

# Master of Engineering (354JA.1)

Please note these are the 2023 details for this course

## Domestic students

Selection rank	N/A
Delivery mode	On campus
Location	Bruce, Canberra
Duration	2.0 years
Faculty	Faculty of Science and Technology
Discipline	Academic Program Area - Technology
UAC code	880276
English language requirements	An IELTS Academic score of 6.5 overall, with no band score below 6.0 (or equivalent). <a href="#">View IELTS equivalences</a>

## International students

Academic entry requirements	To study at UC, you'll need to meet our academic entry requirements and any admission requirements specific to your course. Please read your course admission requirements below. To find out whether you meet UC's academic entry requirements, visit our academic entry requirements page.  <a href="#">View UC's academic entry requirements</a>
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<b>Delivery mode</b>	On campus
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<b>Location</b>	Bruce, Canberra
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<b>Duration</b>	2.0 years
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<b>Faculty</b>	Faculty of Science and Technology
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<b>Discipline</b>	Academic Program Area - Technology
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<b>CRICOS code</b>	090013E
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<b>English language requirements</b>	An IELTS Academic score of 6.5 overall, with no band score below 6.0 (or equivalent). <a href="#">View IELTS equivalences</a>
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# About this course

## Engineer your own career advancement

If you are an existing engineering graduate looking for career progression, then UC's Master of Engineering offers the chance to not only gain an advanced qualification in a field of your choice, but also help put you on the right path to success.

With a strong emphasis on Work Integrated Learning (WIL) and real-world problem solving, this course has been specifically designed to use your existing experience and combine it with a range of new research and practical experiences to enable you to gain the skills to exceed your personal professional objectives.

As part of this course you will also undertake considerable practical work experience which is a unique opportunity designed to expand your knowledge and network base, while simultaneously strengthening your ability to meet the intricate demands of the information and telecommunications industries.

Towards the end of the course you will also get the chance to undertake a major research project, allowing you to create and implement high-quality information systems for use in a real-life practical situation.

This course has been specifically designed to help you graduate with advanced knowledge and skills to confidently and competently assume a senior position within your specialisation – regardless of whether you have chosen a network or software engineering pathway.

## Study a Master of Engineering at UC and you will:

- gain an advanced understanding of the specialisation (either network engineering or software engineering) including the principles to design, develop, operate and evaluate systems
- demonstrate a conceptual and comprehensive understanding of mathematics, electronics and signal processing
- design, implement and evaluate software engineering/network engineering projects which address contemporary and complex issues
- distinguish which engineering principles are appropriate to use in the solution of complex technological (software/networking) problems
- creatively apply relevant theories and techniques of data communication networks or software engineering to the interpretation, analysis and solution of technological problems
- build stronger industry networks
- graduate with a globally recognised and respected degree

## Work Integrated Learning (WIL)

Work-integrated learning (WIL) is an integral component of the UC Master of Engineering course as it offers students the opportunity to gain valuable hands-on experience and build professional relationships through real-work, or work-like placements.

To help encourage on the job learning, UC works hard to foster close industry connections with professional organisations, and as a result, can offer unrivalled access to industry partners with both the knowledge and resources to provide top level work placement positions and training opportunities.

As part of your studies you will be required to undertake a minimum of 12 weeks of professional work placement. Previous internships have taken placement at professional organisations such as: Intelledox, Omni Executive, Pursuit Technology, Qirx, Fujitsu Australia, Birdsnest, Agsafe, ThoughtPatterns Consulting, ESKAPEE, HydroAlgorithmics, ALLBIDS, VerveEd.com, Emanate Technology, Xero Australia and the Australian Taxation Office.

In your final year, you will also get to complete a capstone research project, producing and implementing a real-world engineering solution for a local business, government or community organisation.

## Career opportunities

The UC Master of Engineering is an advanced degree that is both globally recognised and industry respected. UC's unique connections within the industry also means that students tend to establish strong, authentic professional relationships long before they actually graduate. This close connection often means that students stand out from the competition and have a higher chance of moving into a career in any one of the following careers:

- Software engineer
- Network engineer
- Software and hardware programmer
- Network and systems administrator
- IT project manager
- Games developer
- Business or systems analyst

- Database programmer
- IoT (Internet of Things) specialist
- ICT security engineer
- Software and network engineering consultant
- Artificial intelligence and machine learning engineer

## Course-specific information

Applicants need to have completed a four-year Bachelor of Engineering degree (or equivalent), or a three-year bachelor's degree accredited by Engineers Australia at a Technologist level (or equivalent), or have completed the following University of Canberra degrees:

- Bachelor of Information Technology
- Bachelor of Software Engineering
- Bachelor of Science with a major in either Software Engineering or Network Engineering.

