequent fieldwork, survey camps and compulsory industry placements, I feel very prepared for work when I graduate. The small classes create a friendly and comfortable atmosphere. You work closely with other students and the staff are very approachable and always willing to offer extra help.

The highlight of my studies so far has been the practical work at the Yarra Bend Field Station. Practical work is such a valuable way of learning and developing skills.

Applied geospatial techniques also gave me a really good insight into the differences between surveying, cartography and GIS, and the role they play within the geospatial industry. In groups we surveyed an area, developed the data within GIS software, designed a map and presented the final project.

I’m looking forward to graduating I hope to travel and possibly work overseas. There are many different career paths within surveying and I am open to the area of work I will pursue.

Adele Thomson
Bachelor of Applied Science (Surveying)
Surveyors are masters of measurement, whether it is to locate a property boundary or set out a high-rise building. Today's surveyors use advanced equipment and specialised software to determine the accurate position of features on the Earth. They also design subdivisions, measure the ocean floor and monitor deformation of the Earth's crust. It requires attention to detail and a precise mind. The degree is built on a strong link between theory and practice. While there is a sound theoretical base, most subjects incorporate extensive practical work to build skills as well as knowledge.

Surveying is a specialised discipline, so you enjoy the advantage of small class sizes, focused content and staff who are easily accessible. RMIT maintains strong links with industry and members of the profession regularly participate in our teaching programs. RMIT offers the only undergraduate degree in surveying in Victoria. There is also a dedicated field station at Yarra Bend Park to support practical work.

Learning support for students includes a first year transition program, academic coordinators for each year level and a strong Geospatial Science Student Association.

**What you will study**

In the early years of the program, you will study the fundamentals of measurement science, cartography and spatial information science (GIS). Other fundamental skills in mathematics, statistics and physics are also covered.

In later years, more specialised studies are offered in geodesy, map projections, spatial analysis, remote sensing, image analysis and professional practice. Specialised studies in cadastral and engineering surveying, GPS and advanced adjustment methods are central components of the program.

Field camps are held in years two and three to reinforce the theoretical learning and allow you to exercise your knowledge on real-world problems.

Practical work is based on industry standard software and hardware, the same tools you will find in the workplace. You will have ample opportunities to develop skills and experience with these tools.

**Career outlook**

Graduates are typically employed in small and medium sized consultancy businesses, in the mining sector and in government agencies. Graduate employment has approached 100% for the past few years and there is a continuing shortage of suitably qualified surveyors. Many graduates enter a Professional Training Agreement and become Licensed Surveyors. For more information visit:

- www.surveying.org.au
- www.allwithoutlimits.com.au
- www.surveyorsboard.vic.gov.au
- www.spatialsciences.org.au

**Global connections**

Students can study for one or more semesters at an overseas institution through the Education Abroad program at more than 120 partner universities.

**Prerequisite**

Units 3 and 4—one of mathematical methods (CAS) or specialist mathematics and a study score of at least 30 in English (ESL) or at least 25 in any other English.

**Extra requirements**

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

**Pathway**

RMIT graduates of the following program may be eligible to apply for exemptions of up to two years:

- Advanced Diploma of Spatial Information Services

**You may also be interested in...**

- Civil and infrastructure engineering (page 21)

See the science brochure for more information on:

- Geospatial science
MECHANICAL AND MANUFACTURING

C6069* Advanced Diploma of Engineering Technology

Duration: FT2 or PT4—\( \checkmark \) \( \times \)

2011 ATAR: N/A

www.mit.edu.au/programs/c6069

* Program code is subject to change due to anticipated introduction of a new national metals and engineering training package qualification.

CITY CAMPUSS

The Advanced Diploma of Engineering Technology trains mechanical and manufacturing paraprofessional engineers.

You will gain the theoretical and practical skills to work as a technical officer or engineering supervisor/manager.

The program is flexible, allowing you to study either a generic mechanical/manufacturing program or a specialised stream that suits your particular interests or the needs of your employer.

The advanced diploma is equivalent to 1400 hours of training effort, with an embedded diploma consisting of 800 hours. A qualified tradesman with a Certificate III in Mechanical Trade or equivalent can claim 200 hours towards this program.

You will also have the opportunity to undertake the Advanced Diploma of Engineering Technology (Principal Technical Officer) at the same time. This will extend your courses to provide a pathway into degrees in mechanical engineering, advanced manufacturing and mechatronics and automotive engineering.

