COURSE STRUCTURES

MAJORS IN CIVIL, ENVIRONMENTAL AND MINING ENGINEERING

Core subjects:
- Engineering Computing
- Engineering Project Management
- Engineering Research Methods
- Innovation and Design
- Professional Practice
- Sustainability for Engineers, Scientists and Professionals*
- Dissertation (Research Project)

Plus subjects from the selected major. The following subjects provide a guide to the subjects available. For further information see the Course Handbook at uow.edu.au/handbook

*not required for Mining Engineering major

CIVIL ENGINEERING MAJOR
- Advanced Computer Applications
- Advanced Design of Masonry Structures
- Advanced Foundation Engineering
- Advanced Soils Mechanics
- Construction Management
- Highway Materials
- Structural Design Based on Australian Standards

ENVIRONMENTAL ENGINEERING MAJOR
- Air and Noise Pollution Management
- Engineering Project Management
- Environmental Engineering Processes Design
- Industrial Waste Engineering and Cleaner Production
- Membrane Processes and Applications
- Site Contamination and Remediation Technologies
- Sustainable Energy Technologies
- Water Quality Engineering and Management

MINING ENGINEERING MAJOR
- Advanced Mine Safety
- Advanced Mineral Resource Estimation Methods
- Environmental Control in Mines
- Mine Planning and Development
- Mineral Valuation Risk Analysis
- Rock Mechanics
- Surface Mining Methods
- Underground Mining Methods

MAJORS IN ASSET MANAGEMENT, INNOVATIVE MANUFACTURING, MATERIALS, MECHANICAL AND MECHATRONIC ENGINEERING

Core subjects:
- Engineering Computing
- Engineering Project Management
- Engineering Research Methods
- Innovation and Design*

*not required for Mining Engineering major
MAJORS IN COMPUTER, ELECTRICAL & TELECOMMUNICATIONS ENGINEERING

Core subjects:
- Advanced Laboratory
- Advanced Project
- Advanced Signals and Systems
- Engineering Design and Management
- Engineering Research Methods

ELECTRICAL ENGINEERING MAJOR
- Advanced Signals and Systems
- Identification and Optimal Control
- Renewable and Distributed Generation

Plus an additional three subjects selected from the electives from Electrical, Computer, Mechanical or Engineering subjects. For more information see the Course Handbook at uow.edu.au/handbook

COMPUTER ENGINEERING MAJOR
- Advanced Signals and Systems
- Image and Video Processing
- Internet Networking Protocols

Plus an additional three subjects selected from the electives from Electrical, Computer, Mechanical or Engineering subjects. For further information see the Course Handbook at uow.edu.au/handbook

TELECOMMUNICATIONS ENGINEERING MAJOR
- Advanced Signals and Systems
- Identification and Optimal Control
- Mobile Networks

Plus an additional three subjects selected from the electives from Electrical, Computer, Mechanical or Engineering subjects. For more information see the Course Handbook: uow.edu.au/handbook

Students will then select a further three subjects from the list below based on advice and approval from the Course Coordinator.

Subjects available include:
- Communication Systems
- Computer Controlled Systems
- Control Theory
- Data Communications
- Digital Signal Processing
- Embedded Systems
- Foundations in Electrical Energy Utilisation
- Intelligent Control
- Microcontroller Architecture and Applications
- Multimedia Signal Processing
- Operations Research
- Power Electronics and Drives
- Power Engineering 2
- Power System Analysis
- Queuing Theory and Optimization
- Robotics and Flexible Automation
- Wireless Communication Systems
Master of Engineering (Management)

go.uow.edu.au/meng

CRICOS  083844B
DURATION  2 years (96 cp)
STARTS  Autumn and Spring
ENTRY REQUIREMENTS  Recognised 4-year Bachelor of Engineering with an equivalent average mark of 60%.
CREDIT  Applicants with a major in the same area as their proposed ME major may apply for credit for 24 cp (one session). Applicants with a Bachelor Honours degree in the same area may apply for credit for 48 cp (1 year).
IELTS  6.0 (with 6.0 in each band)

This program is for engineers who see their careers progressing into management. The subjects provide a very strong grounding in some of the most modern management thinking applicable to engineering industries. Graduates will work in teams on applied practical projects and case studies, and broaden their skills base with subjects from other disciplines including finance, human resources and marketing.

