

# Master of Engineering

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 1 General

The Master of Engineering shall be available in the Disciplines of:

- Aerospace Engineering
- Chemical Engineering
- Civil & Environmental Engineering
- Civil & Structural Engineering
- Electrical Engineering
- Electronic Engineering
- Mechanical Engineering
- Mechatronic Engineering
- Mining Engineering
- Signal and Information Processing

## 2 Duration of program

The program of study for the Master in Engineering shall extend over 2 years of full-time study or the equivalent part-time study.

## 3 Admission

3.1 An applicant for admission to the program of study for the Master of Engineering shall have qualified for a degree of the University or for a degree of another institution accepted for the purpose by the Faculty as being equivalent to the degree of Bachelor of Engineering in a Discipline related to the proposed field of study.

3.2 The Faculty may, in special cases and subject to such conditions as it may see fit to impose in each case, accept as a candidate for the Master of Engineering, a person who does not qualify for admission to the program under Rule 2.1 above, but has given evidence satisfactory to the Faculty, of fitness to undertake work for the degree.

### 3.3 Status, exemption and credit transfer

On written application to the Faculty, candidates may be granted, on a case by case basis, such status as the Faculty shall determine to a maximum aggregate value of twenty-four (24) units under the conditions outlined below.

3.3.1 Candidates who have completed an accredited Washington Accord degree in Bachelor of Engineering with Honours may be granted status to the maximum aggregate value of twenty-four (24) units.

3.3.2 Candidates who have completed a degree in Bachelor of Engineering that has not been accredited by the Washington Accord will not be granted status.

### 3.4 Articulation with other awards

3.4.1 A candidate who has been enrolled in the Graduate Diploma in Engineering from the University of Adelaide and who has not been awarded the Graduate Diploma in Engineering shall, on written application, be permitted to transfer all equivalent courses towards the Master of Engineering degree.

## 4 Assessment and examinations

4.1 There shall be four classifications of pass in any course for the Master of Engineering: Pass with High Distinction, Pass with Distinction, Pass with Credit, and Pass.

4.2 A candidate shall not be eligible to attend for examination unless the prescribed coursework has been completed to the satisfaction of the teaching staff concerned.

4.3 A candidate who fails a course and desires to take the course again shall again attend the course and satisfactorily do such written and practical work as the teaching staff concerned may prescribe, unless specifically exempted there from after written application to the Faculty for such exemption.

4.4 A candidate who has twice failed any course may not enrol for that course again except by special permission of the Faculty and then only under such conditions as may be prescribed.

4.5 For the purpose of this Rule, a candidate who is refused permission to sit for examination, or who fails to attend all or part of a final examination (or supplementary examination if granted) without a reason accepted by the Faculty, shall be deemed to have failed that course.

## 5 Qualification requirements

### 5.1 General

To qualify for the degree of Master of Engineering, a candidate shall satisfactorily complete courses to the value of 48 units including core courses from 5.2.1 to the value of 9 units, Discipline specific foundation courses to the value of 12 units from 5.2.2, elective courses from that same Discipline to the value of 15 units from 5.2.3, and a research project in one of the relevant Disciplines to the value of 12 units selected from 5.2.4 below.

Candidates who have not achieved this standard will not be permitted to continue study towards the degree and may qualify for the Graduate Diploma. Candidates who have been granted less than 24 units of credit shall achieve a Grade Point Average of at least 5.0 upon completing their first courses to the value of 24 units.

## 5.2 Practical experience

### i General

For all engineering programs, a total of twelve weeks' practical experience (of which a minimum 6 weeks should be under the supervision of a professional engineer) is required and this should be undertaken during the University vacations.

The Faculty may grant either partial or total exemption from these requirements to a student who produces satisfactory evidence of practical experience obtained before their first enrolment in the Faculty; and in special cases, the Faculty may grant dispensation from the requirements. Students who have received a Washington Accord 4-year bachelor degree (or equivalent) will be granted total exemption from these requirements.