Accreditation with Engineers Australia at Professional Engineer level is being pursued.

## Professional accreditation

Accreditation with Engineering Australia at Professional Engineer level is being pursued.

# Admission requirements

A 4 year Bachelor of Engineering degree or equivalent, or a 3 year bachelor degree accredited by Engineers Australia at Technologist level or equivalent. Or, graduates from the following University of Canberra degrees: Bachelor of Information Technology, 322AA; or Bachelor of Software Engineering, 560AA; or Bachelor of Science, 392AB with Major in Software Engineering or Network Engineering.

## Assumed knowledge

None.

## Periods course is open for new admissions

This course is not open for new admissions.

## Credit arrangements

There are currently no formal credit transfer arrangements for entry to this course. Any previous study or work experience will only be considered as part of the application process in accordance with current [course rules and university policy](#).

# Course requirements

Master of Engineering (354JA) | 48 credit points

**Required - Must pass 33 credit points as follows**

[Expand All](#) | [Collapse All](#)

Inf. Sc. Research Methodology PG (6797) | 3 credit points – Level P

- A minimum of 12 weeks of professional experience must be completed. Students must enrol and complete Engineering Work Experience PG, 10136, for the purposes of recording and assessment.

Technology and Engineering Management PG (9784) | 3 credit points – Level P

Introduction to Network Engineering G (10088) | 3 credit points – Level G

Embedded Systems G (10089) | 3 credit points – Level G

Electronics Systems G (10091) | 3 credit points – Level G

Signals and Systems G (10093) | 3 credit points – Level G

Digital Signal Processing G (10095) | 3 credit points – Level G

Introduction to Computer Engineering G (10096) | 3 credit points – Level G

Professional Practice in Engineering G (10097) | 3 credit points – Level G

Engineering Project PG (10098) | 6 credit points – Level P

Engineering Work Experience PG (10136) | 0 credit points – Level P

Students may seek permission to replace the required and restricted-choice units by writing a report detailing previous experience or study. Permission is at the discretion of the Course Convener.

### **Restricted Choice - Must pass 3 credit points from the following**

Discrete Mathematics G (6699) | 3 credit points – Level G

Engineering Mathematics G (10090) | 3 credit points – Level G

### **Award Options - Must select 1 of the following**

#### **Master of Engineering (Network Engineering) - Must pass 12 credit points from the following**

High Speed Networks PG (6692) | 3 credit points – Level P

Coding Theory PG (7146) | 3 credit points – Level P

Information Sciences Internship PG (7900) | 3 credit points – Level P

Network Architecture PG (10099) | 3 credit points – Level P

Wireless Networks PG (10100) | 3 credit points – Level P

Communication Theory PG (10101) | 3 credit points – Level P

#### **Master of Engineering (Software Engineering) - Must pass 12 credit points from the following**

Object Oriented Software Design PG (6684) | 3 credit points – Level P

Client-Server Computing PG (6693) | 3 credit points – Level P

Graphics Visualisation Techniques PG (7108) | 3 credit points – Level P

Game Programming Techniques PG (7191) | 3 credit points – Level P

Soft Computing PG (7197) | 3 credit points – Level P

Information Sciences Internship PG (7900) | 3 credit points – Level P

Data Analytics and Business Intelligence PG (8697) | 3 credit points – Level P

Computer Vision and Image Analysis PG (8890) | 3 credit points – Level P

Programming Natural User Interfaces PG (8891) | 3 credit points – Level P

In addition to course requirements, in order to successfully complete your course you must meet the inherent requirements. Please refer to the [inherent requirements statement](#) applicable to your course

# Typical study pattern

UC - Canberra, Bruce

Standard Full Time, Semester 1 Commencing

## Year 1

### Semester 1

Electronics Systems G (10091)

Embedded Systems G (10089)

Introduction to Network Engineering G (10088)

### Semester 2

Inf. Sc. Research Methodology PG (6797)

Introduction to Computer Engineering G (10096)

Professional Practice in Engineering G (10097)

Signals and Systems G (10093)

## Year 2

### Semester 1

Digital Signal Processing G (10095)

Technology and Engineering Management PG (9784)

Two Award Specialisation Units

### Semester 2

Two Award Specialisation Units

# Course information

## Course duration

Standard 4 semesters full-time or equivalent. Maximum 12 semesters.

