Faculty of Engineering

Member Units

School of Civil, Mining and Environmental Engineering
School of Engineering Physics
School of Mechanical, Materials and Mechatronic Engineering

Degrees Offered

Research

Doctor of Philosophy
Master of Engineering - Research
Master of Science – Research (Physics)

Coursework

Master of Engineering
- Civil Engineering
- Environmental Engineering
- Materials Engineering
- Mechanical Engineering
- Mining Engineering

Master of Engineering Practice
- Bulk Solids and Particulate Technologies

Master of Engineering Practice
Master of Engineering Management
Master of Engineering Asset Management
Master of Welding Engineering
Master of Medical Radiation Physics
Graduate Diploma in Engineering
Graduate Diploma in Materials Welding and Joining
Graduate Diploma in Medical Radiation Physics
Graduate Diploma in Science (Physics)
Graduate Certificate in Engineering
Graduate Certificate of Engineering Asset Management

For tuition fee information please see the following:

Domestic - http://www.uow.edu.au/student/finances/studentcontributions.html
International - http://www.uow.edu.au/prospective/international/fees/

Doctor of Philosophy

Testamur Title of Degree:	Doctor of Philosophy
Abbreviation:	PhD
Home Faculty:	Faculty of Engineering
Duration:	3yrs full-time or part-time equivalent
Total Credit Points:	48 credit points per year
Entry Requirements:	Bachelor degree in a relevant discipline with Honours Class II, Division 2 or higher.
Delivery Mode:	Research
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	201
CRICOS Code:	001245D

Overview

Doctor of Philosophy (PhD) candidates undertake in-depth research in order to make an original contribution to the body of knowledge in their area of interest. This qualification can lead to, or enhance, an academic career and is also highly regarded by public and private sector employers. A thesis containing the candidate's research will be presented for examination at the end of the study.

Current research areas are listed below:

Civil Engineering

Steel and concrete structures
Composite steel-concrete structures
Bridge engineering
Solid and rock mechanics
Foundation engineering, including railways
Slope stability and reliability analysis
Soft ground improvement technology
Reinforced earth
Dam and embankment engineering
Finite element and other numerical methods
Structural dynamics
Cementitious materials for construction
Flood studies, hydraulics and hydrology
Water quality engineering
Geo-environmental studies

Environmental Engineering

Water quality engineering
Environmental hydraulics and unit processes
Pollution control engineering
Water quality and quantity modelling of catchments, rivers and lakes
Soil erosion and sediment transport
Environmental pollution modelling
Recycling and waste management
Environmental geotechnology
Solid-liquid separation processes
Transport and the environment

Materials Engineering

Steel Processing and Products:
Polymer coating adhesion
Mechanical properties of polymer coatings
Surface properties of polymers
Peritectic phase transformation: mechanism and kinetics
Development of in-situ observation techniques
Kinetics of phase transformations in zincalume alloy systems
Property/microstructure relationships
Process optimisation in direct reduction of iron
Thermo-mechanical processing, including HSLA steels
Corrosion of steelmaking refractories
Slag properties and behaviour

Superconducting and Electronic Materials:
Theory and mechanism of superconductors
Phase relation, phase evolution and chemistry of superconductors
Single crystal growth and study of intrinsic properties
Fabrication of bulk, wires and tapes superconductors
Critical current density, transport mechanism and flux pinning
Studies on structure, microstructure and stability
Colossal magnetoresistance materials
Spintronic materials
High energy batteries for electric vehicles
Solid-state rechargeable lithium batteries for telecommunication and portable electronic devices
Developing new cathode materials for lithium-ion batteries using Australian mineral resources
Investigation of nano-materials for use in lithium rechargeable batteries
Composite cathode materials for lithium ion batteries using chemical coating technique
Hydrogen storage materials
Nickel-metal hydride batteries
Processing of thin films
Investigation of superconductor thin films
Nanofabrication of novel multilayer materials
Coated conductors
Nanostructure of electronic materials

Ceramic and Refractory Materials:
Sintering kinetics
High temperature degradation
Extrusion of resin-bonded ceramics
Processing of refractories

Intelligent Polymers:
Artificial muscles
Chemical and physical sensors
Electronic textiles

Nano-materials:
Synthesis and characterisation of carbon nanotubes
High energy ball milling
Structure and properties of nanocrystalline materials

Welding and Joining/Surface Engineering:
Structure and properties of welded metals
Weld metal cracking
Post weld heat treatment
Weldability of creep resistant steels
Brazing and diffusion bonding
Fusion welding of coated steels
Surface engineering of materials
Wear and surface property testing
Physical vapour deposition processing of metals
Ion implantation
Microwave processing of materials
Solidification

Mechanical Engineering (includes Mechatronics)

Applied Mechanics:
Bio-mechanics
Solid mechanics
Computational fluid mechanics
Jet cooling in industrial applications
Finite element analysis
Natural and hybrid ventilation of buildings
Industrial ventilation systems
Renewable energy systems
Wave energy conversion
Small wind energy systems
Mechanical engineering design
Heavy vehicle and rail dynamics
Railway engineering
Rolling mill technology
Solar thermal system analysis and design