COURSE STRUCTURE
In the Master of Engineering (Management), students complete the core subjects from the Master of Engineering program plus subjects from the major study.

Core subjects - Master of Engineering
- Engineering Computing
- Engineering Project Management
- Engineering Research Methods
- Innovation and Design
- Professional Practice
- Sustainability for Engineers, Scientists and Professionals
- Dissertation

The following list provides a guide to the subjects available in the Management major. For further information see the Course Handbook at uow.edu.au/handbook

- Engineering Logistics
- Modelling of Engineering Management Systems
- Financial Management for Engineered Assets
- Life-Cycle and Risk Management
- Strategic Management for Engineers and Technologists
- Supply Chain and Operations Management

Plus an additional elective from Engineering or Sydney Business School subjects.

A one-year (48cp) Master of Engineering Management (CRICOS 051350M) is also available for applicants with a recognised Bachelor Honours degree in Engineering.

PROFESSIONAL PRACTICE SUBJECT ENGG942

Professional Practice is designed to provide students with skills and knowledge to prepare them for the Australian engineering workplace.

Engineering workplace practices, regulatory requirements and recruitment processes are all covered in this subject, as well as communication, marketing and career development, to support graduates seeking employment.

Topics include:
- Australian workplace culture and practices
- Communication skills for the job search and recruitment processes in the Australian context
- Engineering regulatory environment, including OHS and site visits
- Intercultural communication skills

Students in Electrical, Computer and Telecommunications Engineering majors take Communication and ICT Workplace Practice instead of ENGG942.
Technology touches every part of our daily lives, and UOW continues a long-history of providing technically excellent graduates to meet industry demand with the Master of Computer Science. This degree gives graduates the ability to solve complex real world problems by integrating computer science methods with effective management strategies and by developing and deploying computer applications. Students will be able to put theory into practice with an individual capstone project.

**COURSE STRUCTURE**

**YEAR 1**

Four foundation subjects (24 cp) from the following options depending on your background in computer science:

- Algorithms and Data Structures
- Object and Generic Programming in C++ or Java Programming & Applications
- Systems Development or Software Development Methods & Tools
- Database Systems or Systems Security or Human Computer Interaction

Core subjects (24 cp):

- Contemporary Topics in Computer Science
- Research Methods

Plus two electives from the Computer Science Graduate Subjects List.

**YEAR 2**

- Research Project or Professional Project (12 cp)*
- Four subjects (24 cp) from one of the Majors listed below to graduate with a major.
- Plus a further two electives (12 cp) from any of the subjects listed below, and approved by the Course Coordinator.

*students with a mark 75% or above in Research Methods may enrol in the Project, all other students enrol in the Professional Project.

**MAJORS**

**MULTIMEDIA AND VISUAL PROCESSING MAJOR**

- Computational Intelligence
- Computer Vision
- Multimedia Content Management
- Pattern Recognition
- Perception and Planning
- Reasoning and Learning
- Visualisation

**SOFTWARE ENGINEERING MAJOR**

- Formal Methods in Software Engineering
- Service-Oriented Software Engineering
- Software Engineering Requirements and Specification
- Software Testing and Analysis

**NETWORK AND INFORMATION SECURITY MAJOR**

- Advanced Computer Security
- Advanced Network Security
- Coding for Secure Communication
- Mathematics for Cryptography
- Topics in Applying Information Security

**INTELLIGENT SYSTEMS MAJOR**

- Computational Intelligence
- Data Mining
- Formal Methods in Software Engineering
- Perception and Planning
- Reasoning and Learning

**PROFESSIONAL RECOGNITION**

This degree is accredited by the Australian Computer Society (ACS) as meeting the requirements for membership at the Professional level. ACS has global reciprocal agreements, recognising your degree internationally.
Master of Information & Communication Technology Advanced

go.uow.edu.au/mict-adv

CRICOS 067074F
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree majoring in information systems, information technology, computer science or related area, with an equivalent average mark of 65%.

