

# Master of Engineering Science

## 1 General

1.1 This document must be read in conjunction with:

- (a) the General Academic Program Rules for Master by Research Programs (see under Adelaide Graduate Centre, p.18) *and*
- (b) the Research Student Handbook, published by the Adelaide Graduate Centre.

These documents explain procedures to be followed and contain guidelines on supervision and research for the degree of Doctor of Philosophy and the various Masters Degrees by Research, offered by the University.

All students must comply with both the General Academic Rules and the rules following below, and procedures outlined in the Research Student Handbook.

In addition to the General Academic Program Rules for Masters by Research degrees, in this publication, the following discipline specific rules apply.

## 2 Admission

2.1 In addition to General Academic Program Rule 4.1 on Admission, applicants for admission to candidature for the Master of Engineering Science must hold

- (a) a degree of Bachelor of Engineering in the Honours grade from the University of Adelaide *or*
- (b) a qualification accepted by the Research Education and Development Committee as being equivalent to a degree of Bachelor of Engineering in the Honours grade from the University of Adelaide *or*
- (c) a degree of Bachelor of Engineering in the Pass grade or a qualification accepted by the Committee as being equivalent to the degree of Bachelor of Engineering in the Pass grade from the University of Adelaide, and who has, in addition, successfully undertaken advanced studies and/or work in engineering practice which is considered by the Committee to be an adequate preparation for candidature. Candidates admitted under this Rule may be required to undertake qualifying work as prescribed by the Board.

### 2.2 Mode of study

In addition to General Academic Program Rule 7.1, subject to such conditions as it may determine in each case, the Research Education and

Development Committee may permit project work to be undertaken outside the University provided that it can be satisfied:

- (a) that this will result in mutual academic benefit to the candidate and the candidate's supervising school
- (b) that there will be adequate contact and interaction between the candidate and the candidate's supervising school *and*
- (c) that the supervisor's access to any experimental work, the candidate's availability for seminars and other discussions, and the publication of results will not thereby be prejudiced.

### 2.3 Program of study

In addition to General Academic Program Rule 19.1, a program of study for the Master of Engineering Science may contain a combination of coursework and project work. Currently two options are offered:

To qualify for the degree, a candidate shall satisfactorily complete a program of study consisting of one of the following approved options:

- (a) an all-research work program comprising Supervised Project Work be completed and the thesis submitted in not less than one year full-time equivalent or more than two years full-time equivalent from the date of commencement of candidature *or*
- (b) a three-quarters research program comprising coursework to the value of 12 units and Supervised Project Work. All coursework is to be completed and the thesis submitted in not less than one year full-time equivalent or more than two years full-time equivalent from the date of commencement of candidature.

### 2.4 Classification of courses

Courses forming part of any coursework component for the degree shall be classified as follows:

#### A Postgraduate courses

These are courses offered at a postgraduate level either in the Faculty of Engineering, Computer and Mathematical Sciences, in another faculty or school, or at another Institution. These include postgraduate courses in the Faculty of Engineering, Computer and Mathematical Sciences, Honours and approved postgraduate diploma courses in the Faculty of Sciences and

postgraduate courses at Flinders University or the University of South Australia.

## **B Advanced level courses**

These are courses in Engineering which have been designated as 'Advanced Level' by the School concerned. They are courses which reach an advanced level of expertise in the course material.

Subject to the approval of the Faculty, courses from outside Engineering may also be included in this category.

## **C Ordinary level courses**

These are courses at either Level III or Level IV in the Faculty of Engineering, Computer and Mathematical Sciences which are not designated 'Advanced Level', or courses at Level III in the Faculty of Sciences, or approved final year undergraduate courses from other Faculties or institutions.