Solid mechanics of elastic and magneto- elastic bodies
System identification and control
Tribology-bearing friction and wear
Alternative fuels
Novel IC engines

Manufacturing and Mechatronics:
Sensors and actuators
Smart materials and structures
MEMS and Nanotechnology
Laser welding and surfacing
Automated pipe welding
Robotic repair technology
Novel control of arc processes
Virtual reality weld simulator
Magnetic impelled arc butt-welding
Automated QC and reliability engineering
Chip control in automated manufacture
Expert/knowledge system in automated machining
Intelligent manufacturing systems
Monitoring/diagnosis of manufacturing processes and machinery conditions
Integrated CAD/CAM
Maintenance management

Bulk Materials Handling:
Prediction of bin wall loads and flow rates
Feeding and discharging systems including pressurised systems
Dust and fume control
Pneumatic conveying
Computer simulation of discrete particles
Biomass handling and feeding systems
Fluidisation and deaeration

Mining Engineering
Rock mechanics
Surface mining
Mine simulation, planning and design
Mine safety and mine ventilation
Geostatistics
Computer applications in mining engineering
Mine water
Environmental impact of mining

Physics
Astronomy and astrophysics
Observational studies of star formation
Comparative planetology: Mars and Venus
Asteriod and cometary mining
Laser spectroscopy
Scattering of light by solids
Solid state spectroscopy of impurities in semiconductors
Studies of electronic wave functions in solids
Theoretical astrophysics - galaxy formation, gas dynamics
Terahertz optoelectronics
Spintronics
Thermionics
Quantum transport in nanostructures
Resonant tunnelling
Far infrared spectroscopy
Thermal transport in layered structures
Manybody theory
Zeeman spectroscopy
Piezo spectroscopy

Medical Radiation Physics:

Semiconductor radiation detectors
Radiation transport and dosimetry
Radiation therapy
Medical imaging and radiology
PET and SPECT instrumentation
High energy Physics Detector
Proton Therapy

Master of Engineering - Research

Testamur Title of Degree:	Master of Engineering - Research
Abbreviation:	MEng - Res
Home Faculty:	Faculty of Engineering
Engineering Disciplines:	Civil, Environmental, Materials, Mechanical, Mechatronics, Mining
Duration:	1.5 yrs full-time or part-time equivalent
Total Credit Points:	72 credit points
Entry Requirements:	Relevant degree with Honours Class III or above
Delivery Mode:	Research/Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1303
CRICOS Code:	042554G

Overview

The Master of Engineering degree by research is intended for engineers qualified and interested in specific engineering problems. The degree comprises a 48 credit point research thesis and 24 credit points of coursework. Coursework comprises the six credit point subject ENGG951 Engineering Project Management plus 18 credit points of elective subjects chosen from the relevant Master of Engineering program.

Advanced standing for some or the entire coursework component may be granted on demonstrated research skills. Evidence of these skills would normally be a Bachelor of Engineering (Honours Class II Division 2 or better) and/or an appropriate Masters Coursework degree.

For current research areas refer to the PhD program above.

Master of Science - Research

Testamur Title of Degree:	Master of Science - Research
Abbreviation:	MSc - Res
Home Faculty:	Faculty of Engineering
Engineering School:	Engineering Physics
Duration:	1.5 yrs full-time or part-time equivalent
Total Credit Points:	72 credit points
Entry Requirements:	Honours degree in Physics, or a Graduate Diploma in Science (Physics) or approved equivalent qualification
Delivery Mode:	Research/Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1304
CRICOS Code:	042555F

Overview

The Master of Science degree by research equips candidates with superior skills in research design and methodology in preparation for leadership roles in their chosen field. The degree comprises a 48 credit point research thesis and 24 credit points of coursework. Advanced standing for some, or all, of the coursework component may be granted on demonstrated research skills.

Students entering with a degree below Honours Class II, Division 2 will complete the 48 credit point thesis and 24 credit point combination of subjects chosen from the remaining Graduate Subjects below and the list of undergraduate Physics subjects. These subjects will be chosen in consultation with and approved by the Physics Discipline Adviser.

For current research areas refer to the PhD program above.