CREDIT Applicants with a Bachelor in information technology may apply for credit for 24 cp (one session). Applicants with a Bachelor Honours degree in information technology may apply for credit for 48 cp (1 year).

IELTS 6.0 (with 6.0 in each band)

The Master of Information and Communication Technology Advanced covers the deployment, maintenance, management and organisation of Information Technology (IT) in business. Graduates will deepen their understanding and experience in technology analysis and deployment, develop skills in the economic, regulatory and socio-technical issues that arise in the implementation and application of IT, and how to effectively manage these issues.

With the wide-spread deployment of technology in all businesses, IT graduates need to be trained in marketing, business intelligence, corporate government, and change management. This degree allows graduates to train in all aspects of current business operations, and round out their Master with an individual capstone project.

COURSE STRUCTURE

Core subjects (36 cp):
- Enterprise Architecture Design
- Information Systems and Strategies
- Professional Practice and Research Project
- Project and Change Management
- Systems Integration

Plus one of the following options:
- Single major study of four subjects (24 cp) from the options below plus six electives (36 cp); or
- Two major studies of four subjects in each listed major (2 x 24 cp) plus two electives (12 cp).

MAJORS

IT STRATEGIC PLANNING MAJOR
- Business Intelligence
- Information Design and Content Management
- IT Governance
- Organisational Issues and IT
- Strategic Network Design

ENTERPRISE NETWORKING MAJOR
- eBusiness Technologies
- IT Security and Risk Management
- IT-enabled Supply Chain Management
- Strategic Network Design
- Web Services and Service Oriented Architecture

HEALTH INFORMATICS MAJOR
- Business Intelligence
- Concepts and Issues in Healthcare Management
- Information Design and Content Management
- Introduction to Health Informatics

PROFESSIONAL RECOGNITION

The Master of Information Technology Advanced is accredited by the Australian Computer Society (ACS) as meeting the requirements for membership at the Professional level.

Master of Information Technology*

go.uow.edu.au/mit

CRICOS 083840F
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree with an equivalent average mark of 60% in any area. Applicants with other qualifications and substantial relevant professional experience may be considered.

IELTS 6.0 (with 6.0 in each band)

*Subject to final approval

The purpose of the Master of Information Technology is to develop an in-depth study of the organisational, economic, regulatory and socio-technical issues that arise in the implementation of IT in business and government, and how to effectively manage those issues. It is suitable for those without an IT-background seeking to develop the fundamental skills required to work in the sector, or to undertake a management role in which an understanding of IT implementation is essential.

COURSE STRUCTURE

Core subjects (36 cp):
- Database Management Systems
- Information Systems & Strategy
- Professional Practice or Research Project
- Programming Concepts
- System Analysis & Design

Plus either:
- To graduate with a major study—(24 cp) and six electives (36 cp) from the approved schedule of electives; or
- To graduate without a major—10 electives (60 cp) from the approved schedule of electives.
MAJORS
The following major studies are available in the Master of Information Technology. A major comprises four subjects chosen from the list below:

IT STRATEGIC MANAGEMENT MAJOR
Two of the following subjects:
- Business Intelligence and Knowledge
- IT Governance
- IT-enabled Supply Chain Management
- Organisational Issues and IT

Plus two from the following:
- Accounting for Managers
- International Business Strategy
- Internet Applications for Marketing
- Managing in Multinational Companies
- Managing People in Organisations
- Marketing Management
- Quality in Management
- Statistics for Decision Makers

ENTERPRISE NETWORKING MAJOR
- Corporate Network Management
- eBusiness Technologies
- IT Security and Risk Management
- Strategic Network Design
- Web Services and Service Oriented Architecture

INFORMATION SYSTEMS DEVELOPMENT MAJOR
- Advanced Web Program
- Enterprise Architecture Design
- Information Design and Content Management
- Systems Development Methodologies
- Systems Integration
- Web Services and Service Oriented Architecture

PROFESSIONAL RECOGNITION
This is a new course for 2015 and the course is currently undergoing accreditation by the Australian Computer Society (ACS) for membership at the Professional level.

