

GLOBAL INNOVATION



MONASH University

MASTER OF ADVANCED ENGINEERING



MAKE YOUR MARK AS A FUTURE ENGINEERING LEADER

ARE YOU A QUALIFIED ENGINEER WITH LEADERSHIP AMBITION?

Introducing the new Master of Advanced Engineering at Monash University – a one year qualification that could transform your future.

This inspiring study experience is not just about acquiring new skills. It is a key transitional stage in your career as an emerging business leader.

With a \$6,000 scholarship for all students commencing in 2015 and exciting double Masters options, 2015 could be the start of something new for you.

WHY WAIT FOR
SUCCESS TO
COME TO YOU?

JOIN THE CLASS
OF 2015 TODAY.

A COURSE DESIGNED WITH YOU IN MIND

BUILD ON YOUR EXISTING SPECIALISATION

The Master of Advanced Engineering is available in six specialisations:

Chemical engineering

Civil engineering (Water)

Civil engineering (Transport)

Electrical engineering

Materials engineering

Mechanical engineering

MORE POSSIBILITIES WITH A DOUBLE MASTERS

Take your career even further by combining your postgraduate engineering qualification with another one-year Masters degree. Combine with:

Master of Business

Master of Business Information Systems

Master of Information Technology

Master of Networks and Security

If you study full time, you could receive two Masters degrees in just two years.

ONE YEAR IS ALL IT TAKES

Delivered at the Clayton campus, the Master of Advanced Engineering is an attractive one-year qualification.

You may also choose to complete the course in two years, allowing you to work while studying.

THE FINANCIAL REWARD YOU DESERVE

To celebrate the launch of the new program, all students commencing in 2015 receive a \$6,000 scholarship.

Students must enrol by 30 November 2014 to qualify.

WHY STUDY A MASTER OF ADVANCED ENGINEERING AT MONASH?

DEVELOP YOUR LEADERSHIP SKILLS

As a Master of Advanced Engineering graduate, you could become a transformational, global and socially-responsible leader.

You will build on your existing skills and boost your confidence as a leader in a range of settings. Innovative thinking and entrepreneurship will be encouraged.

The program integrates leadership and personal development activities through a range of channels – including coursework, industry seminars and work-ready programs. We also offer a Monash Industry Team Initiative program for interested students.

BUILD A GLOBAL NETWORK

At Monash you will be taught by the best - and learn alongside the best.

World-class academics and passionate professionals from a range of backgrounds will challenge you every day - to share your knowledge, insights and ideas.

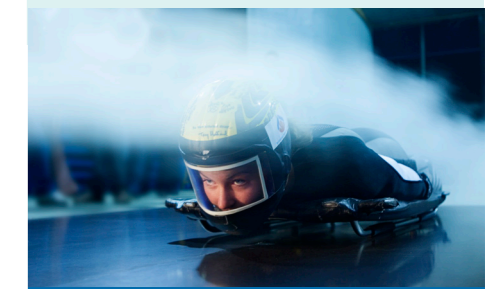
You will study with the same group of students for most of your classes, allowing you to form a solid and enduring network. Your cohort will also have exclusive access to a dedicated postgraduate lounge in the engineering precinct at Clayton.

JOIN A WORLD-ELITE INSTITUTION

With a Monash qualification, you will be highly-regarded all over the world. You will join the ranks of Australia's largest university - and acquire status as a 'Group of Eight' graduate.

The Times Higher Education World University Rankings (2013-2014) places Monash in the top 1% of world universities. Additionally, the Academic Ranking of World Universities (2013) rates Monash as the best university in Australia for engineering.

But rankings are not the be all and end all. What matters most is your personal learning experience - and the facilities that enhance it. Monash hosts some of Australia's most superior engineering facilities, some of which are outlined to the right.



WIND TUNNEL

Monash hosts the largest wind tunnel in the southern hemisphere (pictured above). The wind tunnel has been used to test the aerodynamics and strength of elite athletes such as Cadel Evans.

THE CAVE 2

A next-generation immersive hybrid 2D and 3D virtual reality environment.

NEW HORIZONS CENTRE

The \$175 million facility brings Monash and CSIRO together to research the future in biological engineering, renewable energy and more.

THE 'TITAN' MICROSCOPE

Our centre for Electron Microscopy is home to the one of the world's most powerful electron microscopes.