Credit will not normally be given for periods of less than three consecutive weeks.

A student should seek a variety of practical experience appropriate to the student's academic level.

Before beginning a period of practical experience, a student may ensure that it will be satisfactory to the Faculty by consulting the Head of the School or nominee, concerned.

Upon completion of each period of practical experience, a student is required to submit a prescribed practical experience form to the Faculty for approval. This submission must include a statement of practical experience gained and must be certified by the employer.

### ii Mechanical, Mechanical and Aerospace, Mechanical and Automotive, Mechanical and Sports, Mechatronic

Students must complete Workshop Practice, a short course which will normally occupy a one-week period during a semester break. On satisfactory completion of this short course, students will be automatically credited with one-week engineering experience towards the 12-week work experience requirement.

## 5.3 Academic program

### 5.3.1 Core courses

ELEC ENG 7057 Engineering Communication & Critical Thinking ..... 3

*plus*

a total of 6 units from either:

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

STATS 7053 Statistics in Engineering ..... 3

APP MTH 7054 System Modelling & Simulation\* ..... 3

COMP SCI 7077 System Modelling & Simulation\* ..... 3

\*Only one of the two System Modelling courses can be presented

### 5.3.2 Discipline-specific Foundation courses

#### Aerospace

MECH ENG 7073 Space Vehicle Design ..... 3

MECH ENG 7068 Applied Aerodynamics ..... 3

MECH ENG 7066 Aeronautical Engineering ..... 3

MECH ENG 7067 Aerospace Materials & Structures ..... 3

#### Chemical

CHEM ENG 7050 Chem Eng Applications A ..... 3

CHEM ENG 7051 Chem Eng Applications B ..... 3

CHEM ENG 7052 Chem Eng Applications C ..... 3

CHEM	ENG	7057	Research	Practice	3
.....					3

#### Civil & Environmental

C&ENVENG 7079 Water Engineering and Design ..... 3

C&ENVENG 7011 Engineering Management and Planning .....	3
C&ENVENG 7029 Environmental Modelling, Management & Design .....	3
C&ENVENG 7077 Engineering Hydrology .....	3
<b>Civil &amp; Structural</b>	
C&ENVENG 7058 Structural Mechanics .....	3
C&ENVENG 7007 Structural Design (Steel) .....	3
C&ENVENG 7005 Structural Design (Concrete) .....	3
C&ENVENG 7069 Geotechnical Engineering .....	3
<b>Electrical</b>	
ELEC ENG 7082 Principles of Control Systems .....	3
ELEC ENG 7049 Power Electronic Systems .....	3
ELEC ENG 7069 Electric Energy Systems .....	3
ELEC ENG 7074 Power Systems .....	3
<b>Electronic</b>	
ELEC ENG 7033 Principles of RF Engineering .....	3
ELEC ENG 7048 Principles of Control Systems .....	3
ELEC ENG 7080 Principles of Communication Systems .....	3
ELEC ENG 7079 Principles of Signal Processing .....	3
<b>Mechanical</b>	
MECH ENG 7047 Dynamics & Control II .....	3
MECH ENG 7068 Applied Aerodynamics .....	3
MECH ENG 7070 Heat Transfer & Thermodynamics .....	3
MECH ENG 7074 Structural Design & Solid Mechanics .....	3
<b>Mechatronic</b>	
MECH ENG 7047 Dynamics & Control II .....	3
MECH ENG 7070 Heat Transfer & Thermodynamics .....	3
MECH ENG 7071 Mechatronics II .....	3
MECH ENG 7072 Microcontroller Programming .....	3
<b>Mining</b>	
MINING 7071 Mining Systems .....	3
MINING 7070 Resource Estimation .....	3
MINING 7073 Mine Planning .....	3
MINING 7072 Mining Geomechanics .....	3
<b>Signal Information Processing</b>	
ELEC ENG 7033 Principles of RF Engineering .....	3
ELEC ENG 7048 Principles of Control Systems .....	3
ELEC ENG 7080 Principles of Communication Systems .....	3
ELEC ENG 7079 Principles of Signal Processing .....	3
5.3.3 Elective Courses	
<b>Aerospace</b>	
MECH ENG 7062 Aircraft Design* .....	3
MECH ENG 7063 Advanced Topics in Aerospace Engineering* .....	3
MECH ENG 7028 Advanced PID Control .....	3
MECH ENG 7030 Advanced Vibrations .....	3
MECH ENG 7055 Wind Engineering .....	3
MECH ENG 7045 CFD for Engineering Applications .....	3
MECH ENG 7059 Finite Element Analysis of Structures .....	3
MECH ENG 7025 Topics in Welded Structures .....	3
ELEC ENG 7017 Beamforming and Array Processing .....	3
MECH ENG 7037 Aerospace Propulsion .....	3
MECH ENG 7023 Fracture Mechanics .....	3
MECH ENG 7034 Advanced Digital Control .....	3