The program is delivered through lectures, tutorials, practical/laboratory exercises, work-simulated projects, competency-based assessments, online and offline learning and balanced hands-on practice.

Working with industry

This program has no formal work experience requirements, but some courses may require research and liaison with industry to complete coursework.

What you will study

Diploma

The diploma covers basic engineering skills including drafting, computer-aided drafting (CAD), use of hand and power tools, machining and manufacturing processes. This includes learning to produce a range of basic engineering components using cutting, grinding and turning techniques.

You will learn skills in basic machining operations and fabrication tasks, as well as learning how to select, set up and use a range of test equipment to measure voltage, current and resistance. You are also introduced to basic engineering mathematics (including calculus techniques) and materials engineering. You may also learn to apply computer-aided manufacturing (CAM) processes and programming.

Advanced diploma

The advanced diploma builds on the skills learned in the diploma. The main courses areas include:

» 3D computer-aided drafting and solid modelling
» Advanced statics and dynamics
» Design of machinery
» Metrology
» Project and quality management
» Strength of materials
» Thermodynamics and fluid mechanics.

Career outlook

Graduates can be employed as a technical officer/engineering assistant, supervisor or manager. They work in offices, technical laboratories, workshops or on-site.

Mechanical and manufacturing paraprofessional engineers assist professional engineers:

» in mechanical design
» supervise and manage manufacturing and assembly plants
» construct, operate and maintain machines, and manufacture
» maintain mechanical equipment, mechanical installations and mechanical facilities.

More than 90% of the total workforce across all disciplines in the mechanical and manufacturing industry are TAFE graduates.

With further training it is possible to become a registered/fully qualified engineer.

Practical exercises are carried out in workshops to simulate the work environment and ensure you gain industry relevant skills and experience.

Professional recognition

The Advanced Diploma of Engineering Technology is recognised in the Federal Metal Industry Award and relates directly to the C3 classification of Engineering Associate—Level II. The qualification is a pathway for entry into the professional body Engineers Australia as an engineering associate.

www.engineersaustralia.org.au

Prerequisite

There are no formal prerequisites. However, successful completion of mathematics (preferably mathematical methods and physics in your Year 12 studies) will facilitate progress in this program.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

Pathway

Graduates, who are successful in gaining a place, may be eligible to apply for exemptions of up to one and half years from the following degrees:

» Bachelor of Engineering (Advanced Manufacturing and Mechatronics)
» Bachelor of Engineering (Automotive Engineering)
» Bachelor of Engineering (Mechanical Engineering)

Note: Graduates who complete both the Advanced Diploma of Engineering Technology and the Advanced Diploma of Engineering Technology (Principal Technical Officer) may be eligible to apply for exemptions of up to two years from the above mentioned degrees.

You may also be interested in...

» Principal technical officer (page 52)
» Refrigeration and air-conditioning (page 53)

Legend: FT—Full-time (number of years); PT—Part-time (number of years); RC—A range of selection criteria applied; N/A—Not available; D—Degree program; T—TAFE program

See page 57 for application details: V—VTAC; R—RMIT Direct; S—RMIT School; X—Extra requirement
RMIT’s workshops are well equipped to support a large amount of hands-on, practical learning, ensuring you are familiar with industry standard and equipment before you graduate.

PRINCIPAL TECHNICAL OFFICER

C6016* Advanced Diploma of Engineering (Principal Technical Officer)

Duration: FT1 or PT2 – D X

2011 ATAR: N/A

www.rmit.edu.au/programs/c6016

* Program code is subject to change due anticipated new training package (vocational graduate diploma).

CITY CAMPUS

The Advanced Diploma of Engineering (Principal Technical Officer) will allow you to obtain the Metals and Engineering Award Classification C2b (Principal Technical Officer).

You will gain specialist training through an integrated program of technical and management studies. The program can (in conjunction with the Advanced Diploma of Engineering Technology) also provide a pathway to degrees in mechanical, advanced manufacturing and mechatronics, and automotive engineering.

This program must be studied following, or simultaneously with, the Advanced Diploma of Engineering Technology.

You can choose to specialise in management and commercial modules (non-technical) and a range of technical modules drawn from a number of engineering disciplines including mechanical, manufacturing, electrical, electronics and civil. Alternatively, you may study a broader range of studies in engineering.

Occupational specialisations may include quality training, human resource management, or environmental, mechanical and manufacturing disciplines.