WEATHER RADAR SYSTEM

Soon to come: The METEOR 60DX is a highly sensitive X-Band weather radar system based on magnetron technology. For weather surveillance and tracking, severe weather indication and flood forecasting.

COURSE DETAILS

ENTRY REQUIREMENTS

COURSE OBJECTIVE

The Master of Advanced Engineering is designed to extend your knowledge in your specialisation and advance your leadership and complex problem-solving skills.

You will explore your discipline on an advanced level and learn how to apply your new knowledge to real problems. Your studies will also focus on engineering leadership to strengthen your critical reasoning and strategic thinking skills.

QUALIFICATIONS

To apply for the Master of Advanced Engineering, you must have the equivalent of a four-year Australian Bachelor of Engineering in the relevant discipline with a minimum 70% average (Australian equivalent).

ENGLISH LANGUAGE

If you are an international applicant, you must also meet one of the following English language requirements:

COURSE OUTCOMES

When you successfully complete this course, it is expected that you will be able to:

Understand and proficiently apply the relevant sciences and scientific methods in at least one specialist engineering practice area, to design solutions to complex problems

Identify, interpret and critically appraise current developments and advanced technologies and apply knowledge of these to at least one specialist area

Determine, analyse and proficiently apply theoretical and numerical analysis of phenomena to predict, design, control and optimise the performance of complex engineering systems

Research, identify, conceptualise, investigate, and interpret knowledge from modern engineering tools and techniques to synthesise a coherent approach to the solution of a complex problem and/or the design of a complex project

Develop and implement creative and innovative approaches to complex problem solving

Engage in an internationalised world, exhibit cross-cultural competence and demonstrate ethical values

TEST	REQUIREMENT
IELTS	Overall score of 6.5 with no band less than 6.0
TOEFL Paper-based	Overall score of 550 with a TWE of at least 4.5
TOEFL Internet-based	Overall score of 79 with at least 21 in writing, 12 in Listening, 13 in Reading and 18 in Speaking

QUICK FACTS

Managing faculty

ENGINEERING

Course code

4688

Abbreviated title

MADVENG

CRICOS code

082013E

Credit points required

48

Duration

1 YEAR FT

2 YEARS PT

Study mode

ON-CAMPUS AT CLAYTON

COURSE STRUCTURE

TOTAL 48 CREDIT POINTS

YOU MUST COMPLETE 48 CREDIT POINTS AS FOLLOWS:

COMMON CORE UNITS

12 CREDIT POINTS

Two common core units which are:

1. **Advanced engineering data analysis**
2. **Engineering entrepreneurship**

DISCIPLINE CORE UNITS

12 CREDIT POINTS

Four discipline core units from your specialisation.

Please refer to your specialisation on following pages for units specific to your discipline.

ENHANCEMENT UNITS

12 CREDIT POINTS

Two enhancement units to be selected from the list below.

ENHANCEMENT UNITS: CHOOSE TWO OF THE BELOW

Ground water hydrology
CIV5881

Water sensitive storm water design
CIV5884

Biomass and refineries
CHE5882

Nanostructured membranes for separation and energy production
CHE5883

Engineering systems performance analysis
MEC5881

Instrumentation, sensing and monitoring
MEC5882

Advanced polymeric materials
MTE5882

Environmental durability and protection of metals and engineering materials
MTE5883