Course Program

Subjects		Credit Points
Core Subject		
PHYS401	Theoretical Mechanics and Electromagnetism	8
PHYS441	Advanced Astrophysics	4
PHYS444	Quantum Mechanics	8
PHYS446	Solid State Physics	8
PHYS910	Advanced Project in Physics A	6
PHYS946	Advanced Solid State Physics	6
PHYS947	Special Topics in Physics A	6
PHYS948	Physics of Imaging	6
PHYS952	Radiation and Radiotherapy Physics	8
PHYS953	Medical Imaging and Nuclear Medicine	8
PHYS954	Radiobiology and Radiation Protection	8
PHYS960	Advanced Project in Physics B	6
PHYS997	Special Topics in Physics B	6

Master of Engineering (Civil Engineering)

Testamur Title of Degree:	Master of Engineering (Civil Engineering)
Abbreviation:	MEng
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Bachelor of Engineering with honours at Class III or higher from this University, or an approved equivalent qualification
Delivery Mode:	Coursework/Dissertation
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1403
CRICOS Code:	042657M

Overview

The Master of Engineering allows the student to combine specialist postgraduate subjects, according to his or her undergraduate background, with project work. The program comprises a 24 credit point dissertation and at least 24 credit points of coursework. The dissertation typically requires rigorous research in a specialised area – normally in the area of coursework components undertaken.

Course Program

Subjects		Credit Points
Core Subject		
ENGG945	Dissertation	24
Elective Subjects		
CIVL901	Project	6
CIVL903	Concrete Technology	6
CIVL904	Highway Materials	6
CIVL905	Transportation Engineering	6
CIVL907	Civil Engineering Computations	6
CIVL908	Advanced Soil Mechanics	6
CIVL909	Advanced Foundation Engineering	6
CIVL911	Finite Element Methods	6
CIVL912	Engineering Hydrology	6
CIVL916	Research Topics in Civil Engineering	6
CIVL923	Advanced Reinforced Concrete	6
ENGG955	Engineering Research Methods	6

Note: Not all subjects available in any one year – refer Subject Listing.

Master of Engineering (Environmental Engineering)

Testamur Title of Degree:	Master of Engineering (Environmental Engineering)
Abbreviation:	MEng
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Bachelor of Engineering with honours at Class III or higher from this University, or an approved equivalent qualification
Delivery Mode:	Coursework/Dissertation
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1403
CRICOS Code:	042657M

Overview

The Master of Engineering allows the student to combine specialist postgraduate subjects, according to his or her undergraduate background, with project work. The program comprises a 24 credit point dissertation and at least 24 credit points of coursework. The dissertation typically requires rigorous research in a specialised area – normally in the area of coursework components undertaken.

Course Program

Subjects		Credit Points
Core Subject		
ENGG945	Dissertation	24
Elective Subjects		
ENGG955	Engineering Research Methods	6
ENVE901	Project	6
ENVE916	Research Topics in Environmental Engineering	6
ENVE925	Water Quality Engineering	6
ENVE926	Air and Noise Pollution	6
ENVE927	Environmental Engineering Processes Design	6
ENVE928	Design of Urban Water Systems	6
ENVE929	Site Contamination and Remediation Technologies	6
ENVE930	Coastal, River and Groundwater Engineering	6
ENVE931	Membrane Processes and Applications	6
ENVI920	The Scientific Basis of Environmental Management	6
ENVI921	Environmental Planning	6
CIVL908	Advanced Soil Mechanics	6
CIVL912	Engineering Hydrology	6

Note: Not all subjects available in any one year – refer Subject Listing.

Master of Engineering (Materials Engineering)

Testamur Title of Degree:	Master of Engineering (Materials Engineering)
Abbreviation:	MEng
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Bachelor of Engineering with honours at Class III or higher from this University, or an approved equivalent qualification
Delivery Mode:	Coursework/Dissertation
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1403
CRICOS Code:	042657M

Overview

The Master of Engineering allows the student to combine specialist postgraduate subjects, according to his or her undergraduate background, with project work. The program comprises a 24 credit point dissertation and at least 24 credit points of coursework. The dissertation typically requires rigorous research in a specialised area – normally in the area of coursework components undertaken.

Course Program

Subjects		Credit Points
Core Subject		
ENGG945	Dissertation	24
Elective Subjects		
Advanced Engineering Materials Program		
MATL901	Special Topic in Materials A	6
MATL903	Recent Developments in Materials	6
MATL905	Metallic Materials	6
MATL906	Ceramics, Glasses and Refractories	6
MATL907	Polymeric Materials	6
MATL972	Selection and Design of Materials	6
Materials Processing Program		
MATL901	Special Topic in Materials A	6
MATL902	Special Topic in Materials B	6
MATL903	Recent Developments in Materials	6
MATL932	Surface Engineering of Materials	6
MATL937	Process Metallurgy	6
Metallurgy Program		
MATL901	Special Topic in Materials A	6
MATL903	Recent Developments in Materials	6
MATL905	Metallic Materials	6
MATL911	Mechanical Behaviour of Materials	6
MATL952	Performance of Materials B	6
MATL972	Selection and Design of Materials	6

Note: Not all subjects available in any one year – refer Subject Listing.

Master of Engineering (Mechanical Engineering)

Testamur Title of Degree:	Master of Engineering (Mechanical Engineering)
Abbreviation:	MEng
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Bachelor of Engineering with honours at Class III or higher from this University, or an approved equivalent qualification
Delivery Mode:	Coursework/Dissertation
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1403
CRICOS Code:	042657M

Overview

The Master of Engineering allows the student to combine specialist postgraduate subjects, according to his or her undergraduate background, with project work. The program comprises a 24 credit point dissertation and at least 24 credit points of coursework. The dissertation typically requires rigorous research in a specialised area – normally in the area of coursework components undertaken.