Working with industry

You will undertake a compulsory industry research project which allows you to access industry in a context of rigorous intellectual enquiry.

This gives you the benefit of gaining industry experience without the restrictions of a formal placement. Projects may be design investigations and/or feasibility studies done in conjunction with nominated industry partners in the final year of the program.

What you will study

The advanced diploma will extend your mathematics skills, including differential equations and numerical methods.

You will learn the principles of applied mechanics, strength of materials and engineering materials, as well as how to design rotating machines.

An understanding of fluid mechanics principles will allow you to apply this to a variety of real-world engineering applications, including simple flow networks and pump and turbine design.

You will also learn principles of thermodynamics and total quality management, and the mechanics of solids and dimensional metrology.

Electrical (AC) machines are covered, along with the broad principles of mechanics and dynamics of industrial machines.

You will also gain skills in introductory financial management by completing an industry research project.

Career outlook

Graduates are trained to be mechanical and manufacturing paraprofessional engineers in an industrial sector. This qualification is designed to give students supervisory and/or managerial skills required for the position of principal technical officer or equivalent.

Graduates can be employed as a principal technical officer/engineering assistant, supervisor or manager. They work in offices, technical laboratories, workshops or on-site.

With further training it is possible to become a registered/fully qualified engineer.

Professional recognition

The program is recognised in the Federal Metal Industry Award and relates directly to the C2b classification of Engineering Associate—Level II. The qualification is a pathway for entry into the professional body Engineers Australia as an engineering associate.

www.engineersaustralia.org.au

Prerequisite

There are no prerequisite studies.

Extra requirements

Applicants must have completed, or currently be studying, the Advanced Diploma of Engineering Technology or equivalent.

Pathway

Graduates, who are successful in gaining a place, may be eligible to apply for exemptions from the following degrees:

» Bachelor of Engineering (Advanced Manufacturing and Mechatronics)
» Bachelor of Engineering (Automotive Engineering)
» Bachelor of Engineering (Mechanical Engineering)

Note: Graduates who complete both the Advanced Diploma of Engineering Technology and the Advanced Diploma of Engineering Technology (Principal Technical Officer) may be eligible to apply for exemptions of up to two years from the above mentioned degrees.

You may also be interested in…

» Mechanical and manufacturing (page 51)
» Refrigeration and air-conditioning (page 53)
REFRIGERATION AND AIR-CONDITIONING

C6069* Advanced Diploma of Engineering Technology

Duration: PT4—V X
2011 ATAR: N/A
www.rmit.edu.au/programs/c6069

* Program code is subject to change due to anticipated introduction of a new national metals and engineering training package qualification.

CITY CAMPUS

The Advanced Diploma of Engineering Technology (Refrigeration and Air-conditioning) provides you with the necessary theoretical and practical knowledge to move into a career in the refrigeration and air-conditioning industries as a technical officer or engineering supervisor/manager.

The program supports students who are currently employed in the refrigeration and air-conditioning industry and wish to gain formal qualifications.

You will study a clearly defined specialised stream of subjects tailored to meet your interests and needs of your employer. Common courses are enhanced with specialised skills.

The advanced diploma is equivalent to 1400 hours of training effort, with an embedded diploma consisting of 800 hours. A qualified tradesman with a Certificate III in Mechanical Trade or equivalent can claim 200 hours towards this program.

The program is delivered through lectures, tutorials, practical/laboratory exercises, work-simulated projects, competency-based assessments, online and offline learning and balanced hands-on practice.

Classes will run principally in the evening between 5.30 pm and 9.30 pm, though some classes may be available during the daytime hours.

Working with industry

This program has no formal work experience requirements, but some courses may require research and liaison with industry to complete coursework.

What you will study

Diploma

The diploma covers basic engineering skills including drafting, computer-aided drafting (CAD), basic engineering mathematics, communication management techniques and a range of specific basic courses in the refrigeration and air-conditioning field, including estimation of refrigeration heat loads, and psychrometric processes.

Advanced diploma

The advanced diploma will develop further specialised skills relevant to the refrigeration and air-conditioning industry.

This includes building your understanding of the relevant codes and regulations. Along with basic energy management principles and knowledge of both refrigeration and exhaust systems.

You will learn to design hydronic systems, heat exchangers and industrial and commercial refrigeration systems.

Commission HVAC/R systems are also introduced, along with food storage technology and psychrometric processes.