MECH ENG 7026 Advanced Topics in Fluid Mechanics .....	3
CHEM ENG 7047 Composites & Multiphase Polymers .....	3
MECH ENG 7061 Corrosion Principles & Prevention .....	3
MECH ENG 7043 Stresses in Plates & Shells .....	3

\* denotes compulsory courses

**Chemical**

CHEM ENG 7048 Bio-fuels, Biomass and Wastes .....	3
CHEM ENG 7000 Minerals Processing .....	3
CHEM ENG 7008 Combustion Processes .....	3
CHEM ENG 7012 Environmental Engineering .....	3
CHEM ENG 7032 Principles of Sustainability & Decision Making.....	3
CHEM ENG 7034 Environmental Modelling.....	3
CHEM ENG 7035 Wastewater Treatment.....	3
CHEM ENG 7036 Air Pollution.....	3
CHEM ENG 7037 Combustion & Energy Engineering.....	3
CHEM ENG 7038 Process Plant Safety & Risk Assessment.....	3
CHEM ENG 7039 Pinch Analysis and Process Synthesis .....	3
CHEM ENG 7040 Thermal & Separation Processes.....	3
CHEM ENG 7041 Advanced Rheology & Polymer Process .....	3
CHEM ENG 7042 Advanced Chemical Engineering Thermodynamics.....	3
CHEM ENG 7043 Bioreaction & Bioseparation Engineering .....	3
CHEM ENG 7044 Food Process Engineering .....	3
CHEM ENG 7045 Advanced Fluid Mechanics.....	3
CHEM ENG 7054 Simulation & Concept Design .....	3
CHEM ENG 7056 Process Control & Utilities.....	3

**Civil & Environmental**

C&ENVENG 7037 Water Distribution Systems and Design .....	3
C&ENVENG 7108 Environmental Engineering and Design IVA.....	3
C&ENVENG 7109 Environmental Engineering and Design IVB .....	3
C&ENVENG 7044 Introduction to Environmental Law.....	3
C&ENVENG 7085 Traffic Engineering.....	3
C&ENVENG 7068 Environmental Engineering & Design IVC.....	3
C&ENVENG 7034 Deep Foundation Engineering & Design .....	3
C&ENVENG 7035 Engineering Problematic Soils .....	3
C&ENVENG 7038 Coastal Engineering & Design .....	3
TECHCOMM 7023 Carbon Impact & Strategy.....	3
TECHCOMM 7033 Ongoing Carbon Management .....	3
TECHCOMM 7025 Intro to Climate Change .....	3
TECHCOMM 5004 Managing Risk.....	3
TECHCOMM 7012 Bus & Contract Legal Studies.....	3

