



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

Master of Engineering  
Science (MES)

**AIM  
HIGH**

[www.newcastle.edu.au](http://www.newcastle.edu.au)





## MASTER OF ENGINEERING SCIENCE (MES)

## GRADUATE CERTIFICATE IN ENGINEERING SCIENCE

Do you have a science or an engineering degree and want to advance your career by following either a technical or managerial direction?

The University of Newcastle's Master of Engineering Science degree now provides the flexibility needed by graduates who wish to deepen and broaden their education and obtain a postgraduate qualification in Engineering. Taken over one year full-time, or part-time over two years, the new program offers flexibility via the option of the Graduate Certificate pathway, and through the availability of specialisations that can be chosen according to the interests and requirements of the graduate student.

### Brief Description of Programs

Specialisations fall into three bands: Technical courses, Management courses, and Engineering Project. A specialisation from any one of these bands meets the requirement for the award of a Graduate Certificate in Engineering Science, which can also be used as credit for 50 per cent of the Master of Engineering Science degree.

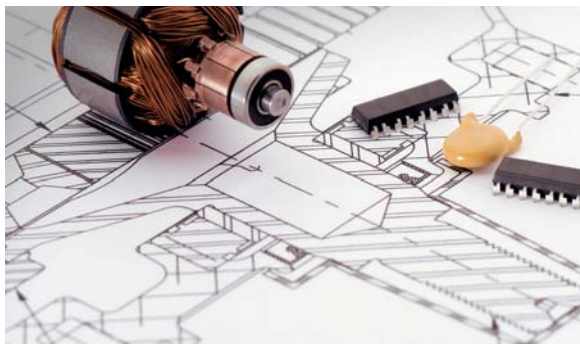
We recognise that graduates working in the field of engineering have a variety of aspirations. For many, the technical direction will provide a rewarding career that today is valued increasingly by employers. For others, the natural career path is through management. The new Master of Engineering Science degree recognises the significance of both, with its requirements fulfilled by choosing specialisations from any two of the three bands. For example, a Technical specialisation in Energy can be combined with either an Engineering Project or a specialisation in Management. It is even possible to combine a specialisation in Management with an Engineering Project.

### Engineering Project

The Engineering Project is an important innovation in postgraduate education. For the busy professional it can be difficult to balance a commitment to both work and further education. But imagine using a work-based project to obtain a Graduate Certificate in Engineering Science, which in turn can be used as 50 per cent credit towards the Master of Engineering Science degree.

A work-based project in research, design, or a consultancy may provide the inspiration and foundation needed to meet the academic requirements of the Engineering Project. Your employer may see benefits in you undertaking a more academic approach to your project at work. The academic merit of the project would be established through a meeting between your mentor from work and academic adviser from the university. You would need to produce a modest Thesis that includes a literature review, and investigation of your topic, with a discussion of your findings. If you work on an engineering plant there might be a specific problem that needs to be investigated so that a solution can be implemented.

For Domestic or International students who do not have access to a work-based project, the Engineering faculty can offer any number of well funded research projects that can be conducted on the campus.



### Technical Specialisations

Opportunities in the energy sector and in the coal and minerals industries are at an all time high. The significance of these areas has been recognised by the University of Newcastle with the recent establishment of the new Priority Research Centre in Energy and the new Priority Research Centre in Advanced Particle Processing. Each of these centres has since sponsored coursework specialisations in Energy and also in Minerals Processing. With millions of dollars per annum in external funding, the work conducted in these centres is recognised internationally for its excellence, innovation, and impact in industry.

The Energy centre recently attracted an Aus-Industry grant in the area of geothermal energy and a desalination grant based on the use of waste heat. Other research is concerned with Clean Coal Technology and the development of wind turbines.

The Advanced Particle Processing Centre draws together research groups from Multiphase Processes and Bulk Solids Handling. The Jameson Cell used throughout the world in the flotation of coal and minerals and in solving environmental problems was invented by Professor Jameson from the Centre.

The Reflux Classifier, which has recently been adopted in a number of countries to separate particles on the basis of density, was invented by Professor Galvin from the Centre. The new course in Particle Processing provides direct insights into these technologies along with the more general range of separation technologies used in minerals processing.