## **2.5 Coursework requirements**

- 2.5.1 A candidate seeking to enrol in a program of study with a coursework component shall, after consulting the Head of the school (or nominee) in which the majority of the candidate's work falls, submit the proposed program to the Committee for approval.
- 2.5.2 The program for a three-quarters research and one-quarter coursework may not contain more than a total of 6 units of courses from Groups B and C and may not contain more than 6 units of courses from outside the discipline of Engineering.
- \* For the purposes of this policy, the discipline of Engineering is deemed to include all Centres and joint ventures of which the discipline, or its constituent schools, is a formal partner.*
- 2.5.3 There shall be four classifications of pass in each course for the Master of Engineering Science: Pass with High Distinction, Pass with Distinction, Pass with Credit, and Pass. If a course has a Conceded Pass classification for the purpose of another award, any such course passed with this classification shall not count towards the requirements for the degree of Master of Engineering Science.
- 2.5.4 A course shall be eligible to be counted for credit towards the coursework requirements of the degree if:
- in Groups A and B the grade obtained is at Pass standard (50%) or higher
  - in Group C the grade obtained is 60% or higher.
- 2.5.5 To satisfy the coursework requirements of the degree, a candidate must obtain a weighted average, taken over the best results in eligible courses which together amount to the required number of units, of at least 55%.
- 2.5.6 Courses which have been presented as part of the requirements for any other award of this University or other institution or courses which in the opinion

of the Faculty are substantially similar to such courses, will not be permitted to count for credit towards the coursework requirements of this degree.

## **2.6 Academic program**

The following shall be the courses for the Master of Engineering Science:

### **A Postgraduate courses**

#### **Chemical Engineering**

CHEM ENG 7000 Minerals Processing.....	3
CHEM ENG 7004 Biochemical Engineering.....	3
CHEM ENG 7008 Combustion Processes .....	3
CHEM ENG 7009 Plant & Safety Engineering .....	3
CHEM ENG 7010W Winery Engineering.....	3
CHEM ENG 7012 Environmental Engineering .....	3
CHEM ENG 7021 Special Studies in Chemical Engineering.....	3
CHEM ENG 7022 Chemical Engineering Management and Optimisation .....	3
CHEM ENG 7023 Chemical Process Simulation...	3
CHEM ENG 7024 Process Synthesis & Integration.....	3
CHEM ENG 7027 Transport Processes in the Environment .....	3
CHEM ENG 7030 Process Modelling & Control...	3

#### **Civil & Environmental Engineering**

C&ENVENG 7027 Wastewater Engineering & Design.....	3
C&ENVENG 7028 Waste Management Analysis & Design .....	3
C&ENVENG 7029 Environmental Modelling, Management & Design.....	3
C&ENVENG 7030 Steel Design.....	3
C&ENVENG 7031 Concrete Design.....	3
C&ENVENG 7033 Structural Dynamics due to Wind and Earthquakes .....	3
C&ENVENG 7034 Deep Foundation Engineering & Design.....	3
C&ENVENG 7035 Expansive Soils & Footing Design .....	3
C&ENVENG 7036 Water Resources Optimisation and Modelling .....	3
C&ENVENG 7037 Water Distribution Systems & Design.....	3
C&ENVENG 7038 Coastal Engineering & Design ..	3
C&ENVENG 7042 Advanced Reinforced Concrete .....	3
C&ENVENG 7046 FRP Retrofitting of Concrete Structures .....	3
C&ENVENG 7047 Analysis of Rivers and Sediment Transport .....	3