MASTER OF HEALTH INFORMATICS

go.uow.edu.au/mhlnf
CRICOS 083828B
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree with an equivalent average mark of 60% in an area related to either information technology or health.
IELTS 6.0 (with 6.0 in each band)

Health services in Australia and around the world are becoming increasingly reliant on IT and e-health. This degree is designed to upgrade IT professionals who wish to specialise in health informatics or provide health professionals with training in IT for application in the health industry. The program aims to equip graduates with an understanding of the health sector and of the application of relevant systems to that sector. The degree enables graduates to take on leadership roles in public & private hospitals, and with health system vendors, telecommunications providers and pharmaceutical companies.

COURSE STRUCTURE
Four core subjects (24 cp):
- Concepts and Issues in Healthcare Computing
- Introduction to Health Informatics
- Statistics in Health Research
- Information Design & Content Management

Plus a capstone Professional Practice and Research Project (12 cp)

Graduates from a Health background will take four subjects (24 cp) from the IT stream outlined below:
- Database Management Systems
- System Analysis and Design
- Programming Concepts
- Information Systems & Strategic Planning

Graduates from an Information Technology background will take three subjects (18 cp) from the Health stream outlined below:
- Social Determinants of Health
- Health Promotion
- Health Policy
- Contemporary Public Health Issues

All students will then complete two Advanced IT subjects, with the remaining subjects taken as electives.

PROFESSIONAL RECOGNITION
The revised structure for the Master of Health Informatics in 2015 is currently undergoing accreditation by the Australian Computer Society (ACS) for the membership at the Professional level.
Master of Information Technology Management

go.uow.edu.au/mitm

CRICOS: 031283E*
DURATION: 1.5 years (72 cp)
STARTS: Autumn and Spring
ENTRY REQUIREMENTS: Recognised Bachelor degree majoring in information systems, information technology, computer science or related areas, with an equivalent average mark of 60%.
CREDIT: Applicants with a Bachelor Honours degree in information technology may apply for credit for 24 cp (1 session).
IELTS: 6.0 (with 6.0 in each band)

*CRICOS code update in progress.

This program is designed to prepare professionals to integrate and manage the information technology and systems in organisations. The program covers both IT strategic planning and implementation, and organisational management. Graduates will acquire an in-depth understanding of managing projects, people, knowledge and technologies in an organisational context.

COURSE STRUCTURE

Core subjects (48 cp):
- Innovation and Design
- IT Governance
- IT Security and Risk Management
- IT Strategic Planning
- Managing People in Organisations
- Project and Change Management
- Professional Practice and Research Project

At least two subjects (12 cp) from:
- Engineering Project Management
- Enterprise Architecture Design
- Information Design and Content Management
- Information Systems for Managers
- Organisational Issues & Information Technology
- Strategic Management for Engineers and Technologists
- Systems Integration

Two additional electives (12 cp) may be taken from:
- Accounting for Managers
- International Business Strategy
- Internet Application for Marketing
- Managing in Multinational Companies
- Procurement Management
- Quality in Management
- Supply Chain Management

PROFESSIONAL RECOGNITION

The revised structure for the Master of Information Technology Management in 2015 is currently undergoing accreditation by the Australian Computer Society (ACS) for membership at the Professional level.

MATHEMATICS AND STATISTICS

Master of Financial Mathematics

go.uow.edu.au/mfinmath

CRICOS: 083829A
DURATION: 2 years (96 cp)
STARTS: Autumn and Spring
ENTRY REQUIREMENTS: Recognised Bachelor degree with at least one year of mathematics or statistics and an equivalent average mark of 60%.
CREDIT: Applicants with a Bachelor in mathematics or statistics may apply for credit for 24 cp (one session). Applicants with a Bachelor Honours degree in mathematics or statistics may apply for credit for 48 cp (1 year).
IELTS: 6.0 (with 6.0 in each band)

This Masters program provides training in quantitative financial analysis and a range of analytical, statistical, computational and modelling skills needed for the formulation, implementation and evaluation of models in the financial sector to structure transactions, evaluate financial derivatives, manage risk and construct investment strategies.