Course Program

Subjects		Credit Points
Core Subject		
ENGG945	Dissertation	24
Elective Subjects		
ENGG955	Engineering Research Methods	6
Advanced Manufacturing Program		
MECH919	Advanced Topics in Mechanical Engineering 1	6
MECH929	Advanced Topics in Mechanical Engineering 2	6
MECH934	Advanced Manufacturing Processes	6
MECH935	Integrated Manufacturing Systems	6
MECH939	Advanced Topics in Mechanical Engineering 3	6
Mech941	Micro/Nano Robotic Systems	6
MECH949	Advanced Computer Control of Machines and Processes	6

MECH950	Advanced Robotics	6

Applied Mechanics Program

MECH903	Biomechanical Engineering	6
MECH918	Sustainable Energy in Buildings	6
MECH919	Advanced Topics in Mechanical Engineering 1	6
MECH920	Numerical Methods in Mechanical Engineering	6
MECH925	Advanced Fluid Power	6
MECH926	Applied Fluid Mechanics	6
MECH928	Finite Element Techniques in Mechanical Engineering	6
MECH929	Advanced Topics in Mechanical Engineering 2	6
MECH930	Mechanical Vibration and Condition Monitoring	6
MECH931	Friction Lubrication and Wear	6
MECH933	Solar Energy	6
MECH939	Advanced Topics in Mechanical Engineering 3	6
MECH979	Sustainable Transport and Engine Technologies	6

Materials Handling Systems Program

Core

MECH913	Pneumatic Transport of Bulk Solids	6
MECH983	Bulk Solids Handling (Storage and Flow)	6

Electives

MECH919	Advanced Topics in Mechanical Engineering 1	6
MECH927	Physical Processing of Bulk Solids	6
MECH929	Advanced Topics in Mechanical Engineering 2	6
MECH931	Friction, Lubrication and Wear	6
MECH939	Advanced Topics in Mechanical Engineering 3	6

Mechatronics Program

Core

ECTE955	Advanced Laboratory (replaces ENGG955)	6

Plus 3 electives – at least one should be chosen from the Control Engineering subjects and one from the Mechanical Engineering subjects.

Control Engineering Subjects:

ECTE945	Advanced Intelligent Control	6
ECTE946	Advanced Computer Controlled Systems	6
MECH949	Advanced Computer Control of Machines and Processes	6

Mechanical Engineering Subjects:

MECH925	Advanced Fluid Power	6
MECH934	Advanced Manufacturing Processes	6
MECH935	Integrated Manufacturing Systems	6
MECH939	Advanced Topics in Mechatronics	6

Robotic Subjects:

ECTE973	Advanced Robotics Manipulators	6
ECTE974	Advanced Robotics Sensory Control	6
MECH950	Advanced Robotics	6

Note: Not all subjects available in any one year – refer Subject Listing.

Master of Engineering (Mining Engineering)

Testamur Title of Degree:	Master of Engineering (Mining Engineering)
Abbreviation:	MEng
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Bachelor of Engineering with honours at Class III or higher from this University, or an approved equivalent qualification
Delivery Mode:	Coursework/Dissertation
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1403
CRICOS Code:	042657M

Overview

The Master of Engineering allows the student to combine specialist postgraduate subjects, according to his or her undergraduate background, with project work.

The program comprises a 24 credit point dissertation and at least 24 credit points of coursework. The dissertation typically requires rigorous research in a specialised area – normally in the area of coursework components undertaken.

Course Program

Subjects		Credit Points
Core Subject		
ENGG945	Dissertation	24
Elective Subjects		
ENGG955	Engineering Research Methods	6
MINE902	Advanced Studies in Mining Engineering	6
MINE903	Simulation of Underground Mining Operations and Problems	6
MINE904	Rock Mechanics and Ground Control	6
MINE905	Environmental Control in Mines	6
MINE906	Mining Engineering Techniques	6

Note: Not all subjects available in any one year – refer Subject Listing.

Master of Engineering Practice (Bulk Solids and Particulate Technologies)

Testamur Title of Degree:	Master of Engineering Practice (Bulk Solids and Particulate Technologies)
Abbreviation:	MEngPrac
Home Faculty:	Faculty of Engineering
Engineering Discipline:	Mechanical Engineering
Duration:	2 years part-time
Total Credit Points:	48 credit points
Entry Requirements:	A Bachelor of Engineering or a Bachelor of Science degree, or an Associate Diploma in a relevant field, plus appropriate industrial experience
Delivery Mode:	Module
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	590
CRICOS Code:	N/A

Overview

This course is offered on a part-time (modular) basis over 2 years and is a joint degree with the University of Newcastle. This is a full fee paying course.