C&ENVENG 7048 Water Resources Sustainability and Design.....3

C&ENVENG 7059 Structural Response to Blast Loading.....3

### **Electrical & Electronic Engineering**

ELEC ENG 7015 Adaptive Signal Processing.....3

ELEC ENG 7017 Beamforming & Array Processing .....3

ELEC ENG 7033 Principles of RF Engineering.....3

ELEC ENG 7044 Multimedia Communications.....3

ELEC ENG 7045 Photonics for Communications .....3

ELEC ENG 7046 Power Quality and Fault Diagnostics .....3

ELEC ENG 7047 Special Studies in Electrical Engineering .....3

ELEC ENG 7049 Power Electronics Systems .....3

ELEC ENG 7050 Microelectronic Testing and Design for Test .....3

ELEC ENG 7051 Microelectronic Datapaths and Arithmetic .....3

ELEC ENG 7052 Electromagnetic Theory and RFID Applications .....3

ELEC ENG 7053 Analog Microelectronic Systems .....3

ELEC ENG 7054 Detection and Estimation Theory.....3

ELEC ENG 7055 Antennas and Propagation.....3

ELEC ENG 7056 RF Measurement and Testing.....3

### **Entrepreneurship, commercialism & Innovation Centre (ECIC)**

TECHCOMM 5008 Leading and Managing.....3

TECHCOMM 5016 Entrepreneurship & Innovation .....3

TECHCOMM 5017 New Enterprise Financial Management .....3

TECHCOMM 5018 Opportunity Assessment .....3

TECHCOMM 5019 New Enterprise Marketing .....3

TECHCOMM 5020 New Enterprise Operations.....3

TECHCOMM 5021 Applied Project Management 1 .....3

### **Mathematical and Computer Sciences**

APP MTH 7026 Communication Network Design (Masters).....3

APP MTH 7043 Transform Methods & Signal Processing .....2

APP MTH 7050 Aerodynamics .....3

APP MTH 7052 Computational Fluid Dynamics (Engineering).....3

APP MTH 7056 Telecommunications Systems Modelling .....3

APP MTH 7057 Special Studies in Engineering Mathematics .....3

APP MTH 7078 Information Theory .....3

### **Mechanical Engineering**

MECH ENG 7020 Materials Selection & Failure Analysis .....3

MECH ENG 7021 Combustion Technology & Emissions Control .....3

MECH ENG 7022 Fundamentals of Non-Linear Computational Mechanics.....3

MECH ENG 7023 Fracture Mechanics.....3

MECH ENG 7024 Robotics M .....3

MECH ENG 7025 Topics in Welded Structures ....3

MECH ENG 7026 Advanced Topics in Fluid Mechanics.....3

MECH ENG 7027 Engineering Acoustics.....3

MECH ENG 7028 Advanced Automatic Control ...3

MECH ENG 7029 Airconditioning .....3

MECH ENG 7030 Advanced Vibrations.....3

MECH ENG 7031 Aerospace Navigation and Guidance.....3

MECH ENG 7044 Biomechanical Engineering.....3

### **Petroleum Engineering and Management**

PETROENG 7001 Petrophysics .....2

PETROENG 7002 Reservoir Engineering .....2

PETROENG 7006 Petroleum Project Economics..2

PETROENG 7009 Decision-Making Under Uncertainty .....2

PETROENG 7012 Oil and Gas Resources & Reserves.....2

PETROENG 7023 Project Management.....2

PETROENG 7031 Reservoir Characterisation and Modelling.....3

PETROENG 7032 Integrated Reservoir Management .....2

PETROENG 7035 Reservoir Simulation.....3

PETROENG 7038 Well Testing and Pressure Transient Analysis.....3

PETROENG 7040 Enhanced Oil Recovery .....3

PETROENG 7041 Gas Fields Optimisation .....2

PETROENG 7043 Integrated Field Development..3

PETROENG 7044 Petroleum Geology & Geophysics .....2

PETROENG 7050 Production Engineering and Optimisation .....3

PETROENG 7042 Drilling Engineering and Well Completion .....3

PETROENG 7049 Advanced Managerial Decision Making & Risk Analysis .....3

PETROENG 7048 Petroleum Exploration & Management .....3

**B    Advanced courses**

Level IV Engineering courses, which have been designated as 'Advanced Level' by the School concerned; details available from the Schools.

**C    Ordinary level courses**

Level III and IV courses (not included above) in the Faculties of Engineering, Computer and Mathematical Sciences, and Sciences.

Notwithstanding the above, the availability of all courses is conditional on the availability of staff and facilities and sufficient enrolments.