Career outlook

Refrigeration and air-conditioning technicians design, specify and commission industrial, commercial and domestic refrigeration and air-conditioning systems in many different applications.

Areas may include air-conditioning, transport refrigeration, industrial processing systems and commercial food storage.

Students completing this program will be professional refrigeration and air-conditioning technicians.

Graduates usually move into roles as supervisors or managers.

Professional recognition

The Advanced Diploma of Engineering Technology is recognised in the Federal Metal Industry Award and relates directly to the C3 classification of Engineering Associate—Level II.

The qualification is a pathway for entry into the professional body Engineers Australia as an engineering associate.

www.engineersaustralia.org.au

Prerequisite

There are no formal prerequisites. However, successful completion of mathematics (preferably mathematical methods and physics in your Year 12 studies) will facilitate progress in this program.

Extra requirements

Non-Year 12 applicants must complete and submit a VTAC Pi form, available online at www.vtac.edu.au, if they wish other information to be considered.

Please refer to the 2012 VTAC Guide for full details on extra requirements.

You may also be interested in...

» Mechanical and manufacturing (page 51)
» Principal technical officer (page 52)
A highlight of my studies was spending time working for MAN in Germany as part of my practical experience in third year. During my final year I also took on a leadership role in the Formula H program, where we built a hydrogen powered prototype vehicle. Both experiences proved very rewarding and allowed me to enter the workforce with far more confidence.

Nikolaus Lawry
Bachelor of Engineering (Automotive Engineering)
Scholarships at RMIT: a world of possibilities

Commencing and current students are strongly encouraged to apply for an RMIT scholarship. Each year RMIT awards millions of dollars in scholarships to thousands of RMIT students across all TAFE, university and postgraduate program areas. RMIT scholarships recognise academic achievement, leadership and community skills. RMIT also offers Equity and Aboriginal and Torres Strait Islander scholarships to assist students from a range of backgrounds to achieve their study ambitions.

Scholarships for academic achievement

If you achieve outstanding VCE (or equivalent) results, there are many opportunities to have your talents rewarded at RMIT.

Leadership scholarships

Leadership and community involvement scholarships provide assistance in the education of young people with outstanding leadership potential. These scholarships target students with a passion for study and a commitment to contributing to their community.

Equity scholarships

Equity scholarships are available to assist students from disadvantaged backgrounds.

Scholarships for Aboriginal and Torres Strait Islander students

RMIT is committed to supporting Aboriginal and Torres Strait Islander students to engage in study through financial support.

Research scholarships

RMIT has various scholarships to assist you with your academic and career goals.

Further information on these and many more scholarships is available on our website: www.rmit.edu.au/scholarships

Invergowrie Foundation Scholarships—Scholarship for Women

The Invergowrie Foundation is a public charitable trust whose primary focus is to promote and advance the education of women in Victoria. RMIT University offers three scholarships, sponsored by the Invergowrie Foundation for eligible Victorian female students commencing bachelor degrees offered by the University’s science, engineering and health schools. The three scholarship categories are for women who:

» are articulating from a TAFE program
» are 21 years or older
» gained access to RMIT through an RMIT Equity Access Scheme.
Each scholarship is valued at $2,000 per annum.

www.rmit.edu.au/seh/scholarships/invergowrie

TAFE Enrolment

The structure of a TAFE qualification is pre-determined by the relevant industry training package. How you progress through the qualification levels in a training package, combined with your eligibility for a government-subsidised place, will determine the tuition fees that you will pay.

For the following programs, you will be admitted into the highest qualification level and can choose to exit with a lower listed qualification upon the successful completion of the required courses (subjects). Your eligibility for a government-subsidised place will be assessed at the highest entry point and this will determine the fees you will pay:

» Engineering design (page 23)
» Engineering technology (page 51, 53)
» Telecommunications engineering (page 41)

For the following programs, you will be admitted into the lowest level in the training package and upon successful completion of each qualification level you can apply to commence the next qualification level in the training package. Each qualification level is classed as a new enrolment in a new program and your eligibility for a government-subsidised place will be assessed prior to enrolling in each program. This will determine the fees you will pay. Most students will commence at the lowest qualification level, however you may be able to commence at a higher qualification level, subject to recognition of prior learning:

» Spatial information services (page 47)
» Surveying (page 48)

More information about TAFE tuition fees is available in Money matters on page 56.