Materials for energy technologies
MTE5884

Sustainability regulation
BTF5910

Economics
ECF5953

Network protocols standards
FIT5010

Network design and performance
FIT5011

Quality of service and network management
FIT5011

Network security
FIT5037

Mobile and distributed computing systems
FIT5046

Network infrastructure
FIT5083

Intelligent systems
FIT5047

Software engineering
FIT5136

Database analysis and processing
FIT5137

Patenting for commercialisation
LAW7433

Managing innovation
MGF5600

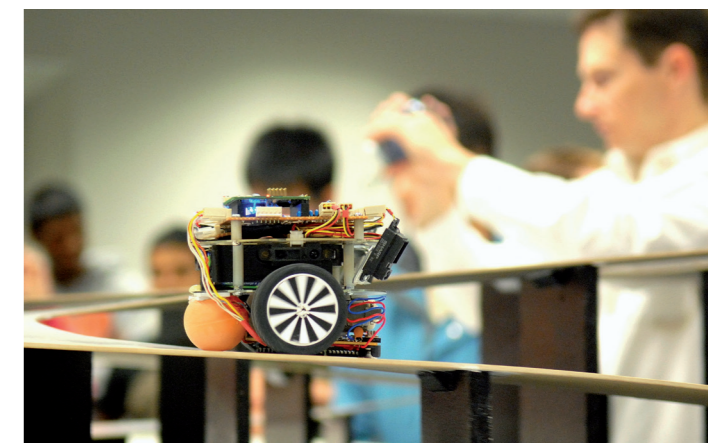
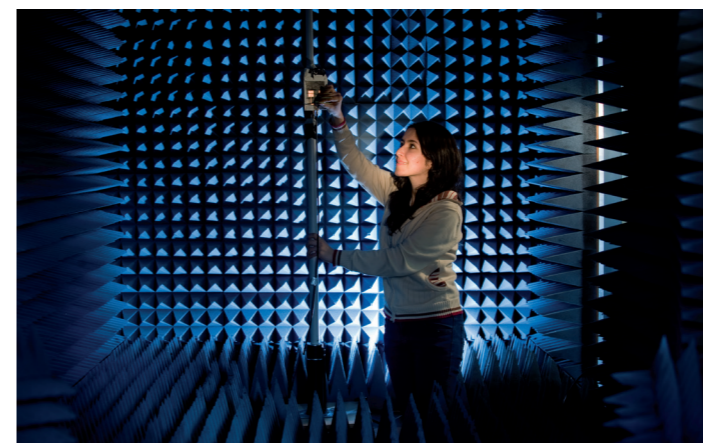
Pathways from science to wealth
MGX5011

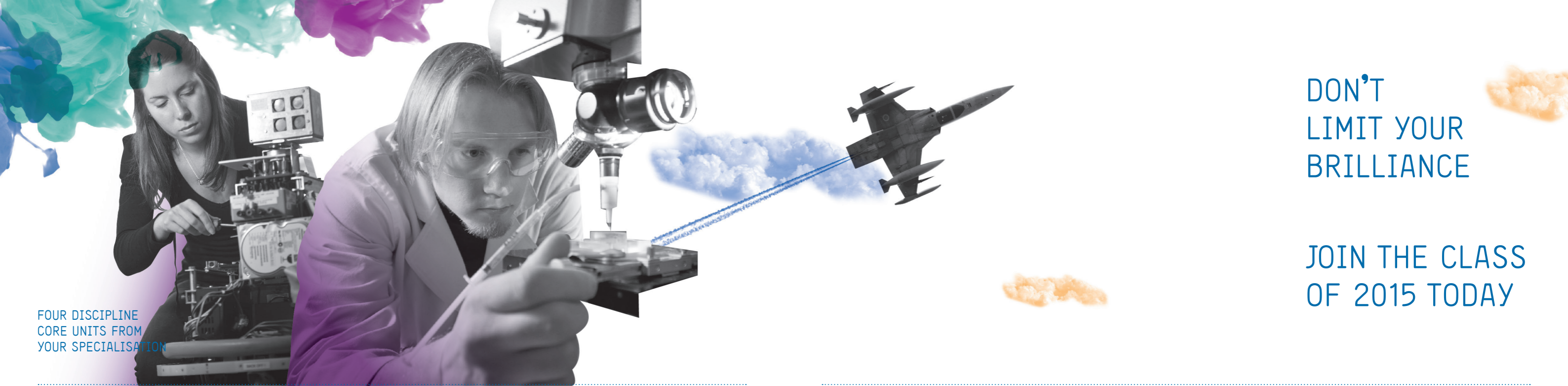
Personal development – critical thinking and communications
MGX5991

Personal development – managing self and relationships
MGX5992

Foundations of marketing
MKF5916

Please note prerequisites may exist for some of the above units and some are offered at campuses other than Clayton.