COURSE STRUCTURE

YEAR 1
- Differential Equations 2
- Estimation and Hypothesis Testing
- Investment Management or Portfolio Management or Portfolio Simulation
- Managerial Finance
- Multivariate and Vector Calculus
- Probability and Random Variables
- Research Methods

Plus one elective.

YEAR 2
- Advanced Managerial Finance
- Financial Calculus (Enhanced)
- Linear and Generalised Linear Models (Enhanced)
- Major Project
- Numerical Methods in Finance
- Practitioners' Seminars
- Stochastic Methods in Finance

Plus one elective.

PROFESSIONAL RECOGNITION

This program satisfies the education requirements for Senior Associate membership of the Financial Services Institute of Australasia (FINSIA).
Master of Mathematics

go.uow.edu.au/mmath

CRICOS 012130B*
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree with at least one year of mathematics or statistics and an equivalent average mark of 60%.
CREDIT Applicants with a Bachelor in mathematics or statistics may apply for credit for 24 cp (one session).
Applicants with a Bachelor Honours degree in mathematics or statistics may apply for credit for 48 cp (1 year).
IELTS 6.0 (with 6.0 in each band)

This program is designed to consolidate and expand the mathematics knowledge gained by a student in an undergraduate program and to develop skills in undertaking mathematical research projects. Students complete a research project and subjects from the Mathematics and Statistics electives.

Master of Statistics

go.uow.edu.au/mstat

CRICOS 083830G
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree with at least one year of mathematics or statistics and an equivalent average mark of 60%.
CREDIT Applicants with a Bachelor in mathematics or statistics may apply for credit for 24 cp (one session).
Applicants with a Bachelor Honours degree in mathematics or statistics may apply for credit for 48 cp (1 year).
IELTS 6.0 (with 6.0 in each band)

This program is designed to upgrade statistical skills and to educate students to undertake advanced statistical work in industry, commerce or government, including the ability to communicate effectively with others.

PHYSICS

Master of Science (Medical Radiation Physics)

go.uow.edu.au/msci-mrphys

CRICOS 067176M
DURATION 2 years (96 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree in Science, Physics or Health with an equivalent average mark of 60%.
IELTS 6.0 (with 6.0 in each band)

Students in the Masters program will gain an in-depth technical and theoretical background and complete embedded practical work to prepare for a career as a medical physicist.

The Graduate Diploma allows students to complete the formal coursework necessary for accreditation separately from the research component.

COURSE STRUCTURE

The Masters program comprises 12 coursework subjects and an applied research project under the supervision of professional medical physicists.

Coursework subjects include:

- Advanced Modern Physics
- An Introduction to Human Anatomy and Physiology 1
- Applied Differential Equations
- Electromagnetism
- Electromagnetism and Optoelectronics
- Medical Imaging and Nuclear Medicine
- Multivariate and Vector Calculus
- Nuclear Physics
- Quantum Mechanics
- Radiation and Radiotherapy Physics
- Radiation Physics
- Radiobiology and Radiation Protection

The Graduate Diploma comprises the five subjects marked with an asterisk (*) above plus three electives.

PROFESSIONAL RECOGNITION

Accredited by the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM).
Graduate Diploma in Science (Physics)

go.uow.edu.au/gdipsci-phys
CRICOS 002363A
DURATION 1 year (48 cp)
STARTS Autumn and Spring
ENTRY REQUIREMENTS Recognised Bachelor degree in a relevant discipline.
IELTS 6.0 (with 6.0 in each band)

This program is designed to provide:

- a Masters qualifying program for students who have inadequate preparation for direct entry into the Master of Philosophy or Master of Science (Medical Radiation Physics)
- an opportunity for students without a full major in Physics to upgrade their knowledge of physics
- an opportunity for science teachers who have a degree, but have taken physics to first or second-year level only, to improve their understanding of physics.

Students complete 48 cp of subjects chosen from those available in Physics.