More Degree and TAFE Study Options

The following brochures are also available:

» Apprenticeship and traineeship
» Architecture and building
» Art and design
» Business
» Community services and social sciences
» Computing and information technology
» Education and training
» Environment and planning
» Health and medical sciences
» Justice and legal
» Media and communications
» Science

Order more brochures online at www.rmit.edu.au/programs/publications.

Alternatively, speak to a customer service consultant at RMIT’s Info Corner. Tel. + 61 3 9925 2260, email study@rmit.edu.au, or drop into Info Corner at 330 Swanston Street (cnr La Trobe St), Melbourne.
MONEY MATTERS

TAFE programs
At TAFE you may be offered a state government-subsidised place or a full-fee place.

State government-subsidised places
You are eligible for a government-subsidised place if you are:
» an Australian citizen, an Australian Permanent Resident, a Special Category Visa holder (sub-class 444, New Zealand citizen), or an East Timorese asylum seeker
and any of the following:
» under 20 years of age on 1 January in the year you start studying
» enrolling in a Foundation Skills qualification (as categorised by Skills Victoria)
» enrolling in a qualification that is accredited at a higher level than the qualifications you already hold
» a Victorian apprentice commencing in 2011.
TAFE tuition fees are determined by the level of the qualification and in 2011 they were categorised as follows:

Skills Creation: certificate I and II
$1.51 per student contact hour
with a minimum fee $105 and a maximum fee $875 p.a.

Skills Building: certificate III and IV
$1.84 per student contact hour
with a minimum fee $188 and a maximum fee $1250 p.a.

Skills Deepening: diploma and advanced diploma
$3.79 per student contact hour
with a minimum fee $375 and a maximum $2000 p.a.

For information about the TAFE program level you will be enrolled in and how this will affect your eligibility for a government-subsidised place and the tuition fees that you will pay, please refer to www.rmit.edu.au/programs/apply/tafe/eligibility.

Full-fee places
If you do not meet the criteria listed above then you will be offered a full-fee place (FFP). FFP students are required to pay the approved tuition fee for their program. FFP fees vary according to each program. A full list of fees for TAFE programs is available online at www.rmit.edu.au/programs/fees/tafe/fullfee.

Financial assistance
Financial assistance may be available to eligible students through the VET FEE-HELP scheme, which is a government loans scheme to assist students to pay their tuition fees. For information visit www.deewr.gov.au/vetfeehelp.

TAFE fee concession
If you are a Victorian Government-funded student with a Health Care Card or receive government benefits through Centrelink you may be entitled to a concession on your tuition fees, which in most cases is equivalent to the minimum fee for the qualification level. For information visit www.rmit.edu.au/programs/fees/tafe/concession.

Associate degree and degree programs
If you are applying for an associate degree or degree program you may be offered a Commonwealth-supported place (CSP).

Commonwealth Supported Places (CSP)
A CSP is jointly funded by you and the Commonwealth Government. Some Commonwealth supported students may be eligible for HECS HELP. The amount to be paid is defined by Student Contribution ‘bands’. In 2011, the following student contributions for a standard, annual, full-time load applied:

<table>
<thead>
<tr>
<th>Student contribution band</th>
<th>Maximum student contribution for a place in 2011</th>
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</thead>
<tbody>
<tr>
<td>Band—national priorities: mathematics, statistics, science</td>
<td>$4355</td>
</tr>
<tr>
<td>Band 1: humanities, behavioural science (including clinical psychology), social studies, foreign languages, visual and performing arts, education, nursing</td>
<td>$5442</td>
</tr>
<tr>
<td>Band 2: computing, built environment, health (allied health and other health), engineering, surveying, agriculture</td>
<td>$7756</td>
</tr>
<tr>
<td>Band 3: law, dentistry, medicine, veterinary science, accounting, administration, economics, commerce</td>
<td>$9080</td>
</tr>
</tbody>
</table>

More information
For information on Commonwealth supported places and HECS HELP please visit the Australian Government Department of Education, Employment and Workplace Relations website at www.goingtouni.gov.au.

Australian students may be eligible to apply for income tax deductions relating to the education expenses that are linked to their employment. Students should check with an accredited taxation accountant/consultant as to their eligibility for possible deductions. The Australian Taxation Office website may also be useful www.ato.gov.au.

Material fees (TAFE and degree)
Material fees are charged by RMIT for goods and services associated with your study such as field trips or lecture notes, reading material or course readers and laboratory or workshop equipment that is consumed by you or may become your own property after you have completed the course. These fees are not compulsory and you can choose to purchase these items independently.