FOUR DISCIPLINE
CORE UNITS FROM
YOUR SPECIALISATION

DON'T
LIMIT YOUR
BRILLIANCE

JOIN THE CLASS
OF 2015 TODAY

CHEMICAL ENGINEERING

AREAS OF STUDY

You will develop up-to-the-minute knowledge relevant to chemical engineers across a range of industry and research areas including:

- Advanced reaction engineering
- Process design and optimisation
- Conversion of bio-resources into fuel
- Materials and specialty chemicals
- Nano-structured membranes for sustainable separations and energy production

DISCIPLINE CORE UNITS

- Advanced reaction engineering **CHE5881**
- Biomass and bio-refineries **CHE5882**
- Nanostructured membranes for separation and energy production **CHE5883**
- Process optimisation **CHE5884**

TOTAL: 24 CREDIT POINTS

CIVIL ENGINEERING (WATER)

AREAS OF STUDY

This program will equip you with advanced skills for managing the challenges of changing climatic conditions on water resource management. Areas of study include:

- Surface and ground water flow
- Stormwater management
- Water quality
- Flood forecasting and mitigation

DISCIPLINE CORE UNITS

- Ground water hydrology **CIV5881**
- Flood hydraulics and hydrology **CIV5882**
- Surface water hydrology **CIV5883**
- Water sensitive stormwater design **CIV5884**

TOTAL: 24 CREDIT POINTS

CIVIL ENGINEERING (TRANSPORT)

AREAS OF STUDY

Today's society increasingly demands engineers with advanced transport expertise. With a focus on state-of-the-art engineering solutions, you will investigate the significance and impact of transport from a technological, economic and social perspective. Areas of study include:

- Transport engineering and management
- Traffic engineering
- Intelligent transport systems
- Transport planning

DISCIPLINE CORE UNITS

- Traffic engineering fundamentals **CIV5301**
- Transport planning and policy **CIV5314**
- Road traffic: engineering and management **CIV5302**
- Transport modelling **CIV5305**

TOTAL: 24 CREDIT POINTS

ELECTRICAL ENGINEERING

AREAS OF STUDY

You will explore advanced techniques in signal processing, communications, digital systems and electronics.

Units focus on the common theme of embedded systems - special purpose computing systems designed for specific applications. Embedded systems are found just about everywhere, including consumer electronics, transport, medical equipment and sensor networks.

DISCIPLINE CORE UNITS

- Real-time system design **ECE5881**
- Advanced electronics design **ECE5882**
- Advanced signal processing **ECE5883**
- Wireless communications **ECE5884**

TOTAL: 24 CREDIT POINTS

MATERIALS ENGINEERING

AREAS OF STUDY

With a focus on the latest developments in materials engineering, this course explores:

- The role of materials in the design and construction of engineering structures from a technical, economic and environmental perspective
- The practical aspects of key material classes such as metals, polymers, biomaterials, nanomaterials and energy-related materials
- The electronic, chemical and mechanical properties of materials through modern characterisation techniques.

DISCIPLINE CORE UNITS

- Advanced materials characterisation and experimental methods **MTE5881**
- Advanced polymeric materials **MTE5882**
- Environmental durability and protection of metals and engineering materials **MTE5883**
- Materials for energy technologies **MTE5884**

TOTAL: 24 CREDIT POINTS

MECHANICAL ENGINEERING

AREAS OF STUDY

This program takes a systems approach to the design, monitoring and performance of complex mechanical engineering systems in the fields of:

- Renewable energy
- Aerospace,
- Buildings
- Transportation
- Biomedical devices.

The systems approach also permeates the design of the course. Four discipline-based core units are integrated so that common problems are examined from different perspectives, culminating in a sustainable systems unit.

DISCIPLINE CORE UNITS

- Engineering systems performance analysis **MEC5881**
- Instrumentation, sensing and monitoring **MEC5882**
- Mechanical systems design **MEC5883**
- Sustainable engineering systems **MEC5884**

TOTAL: 24 CREDIT POINTS

HOW TO APPLY

Apply now for 2015 and take advantage of our special \$6,000 scholarship opportunity.

Applications close 30 November 2014.

Learn more

www.eng.monash.edu/masters

Apply now

www.monash.edu.au/study/apply

Phone Domestic

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Phone International

(+61) 3 9903 4788



The information in this brochure was correct at the time of publication (August 2014). Monash University reserves the right to alter this information should the need arise. You should always check with the relevant Faculty office when considering a course. CRICOS provider: Monash University 00008C



Group of 8 is an alliance of Australia's best universities, recognised for their excellence in teaching and research.