Students will be awarded a Master of Engineering Practice (Bulk Solids and Particulate Technologies) on successful completion of 48 cp comprising:

Course Program

Subjects		Credit Points
Core Subject		
MECH983	Bulk Solids Handling (Storage and Flow)	6
MECH995	Bulk Solids Handling (Systems and Design)	6
MECH990	Project in Bulk Solids and Particulate Technologies	6
Elective Subjects		
MECH913	Pneumatic Transport of Bulk Solids	6
MECH927	Physical Processing of Bulk Solids	6
MECH982	Bulk Solids Characterisation and Particulate Mechanics	6
MECH984	Belt Conveying	6
MECH985	Dust and Fume Systems	6
MECH986	Instrumentation and Control Systems for Bulk Solids	6
MECH987	Advanced Topics in Bulk Solids and Particulate Technologies 1	6
MECH988	Advanced Topics in Bulk Solids and Particulate Technologies 2	6
MECH989	Advanced Topics in Bulk Solids and Particulate Technologies 3	6
MECH993	Maintenance Management of Bulk Handling Systems	6
MECH994	Mechanical Handling Systems	6

Note: Apart from MECH990, each subject is run on a modular basis comprising 5 days of lectures, laboratory demonstrations, case studies and problem solving, followed by assessable tasks.

Master of Engineering Practice

Testamur Title of Degree:	Master of Engineering Practice
Abbreviation:	MEngPrac
Home Faculty:	Faculty of Engineering
Engineering Discipline:	Refer to Engineering streams below
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A 4 yr Bachelor of Engineering degree
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	590
CRICOS Code:	020204M

Overview

The Master of Engineering Practice has been designed to meet the needs of engineering leaders of the future. This program allows practicing engineers to build on and update their knowledge, and learn in additional areas to those taken in their first degree.

This is a 48 credit point program. The core program comprises four 6 credit point subjects. The remaining 24 credit points can be selected from the Engineering Postgraduate subject list or for students wishing to have a specialisation recorded on their degree, 24 credit points of approved elective subjects from one of the engineering streams listed below.

Students can apply to undertake the Master of Engineering Practice in two streams. Students would complete the core program and two 24 credit point programs of elective subjects. This is a 72 credit point program and would normally take 1.5 to 2 years to complete. Both specialisations would be recorded on the testamur.

With approval of the Course Advisor, students can undertake a 12 credit point dissertation as part of the elective subjects. The dissertation, ENGG940 Dissertation, is a research project allowing students to pursue a particular area in depth. The dissertation develops skills in information retrieval, project planning and organisation analysis, problem solving, and effective communication of results.

Course Program

Subjects		Credit Points
Core Subject		
ENGG950	Innovation and Design	6
ENGG951	Engineering Project Management	6
ENGG952	Engineering Computing	6
ENGG954	Strategic Management for Engineers and Technologists	6
Elective Subjects – Asset Management		
ENGG953	Modelling of Engineering Management Systems	6
ENGG956	Financial Management for Engineered Assets	6
ENGG957	Project Implementation and Outsourcing	6
ENGG960	Maintenance Requirements Analysis	6
ENGG961	Systems Engineering	6
Elective Subjects – Civil Engineering		
CIVL904	Highway Materials	6
CIVL909	Advanced Foundation Engineering	6
CIVL912	Engineering Hydrology	6
CIVL916	Research Topics in Civil Engineering	6
CIVL980	Advanced Computer Applications	6
CIVL981	Special Topic A	6
ENVE929	Site Contamination and Remediation Technologies	6
Elective Subjects – Environmental Engineering		
ENVE923	Industrial Waste Engineering and Cleaner Production	6
ENVE924	Solid and Hazardous Waste Management	6
ENVE925	Water Quality Engineering and Management	6
ENVE926	Air and Noise Pollution Management	6
ENVE928	Design or Urban Water Systems	6
ENVE929	Site Contamination and Remediation Technologies	6
ENVE930	Coastal, River and Groundwater Engineering	6
ENVE931	Membrane Processes and Applications	6
MECH979	Sustainable Transport and Engine Technology	6