Please note: fees indicated relate to 2011 and should be used as a guide only. RMIT reserves the right to adjust fees for full-fee places on an annual basis.
HOW TO APPLY

Before applying for a program at RMIT, check the mode of application and the extra requirements in this brochure, the VTAC Guide or at www.rmit.edu.au/programs.

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<tr>
<th>How to apply by program type</th>
<th>Semester 1 intake</th>
<th>Semester 2 intake (if offered)</th>
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<tbody>
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<td>Degrees and associate degrees (not including honours)</td>
<td>VTAC application</td>
<td>Direct application</td>
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<tr>
<td>Certificate IV, diploma, advanced diploma (full-time)</td>
<td>VTAC application</td>
<td>Direct application</td>
</tr>
<tr>
<td>Certificate IV, diploma, advanced diploma (part-time)</td>
<td>VTAC application</td>
<td>Direct application</td>
</tr>
<tr>
<td>Certificate III and lower*</td>
<td>RMIT school-based application</td>
<td>RMIT school-based application</td>
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<tr>
<td>Apprenticeships and traineeships</td>
<td>RMIT school-based application</td>
<td>RMIT school-based application</td>
</tr>
</tbody>
</table>

* Some certificate III and lower programs are administered by direct application. Please visit www.rmit.edu.au/programs for more information.

VTAC application

To apply for the following RMIT programs for Semester 1 2012, you need to apply through the Victorian Tertiary Admissions Centre (VTAC):
- degree programs—full-time and part-time
- certificate and diploma programs—full-time and part-time.
For more detailed information about the VTAC application process, entrance requirements and application dates go to www.vtac.edu.au.

Direct application

To apply for one of the following programs submit a direct application at www.rmit.edu.au/programs/apply:

- TAFE
  - VCE and VCAL
  - full-time and part-time TAFE programs not offered through VTAC
- Degree
  - new degrees not offered through VTAC
- Midyear
  - distance education degree program
- Midyear
  - all midyear applications

RMIT school-based application

A number of TAFE certificate I, II, III and a limited number of certificate IV programs accept applications directly to the relevant RMIT school. Information on where to obtain and lodge an application can be found on the program information web page at www.rmit.edu.au/programs, by contacting Info Corner, or by contacting the relevant RMIT school at www.rmit.edu.au/schools.

Midyear entry

To apply for midyear entry at RMIT you will need to apply online at www.rmit.edu.au/programs/midyear.
Not all RMIT programs will accept applications for midyear entry. A list of programs accepting midyear applications is published in May at www.rmit.edu.au/programs/midyear.

Entrance requirements

RMIT has general requirements of entry which applicants are required to meet in order to demonstrate their capacity to successfully complete an RMIT program. The general requirements of entry for undergraduate programs can be found at www.rmit.edu.au/policies/students/selection.

Extra requirements

Many programs at RMIT have extra requirements as part of their selection process such as:
- an interview
- a test
- a folio
- completion of additional supplementary forms.
It is very important that you carefully read any extra requirements listed under programs in the current VTAC Guide or in RMIT program brochures. Failure to comply with these requirements by the date specified will jeopardise entry into a program.

Application dates

Key application dates are as follows:
- 1 May Midyear intake applications open
- 31 May Closing date for direct applications—midyear (timely)
- 1 August VTAC applications open
- 14 August Direct applications for degree and diploma programs open (Semester 1 2012 intake)
- 30 September Closing date for VTAC applications (timely)
- 11 October Closing date for VTAC SEAS and Direct ACESS applications
- 31 October Closing date for direct applications—selected TAFE programs
- 10 November Closing date for direct applications—postgraduate and honours (timely)
- 11 November Closing date for VTAC applications (late)
- 1 December Closing date for direct applications—selected degree and TAFE programs
- 9 December Closing date for VTAC applications (very late)

International/non-resident of Australia

Applicants who are not Australian or New Zealand citizens, permanent residents of Australia or holders of a Permanent Humanitarian or Temporary Protection Visa should apply through RMIT International Services (unless currently studying Year 12 in Victoria—VCE or the International Baccalaureate).
For more information visit www.rmit.edu.au/programs/international.

More information

For more information about RMIT programs and application procedures go to www.rmit.edu.au/programs/apply or contact Info Corner at 330 Swanston Street, Melbourne, tel. +61 3 9925 2260 or email study@rmit.edu.au.