\*denotes compulsory courses

**Civil & Structural**

C&ENVENG 7061 Computer Methods of Structural Analysis and Design* .....	3
C&ENVENG 7042 Advanced Reinforced Concrete*.....	3
C&ENVENG 7034 Deep Foundation Engineering & Design .....	3
C&ENVENG 7035 Engineering Problematic Soils .....	3
C&ENVENG 7046 FRP Retrofitting of Concrete Structures .....	3
C&ENVENG 7059 Structural Response to Blast Loading .....	3
C&ENVENG 7033 Structural Dynamics due to Wind & Earthquakes.....	3
C&ENVENG 7107 Prestressed Concrete Structures.....	3
C&ENVENG 7108 Environmental Engineering and Design IVA.....	3
C&ENVENG 7111 Structural Dynamics and Applications.....	3

MECH ENG 7023 Fracture Mechanics.....	3
MECH ENG 7043 Stresses in Plates and Shells .....	3
MECH ENG 7055 Wind Engineering.....	3
MECH ENG 7059 Finite Element Analysis of Structures.....	3
MECH ENG 7061 Corrosion Principles and Prevention .....	3
TECHCOM 5021 Applied Project Management 1 # .....	3
TECHCOM 5026 Applied Project Management 2 .....	3
TECHCOM 5004 Managing Risk .....	3
TECHCOM 7012 Bus & Contract Legal Studies.....	3

\*denotes compulsory courses

# available if not already taken as a core course

**Electrical**

ELEC ENG 7075 Distributed Generation Technologies*.....	3
ELEC ENG 7046 Power Quality and Fault Diagnostics*.....	3
ELEC ENG 7066 Power System Dynamics* .....	3
ELEC ENG 7079 Principles of Signal Processing .....	3
ELEC ENG 7068 Power Systems Monitoring and Protection .....	3
MECH ENG 7034 Advanced Digital Control.....	3
TECHCOMM 5013 Systems Engineering 1 .....	3
TECHCOMM 7012 Systems Engineering 2 .....	3
TECHCOMM 5014 Project Management Techniques.....	3

\*must select at least 6 units from those denoted with an asterisk

**Electronic**

ELEC ENG 7001 Introduction to Electronic Defence Systems*.....	3
ELECENG 7023 Satellite Communications.....	3
ELEC ENG 7049 Power Electronic Systems.....	3
ELEC ENG 7051 Microelectronic Systems* .....	3
ELEC ENG 7060 Image Sensors and Processing .....	3
ELEC ENG 7015 Adaptive Signal Processing .....	3
ELEC ENG 7052 Electromagnetic Theory & RFID Applications .....	3
ELEC           ENG           7083           Telecommunications           Principles           and	
Systems.....	3
ELEC           ENG           7084           Avionic           Sensors           and           Systems	
PG*.....	3
ELEC                   ENG                   7085                   Multisensor                   Data	
Fusion.....	3

\*must select at least 6 units from those denoted with an asterisk

**Mechanical**

MECH ENG 7029 Airconditioning* .....	3
MECH ENG 7021 Combustion Technology & Emission Control*.....	3
MECH ENG 7051 Computational Acoustics* .....	3
MECH ENG 7020 Materials Selection & Failure Analysis* .....	3
MECH ENG 7069 Fire Engineering* .....	3
MECH ENG 7023 Fracture Mechanics.....	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 7030 Advanced Vibrations.....	3
MECH ENG 7043 Stresses in Plates & Shells .....	3
MECH ENG 7044 Biomechanical Engineering .....	3
MECH ENG 7045 CFD for Engineering Applications.....	3
MECH ENG 7055 Wind Engineering.....	3
MECH ENG 7059 Finite Element Analysis of Structures.....	3

MECH ENG 7061 Corrosion Principles & Prevention .....	3
MECH ENG 7075 Sustainable Thermal Technologies .....	3
MECH ENG 7076 Renewable Fluid Power Technology .....	3
CHEM ENG 7047 Composites & Multiphase Polymers.....	3