Elective Subjects – Manufacturing Engineering		
MECH934	Advanced Manufacturing Processes	6
MECH935	Integrated Manufacturing Systems	6
MECH950	Advanced Robotics	6
TBS908	Supply Chain Management	6
TBS926	Manufacturing Management	6
Elective Subjects – Materials Engineering		
MATL901	Special Topic in Materials 1	6
MATL903	Recent Developments in Materials	6
MATL905	Metallic Materials	6
MATL906	Ceramic Materials	6
MATL907	Polymeric Materials	6
MATL952	Performance of Materials B	6
Elective Subjects – Mechanical Engineering		
MECH913	Pneumatic Transport of Bulk Solids	6
MECH919	Advanced Topics in Mechanical Engineering 1	6
MECH928	Finite Element Techniques in Mechanical Engineering	6
MECH934	Advanced Manufacturing Processes	6
MECH949	Advanced Computer Control of Machines and Processes	6
MECH979	Sustainable Transport and Engine Technology	6
Elective Subjects -- Mechatronics		
ECTE912	DC-Sourced Power Electronics	6
ECTE925	Industrial Drives and Actuators	6
ECTE931	Real-time Computing	6
ECTE941	Intelligent Control	6
ECTE955	Advanced Laboratory	6
MECH941	Micro/Nano Robotic Systems	6
MECH950	Advanced Robotics	6
Elective Subjects – Mining Engineering		
MINE902	Advanced Studies in Mining Engineering	6
MINE903	Simulation of Mining Operations and Problems	6
MINE904	Rock Mechanics	6
MINE905	Environmental Control in Mines	6
MINE906	Mining Engineering Techniques	6
Elective Subjects – Resource Management*		
MINE916	Mineral Valuation, Risk Analysis	6
MINE917	Mineral Economics	6
MINE918	Commodity Analysis	6
MINE919	Natural Resource Policy	6
Elective Subjects – Steel Processing and Products*		
ENGG931	Steel Products and their Production	6
ENGG932	Rolling Technology	6
ENGG933	Coating Technology	6
ENGG934	Steelmaking	6
ENGG935	Casting	6

Note: Not all subjects available in any one year – refer Subject Listing.

**Only available on a part-time basis*

Master of Engineering Management

Testamur Title of Degree:	Master of Engineering Management
Abbreviation:	MEM
Home Faculty:	Faculty of Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A Bachelor of Engineering degree or other qualifications together with at least 4 years experience in a senior management position will be considered
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	
CRICOS Code:	051350M

Overview

The Master of Engineering Management is aimed at Engineers and others who see their careers progressing into management. The course provides them with a very strong grounding in some of the most modern management thinking that is applicable to Engineering and Manufacturing Industries. Graduates of this degree will become empowered to work in teams and understand managers from other disciplines including finance, human resources and marketing. They will be equipped to advance their careers into senior managerial positions.

This is a 48 credit point program. The core program comprises five 6 credit point subjects. The remaining 18 credit points can be selected from the list below.

Course Program

Subjects		Credit Points
Core Subjects		
ENGG950	Innovation and Design	6
ENGG951	Engineering Project Management	6
ENGG952	Engineering Computing	6
ENGG954	Strategic Management for Engineers and Technologists	6
TBS901	Accounting for Managers	6
Elective Subjects		
ENGG953	Modelling of Engineering Management Systems	6
ENGG961	Systems Reliability Engineering	6
TBS903	Managing People in Organisations	6
TBS904	Marketing Management	6
TBS908	Supply Chain Management	6
TBS950	Quality Management	6

Master of Engineering Asset Management

Testamur Title of Degree:	Master of Engineering Asset Management
Abbreviation:	MEngAssetMgmt
Home Faculty:	Faculty of Engineering
Engineering Discipline:	Mechanical Engineering
Duration:	2 year part-time
Total Credit Points:	48 credit points
Entry Requirements:	A Bachelor of Engineering degree from a recognised tertiary institution
Delivery Mode:	Module
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	TBA
CRICOS Code:	TBA

Overview

The objective of the program is to ensure continuous improvement in the strategic and tactical response of organisations, and their managers, to the management of infrastructure assets. The program provides the knowledge to organise and manage engineered assets costs effectively. From a strategic framework, students progressively address problems in designing and managing assets. This is achieved through a balanced program of subjects in asset management science and engineering, business administration and management and industrial engineering with emphasis on practical applications. Students learn concepts and techniques by evaluating potential solutions to challenges faced by organisations.

This is a 48 credit point program. The core program comprises six 6 credit point subjects. The remaining 12 credit points can be either two 6 credit point subjects or one 12 credit point dissertation.

Course Program

zSubjects		Credit Points
Core Subject		
ENGG953	Modelling of Engineering Management Systems	6
ENGG956	Financial Management for Engineered Assets	6
ENGG957	Project Implementation and Outsourcing	6
ENGG958	Life-Cycle and Risk Management	6
ENGG960	Maintenance Requirements Analysis	6
ENGG961	Systems Engineering	6

Elective Subjects:

ENGG959	Asset Management System Design	6
TBS903	Managing People in Organisations	6
Or		
ENGG940	Dissertation	12

Master of Welding Engineering

Testamur Title of Degree:	Master of Welding Engineering
Abbreviation:	MWeldEng
Home Faculty:	Faculty of Engineering
Engineering Discipline:	Materials and Mechanical Engineering
Duration:	3 to 4 yrs part-time distance delivery
Total Credit Points:	60 credit points
Entry Requirements:	A Bachelor of Engineering or Bachelor of Science degree
Delivery Mode:	Flexible Delivery
Starting Session(s):	Jan, Mar, May, July, Sept, Nov Intakes
Location:	Wollongong
UOW Course Code:	CR590
CRICOS Code:	051845K

Overview

This course is offered on a flexible delivery basis. It consists of a set of 16 modules with a total of 48 cp, together with a 12cp Dissertation (ENGG 919). The 3 cp modules are presented in the form of 12 text based distance delivery subjects and four intensive one week subjects, which are offered in February each year. Assessment is by assignment and examination.