## Learning outcomes

Learning outcomes	Related graduate attributes
<p>Application of Knowledge and Skills:</p> <p>Contextualise the most recent practical and theoretical developments in Software Engineering or Network Engineering and justify their application in various contemporary and emerging professional fields.</p>	<ul style="list-style-type: none"><li>- Employ up-to-date and relevant knowledge and skills.</li></ul>
<p>Effectively communicate findings to specialist and non-specialist audiences in a manner that is clear, concise and demonstrates a clear message of an integrated and advanced understanding of the subject matter.</p>	<ul style="list-style-type: none"><li>- Communicate effectively in diverse cultural and social settings;</li><li>- Work collaboratively as part of a team, negotiate, and resolve conflict.</li></ul>
<p>Demonstrate an understanding of the professional engineering environment including autonomous initiative, appropriate team working skills, management and leadership, professional communication, and engineering workplace ethics, responsibilities, safety and sustainability.</p>	<ul style="list-style-type: none"><li>- Communicate effectively;</li><li>- Work collaboratively as part of a team, negotiate, and resolve conflict;</li><li>- Take pride in their professional and personal integrity;</li><li>- Behave ethically and sustainably in their professional and personal lives;</li><li>- Think globally about issues in their profession.</li></ul>

<p>Demonstrate a conceptual and comprehensive understanding of mathematics, electronics, and signal processing, which underpin the engineering specialisation - and to be able to synthesize the relevant concepts as they are employed within information and networking systems as applicable to their relevant specialisation in software or network engineering.</p>	<ul style="list-style-type: none"> <li>- Employ up-to-date and relevant knowledge and skills;</li> </ul>
<p><b>Knowledge:</b>          Demonstrate an advanced and integrated understanding of their specialisation (either networking engineering or software engineering) including the principles to design, develop, operate and evaluate systems, the associated services and applications assuring the appropriate security and quality mechanisms.</p>	<ul style="list-style-type: none"> <li>- Employ up-to-date and relevant knowledge and skills;</li> </ul>
<p><b>Skills:</b>          Through applied research and theory based understanding, graduates will be able to develop a detailed specification from an initial brief, evaluate the various design options available to meet a given set of technical requirements, formulate a final design specification, and demonstrate how to implement and test the preferred option.</p>	<ul style="list-style-type: none"> <li>- Use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems;</li> <li>- Evaluate and adopt new technology.</li> </ul>
<p>Creatively apply relevant theories and techniques of data communication networks or software engineering to the interpretation, analysis and solution of technological problems in the merging software and telecommunication industry, such as those encountered in the Commonwealth Public Service, major telecommunications companies and national and international software and networking industry companies.</p>	<ul style="list-style-type: none"> <li>- Use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems;</li> <li>- Make creative use of technology in their learning and professional lives.</li> </ul>
<p>Design, implement and evaluate software engineering/network engineering projects which address contemporary and complex issues.</p>	<ul style="list-style-type: none"> <li>- Display initiative and drive, and use their organisation skills to plan and manage their workload.</li> </ul>
<p>Demonstrate the ability to transfer and enhance the knowledge and skills acquired during the course to new or complementary areas of engineering and technology through the establishment of continuing professional development plans and career goal planning, all of which are keys for lifelong learning.</p>	<ul style="list-style-type: none"> <li>- Reflect on their own practice, updating and adapting their knowledge and skills for continual professional and academic development;</li> </ul>



	<ul style="list-style-type: none"> <li>- Be self-aware;</li> <li>- Take pride in their professional and personal integrity.</li> </ul>
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Utilising the expert-level judgement, graduates will be able to distinguish which engineering principles are appropriate to use in the solution of complex technological (software/networking) problems.

- Employ up-to-date and relevant knowledge and skills;
- Adopt an informed and balanced approach across professional and international boundaries;
- Understand issues in their profession from the perspective of other cultures.

## Awards

Award	Official abbreviation
Master of Engineering (Software Engineering)	ME (SE)
Master of Engineering (Network Engineering)	ME (Network E)

## Honours

None.

## Alternative exits

Graduate Certificate in Computing Engineering, Graduate Diploma in Computing Engineering

## Enquiries

Student category	Contact details
Current and Commencing Students	Please contact the University Student Centre by Email <a href="mailto:student.centre@canberra.edu.au">student.centre@canberra.edu.au</a> or Phone 1300 301 727
Prospective Domestic	Email <a href="mailto:study@canberra.edu.au">study@canberra.edu.au</a> or Phone 1800 UNI CAN (1800 864 226)

Students

Prospective International  
Students

Email [international@canberra.edu.au](mailto:international@canberra.edu.au) or Phone +61 2 6201 5342

## Download your course guide



# Scholarships

Find the scholarship that's the right fit for you

[Explore Scholarships](#)

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UC acknowledges the Ngunnawal people, traditional custodians of the lands where Bruce campus is situated. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of Canberra and the region. We also acknowledge all other First Nations Peoples on whose lands we gather.