\*must select at least 9 units from those denoted with an asterisk

**Mechatronic**

APP MTH 7011 Transform Methods & Signal Processing* .....	3
MECH ENG 7024 Robotics M*.....	3
ELEC ENG 7015 Adaptive Signal Processing .....	3
ELEC ENG 7017 Beamforming and Array Processing .....	3
ELEC ENG 7055 Antennas and Propagation .....	3
ELEC ENG 7060 Image Sensors and Processing .....	3
ELEC ENG 7065 Sonar Sensors and Systems .....	3
MECH ENG 7027 Engineering Acoustics .....	3
MECH ENG 7030 Advanced Vibrations.....	3
MECH ENG 7034 Advanced Digital Control.....	3
MECH ENG 7028 Advanced PID Control.....	3
MECH ENG 7044 Biomechanical Engineering .....	3
MECH ENG 7051 Computational Acoustics.....	3
MECH ENG 7075 Sustainable Thermal Technologies .....	3
MECH ENG 7076 Renewable Fluid Power Technology .....	3

\* denotes compulsory courses

**Mining**

MINING 7107 Surface Mining Systems.....	3
MINING 7108 Underground Mining Systems .....	3
MINING 7114 Simulation & Animation for Mining Engineering .....	3
MINING 7101 Mine Management.....	3
MINING 7102 Mine Geotechnical Engineering .....	3
MINING 7110 Mine Asset Management & Services.....	3
MINING 7106 Hard Rock Mine Design & Feasibility.....	3
APP MTH 7105 Optimisation and Operations Research.....	3
C&ENVENG 7043 Introduction to Geostatistics .....	3
C&ENVENG 7053 Non-Linear Geostatistics.....	3
C&ENVENG 7056 Linear Geostatistics.....	3
MINING 7105 Minerals Processing Engineering .....	3
MECHENG 7059 Finite Element.....	3
TECHCOMM 5004 Managing Risk.....	3
TECHCOMM 7033 Ongoing Carbon Management .....	3
TECHCOMM 7032 Mine Financing and Valuation .....	3

**Signal Information Processing**

ELEC ENG 7002 Kalman Filtering & Tracking* .....	3
ELEC ENG 7015 Adaptive Signal Processing* .....	3
ELEC ENG 7017 Beamforming and Array Processing* .....	3
ELEC ENG 7085 Multisensor Data Fusion* .....	3
ELEC ENG 7059 Radar Principles and Systems - An Introduction* .....	3
ELEC ENG 7065 Sonar Sensors and Systems* .....	3
ELEC ENG 7071 Detection, Estimation and Classification* .....	3
ELEC ENG 7001 Introduction to Electronic Defence Systems.....	3
ELEC ENG 7023 Satellite Communications .....	3
ELEC ENG 7051 Microelectronic Systems .....	3
ELEC ENG 7052 Electromagnetic Theory & RFID Applications .....	3
ELEC ENG 7055 Antennas and Propagation .....	3
ELEC ENG 7060 Image Sensors and Processing .....	3

ELEC ENG 7068 Power Systems Monitoring and Protection .....	3
ELEC           ENG           7084           Avionics           Sensors           and           Systems PG.....	3
APP MTH 7078 Information Theory .....	3

\*must select at least 6 units from those denoted with an asterisk

5.3.4 Research Project

CHEM ENG 7046A/B Masters Chemical Project .....	12
C&ENVENG 7049A/B Masters Civil & Structural Engineering Project .....	12
C&ENVENG 7058A/B Masters Civil & Environmental Engineering Project .....	12
ELEC ENG 7078A/B Masters Electrical Project .....	12
ELEC ENG 7077A/B Masters Electronic Project .....	12
MECH ENG 7041A/B Masters Mechanical Project.....	12
ELEC ENG 7076A/B Masters Signal Information Processing Project .....	12

The availability of all courses is conditional on there being adequate staffing and resources

5.4 Unacceptable combination of courses

No candidate will be permitted to present towards an award two courses which, in the opinion of the Faculty, contain a substantial amount of the same academic material; furthermore, no course or portion of a course may be presented twice towards an award. Where courses contain a substantial amount of the same academic material as previously completed courses, on written application to the Faculty, students may be granted permission to substitute core courses for an alternative course as approved by the Faculty.

5.5 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

**6 Special circumstances**

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.