In addition to the self-study texts a web-based tutor is used.

Approval of the Professor of Materials Welding and Joining will be required for the subject matter of ENGG 919 - Dissertation.

Course Program

Subjects		Credit Points
ENGG901	Introduction to Welding and Joining Processes	3
ENGG902	Fusion Welding Processes Part 1	3
ENGG903	Other Joining Processes	3
ENGG904	Fusion Welding Processes Part 2	3
ENGG905	Behaviour of Metals during Welding - Part 1	3
ENGG906	Behaviour of Metals during Welding - Part 2	3
ENGG907	Welding of Non-Ferrous Metals and Non-Metals	3
ENGG908	Construction and Design - Part 1	3
ENGG909	Construction and Design - Part 2	3
ENGG910	Fabrication/Applications Engineering - Part 1	3
ENGG911	Fabrication/Applications Engineering - Part 2	3
ENGG914	Fabrication/Applications Engineering - Part 3	3
ENGG915	Design on Structures	3
ENGG916	Fabrication Case Studies	3
ENGG917	Processes, Equipment, Automation	3
ENGG918	Weldability and Wear	3
ENGG919	Dissertation	12

Master of Medical Radiation Physics

Testamur Title of Degree:	Master of Medical Radiation Physics
Abbreviation:	MMRP
Home Faculty:	Faculty of Engineering
Engineering School:	Engineering Physics
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	Completion of an Honours BSc or equivalent with Physics as a major study
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	
CRICOS Code:	035592D

Overview

Candidates who have completed a Bachelors degree which does not include a relevant major study will be required to complete additional subjects in Physics as outlined in the Masters Degree regulations. Students who have completed the Bachelor of Medical Radiation Physics from the University of Wollongong, or equivalent specialist course, would be advised to enrol in a Medical Radiation Physics research program. The course consists of a research project and four subjects.

Course Program

Subjects		Credit Points
Core Subject		
PHYS951	Medical Physics Research Project	18
PHYS952	Radiation and Radiotherapy Physics	8
PHYS953	Medical Imaging and Nuclear Medicine	8
PHYS954	Radiobiology and Radiation Protection	8
GHMB927	An Introduction to Human Anatomy and Physiology	6

Graduate Diploma in Engineering

Testamur Title of Degree:	Graduate Diploma in Engineering
Abbreviation:	GradDipEng
Home Faculty:	Faculty of Engineering
Engineering Disciplines:	Civil, Environmental, Materials, Mechanical, Mining
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A Bachelor of Engineering degree from a recognised tertiary institution
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	649
CRICOS Code:	009237F

Overview

The Graduate Diploma in Engineering is intended to provide specialised studies in engineering. It may provide entry to the Masters – Research program for students who do not have the necessary entry qualifications, particularly if studying this discipline for the first time.

Students enrol in one of the following 48 credit point subjects according to their discipline area:

Civil Engineering	CIVL899 Advanced Topics in Engineering
Environmental Engineering	ENVE899 Advanced Topics in Engineering
Materials Engineering	MATL899 Advanced Topics in Engineering
Mechanical Engineering	MECH899 Advanced Topics in Engineering
Mining Engineering	MINE899 Advanced Topics in Engineering

Graduate Diploma in Materials Welding and Joining

Testamur Title of Degree:	Graduate Diploma in Materials Welding and Joining
Abbreviation:	GradDipMWJ
Home Faculty:	Faculty of Engineering
Engineering Discipline:	Materials and Mechanical Engineering
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A Bachelor of Engineering degree from a recognised tertiary institution or approved equivalent qualification, prior learning and experience
Delivery Mode:	Flexible Delivery
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	CR666
CRICOS Code:	N/A

Overview

There are 16 modules. Refer to Master of Engineering Practice in Materials Welding and Joining. This course is offered on a flexible delivery basis and is the same as the MEngPrac with the exception of the dissertation which is not required.

Graduate Diploma Medical Radiation Physics

Testamur Title of Degree:	Graduate Diploma Medical Radiation Physics
Abbreviation:	GDipMRP
Home Faculty:	Faculty of Engineering
Engineering School:	Engineering Physics
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A pass Bachelor degree of at least three years' duration in a relevant discipline
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	TBA
CRICOS Code:	052460G

Overview

This Graduate Diploma is based on the coursework component of the Master of Medical Radiation Physics, it allows students to complete the formal coursework necessary for ACPSEM accreditation separately from the research component. The Graduate Diploma program has been accepted by the ACPSEM as leading towards accreditation as a professional medical physicist, the Graduate Diploma is not accredited by ACPSEM.

Students must consult the Medical Radiation Physics Discipline Adviser for admission to the course. Forty eight (48) credit points are to be chosen from the following list in consultation with the Physics Discipline Adviser.