These technical specialisations, which make use of University laboratories, are attended on a block-release basis.

### Management Specialisations

You can choose to Specialise in the area of Management, or take advantage of a new specialisation, funded directly by the Federal Government, in the area of Innovation and Commercialisation. Provided on campus and on-line, these specialisations are relevant to SMEs, through to large multi-national companies, where the management of people, projects and money, together with innovation and commercialisation, are fundamental to survival in a global economy.

# OPTIONS

- **Graduate Certificate in Engineering Science**  
– choose any one specialisation from Bands A, B, C
- **Master of Engineering Science**  
– choose any two specialisations, covering two of the three Bands (eg combine Energy with Engineering Project)

BAND	SPECIALISATION
A – Technical	Energy or Mineral Processing
B – Management	Management or Commercialisation* *(see Graduate Certificate in Innovation and Commercialisation)
C – Project	Engineering Project

## Sample Program Structure for Graduate Certificates and Master of Engineering Science Specialisations

### BAND A – Technical

#### Specialisation in MINERAL PROCESSING

Course Code	Course Name	Units
GENG6005*	Engineering Practice, Innovation and Commercialisation	10
CHEE6007	Particle Processing II	10
DIRECTED STUDIES Students need to choose TWO COURSES from the selection below		
CHEE6410	Advanced Coal and Mineral Processing	10
MECH6250	Bulk Materials Handling and Transportation	10
MECH6200	Advanced Computer Aided Engineering	10

\* Where this course is part of two specialisations an additional elective from one specialisation must be selected.

#### Specialisation in ENERGY

Course Code	Course Name	Units
GENG6005*	Engineering Practice, Innovation and Commercialisation	10
CHEE6200	Advanced Clean Coal Technologies	10
CHEE6008	Advanced Energy Systems	10
DIRECTED STUDIES Students need to choose ONE COURSE from the selection below		
CHEE6410**	Advanced Coal and Mineral Processing	10
MECH6250	Bulk Materials Handling and Transportation	10
MECH6200	Advanced Computer Aided Engineering	10

\*\* Credit from other external courses may be granted.

### BAND B – Management

#### Specialisation in MANAGEMENT

Course Code	Course Name	Units
GENG6005*	Engineering Practice, Innovation and Commercialisation	10
GEBU6020	Strategic Business Systems	10
DIRECTED STUDIES Students need to choose TWO COURSES from the selection below		
GSBS6503	Project Management	10
GSBS6200	Accounting and Financial Management	10
GSBS6040	Human Resource Management	10
ENVS6510	Environmental Legislation and Planning	10
GSBS6020	Management and Organisational Behaviour	10
ENVS6520	Sustainability	10

#### Specialisation in COMMERCIALISATION

(Graduate Certificate in Innovation and Commercialisation)

Course Code	Course Name	Units
GENG6005*	Engineering Practice, Innovation and Commercialisation	10
GSBS6020	Management and Organisational Behaviour	10
GENG6006	Research and Development and Managing Intellectual Property	10
DIRECTED STUDIES Students need to choose ONE COURSE from the selection below		
GSBS6503	Project Management	10
GSBS6200	Accounting and Financial Management	10
GSBS6031	Marketing Research	10
GSBS6162	Entrepreneurship	10

### BAND C – Project

#### Specialisation in ENGINEERING PROJECT

Course Code	Course Name	Units
GENG6000	Engineering Project A	20
GENG6001	Engineering Project B	20

# CONTACT

#### Australian Students

Student Services Office  
Faculty of Engineering and Built Environment  
The University of Newcastle  
Callaghan NSW 2308 Australia

T: 02 4921 5000

F: 02 4921 2020

E: eng-builtenviro@newcastle.edu.au

W: www.newcastle.edu.au/faculty/engineering/

CRICOS Provider 00109J

The information in this brochure is correct as at June 2007.

#### International Students

International Admissions Student Administration Services  
The University of Newcastle  
Callaghan NSW 2308 Australia

T: +61 2 4921 6595

F: +61 2 4960 1766

E: int-adm@newcastle.edu.au

W: www.international.newcastle.edu.au