Course Program

Subjects		Credit Points
Core Subject		
PHYS255	Radiation Physics	6
GMBH927	An Introduction to Human Anatomy and Physiology	6
PHYS952	Radiation and Radiotherapy Physics	8
PHYS953	Medical Imaging and Nuclear Medicine	8
PHYS954	Radiobiology and Radiation Protection	8

Plus 2 electives from the Physics undergraduate program or 900-level Physics subjects

Graduate Diploma in Science (Physics)

Testamur Title of Degree:	Graduate Diploma in Science (Physics)
Abbreviation:	GDipSc
Home Faculty:	Faculty of Engineering
Engineering School:	Engineering Physics
Duration:	1 yr full-time or part-time equivalent
Total Credit Points:	48 credit points
Entry Requirements:	A pass Bachelor degree of at least three years' duration in a relevant discipline.
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	650
CRICOS Code:	002363A

Overview

This course is designed to provide:

1) a Masters qualifying course for students who have inadequate preparation for direct entry into the Masters by Research program;
2) an opportunity for Science teachers who have a degree, but have taken Physics to first or second year level only, to improve their understanding and horizons in Physics;
3) an opportunity for international students and students without a full major in Physics to update their knowledge of Physics.

Students must consult the Physics Discipline Adviser for admission to the course. Forty eight (48) credit points are to be chosen from the following list in consultation with the Physics Discipline Adviser.

Course Program

Subjects		Credit Points
Core Subject		
PHYS205	Advanced Modern Physics	6
PHYS215	Vibrations, Waves and Optics	6
PHYS233	Introduction to Environmental Physics	6
PHYS235	Mechanics and Thermodynamics	6
PHYS255	Radiation Physics	6
PHYS295	Astronomy - Concepts of the Universe	6
MATH201	Multivariate and Vector Calculus*	6
MATH202	Applied Differential Equations*	6
MATH283	Mathematics 2E for Engineers Part 1	6
PHYS305	Quantum Mechanics*	6
PHYS325	Electromagnetism*	6
PHYS335	Classic Mechanics*	6
PHYS365	Detection of Radiation: Neutrons, Electrons and X-Rays	6
PHYS375	Nuclear Physics	6
PHYS385	Statistical Mechanics*	6
PHYS390	Astrophysics	6
PHYS401	Theoretical Mechanics and Electromagnetism	8
PHYS441	Advanced Astrophysics	4
PHYS444	Quantum Mechanics	8
PHYS446	Solid State Physics	8
PHYS452	Medical Imaging	8
PHYS453	Radiobiology and Radiation Protection	8
PHYS456	Imaging Physics	8
PHYS910	Advanced Project in Physics A	6
PHYS947	Special Topics in Physics A	6
PHYS948	Physics of Imaging	6
PHYS960	Advanced Project in Physics B	6
PHYS990	Applied Physics Project	24
PHYS997	Special Topics in Physics B	6

Note: Starred subjects are pre- and co-requisites of some of the physics subjects.

Graduate Certificate in Engineering

Testamur Title of Degree:	Graduate Certificate in Engineering
Abbreviation:	GCertEng
Home Faculty:	Faculty of Engineering
Duration:	6mths part-time equivalent
Total Credit Points:	24 credit points
Entry Requirements:	A Bachelor of Engineering degree from a recognised tertiary institution.
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	695
CRICOS Code:	N/A

Overview

This program is designed for those wishing to undertake a short program in engineering. Other qualifications, together with relevant professional experience, will be considered.

On completion of the Graduate Certificate, students can apply to transfer to the Master of Engineering Practice.

Course Program

Subjects		Credit Points
Core Subject		
ENGG950	Innovation and Design	6
ENGG951	Engineering Project Management	6
ENGG952	Engineering Computing	6

Plus one elective subject from one of the Master of Engineering Practice programs.

Graduate Certificate of Engineering Asset Management

Testamur Title of Degree:	Graduate Certificate of Engineering Asset Management
Abbreviation:	GcertAssetMgmt
Home Faculty:	Faculty of Engineering
Duration:	6mths part-time equivalent
Total Credit Points:	24 credit points
Entry Requirements:	A Bachelor of Engineering degree from a recognised tertiary institution
Delivery Mode:	Coursework
Starting Session(s):	Autumn/Spring
Location:	Wollongong
UOW Course Code:	1134
CRICOS Code:	032520M

Overview

This course is designed for those wishing to undertake a short program in Engineering Asset Management. On completion of the Graduate Certificate, students can apply to transfer to the Master of Engineering Asset Management.

This is a 24 credit point program. The core program comprises three 6 credit point subjects. The remaining 6 credit points can be from the Master of Engineering Asset Management core or elective list.

Course Program

Subjects		Credit Points
Core Subject		
ENGG958	Life-Cycle and Risk Management	6
ENGG960	Maintenance Requirements Analysis	6
ENGG961	Systems Reliability Engineering	6
Plus one Elective		6