

# Handbook 2020

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G1070

GRADUATE DIPLOMA IN ENGINEERING

**Murdoch University**

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#### **Cancellation of Courses, Majors, Minors and Units**

The University reserves the right to cancel, without notice, any course, major, minor or unit if the number of students enrolled falls below limits set by the University or in other unforeseen circumstances.

#### **Alternative Formats**

Handbook home page:

<http://handbook.murdoch.edu.au>

This publication can also be provided in alternative formats by contacting the Equity and Social Inclusion Office at Murdoch University

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<http://goto.murdoch.edu.au/EquitySocialInclusion>

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**Cancellation of Courses, Majors, Minors and Units**

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Group	Course	Offerings
<b>Graduate Coursework Degrees and Professional Doctorates</b>		
Engineering	Graduate Diploma in Engineering (GradDipEng)	• Murdoch campus (internal)

## ENGINEERING

### GRADUATE DIPLOMA IN ENGINEERING (GRADDIPENG)

**The Graduate Diploma in Engineering is intended for practising professionals and recent graduates who wish to update their existing qualifications and/or enhance their skills in one of the following three majors:**

**Major 1: Instrumentation, Control and Industrial Computer Systems Engineering; Major 2: Electrical Power and Industrial Computers Systems Engineering; or Major 3: Water Treatment and Desalination.**

#### Environmental Engineering

Duration: 1 year full-time or part-time equivalent

##### Special Requirements:

Successful completion of the Graduate Diploma in Engineering allows the student to progress directly into the start of the second year of the Master of Engineering in the same disciplinary major. Some units in this course are offered in a flexible delivery mode, allowing candidates to complete some of

their studies at home or at their workplace.

Special Requirements Apply for admission to and participation in the Water Treatment and Desalination Major as follows:

- Some attendance at on- and off-campus site visits and technology operation sessions will be a requirement.

- Water treatment engineering is a highly quantitative profession requiring a sound grounding in physics, chemistry, fluid mechanics, and mathematics. The coursework assumes a prior understanding of the fundamentals of these disciplines to a level allowing entry into the specifics of water engineering without further general instruction in these disciplines. Consequently, students entering the course must have passed the following units at Murdoch or their equivalent elsewhere:

MAS221 Mathematical Modelling

ENG201 Fluid Mechanics

CHE144, Foundations of Chemistry

PEN152, Principles of Physics

For students with potentially equivalent alternative training, contact the Academic Chair for assessment of equivalency.

##### Employment Prospects:

Graduates in majors 1 and 2 can find employment in the following areas of manufacturing, medical, mining, processing energy supply, communications, electronics, computer systems and defence-related industries. Graduates in major 3 can find employment in municipal water supply and wastewater management, governmental departments of water and natural resources, and private or public irrigation and water resource management entities, mining, manufacturing and other industrial enterprises in which water is extensively used.

##### Admission Requirements (Onshore):

Entry may be gained through any of three means:

1. Recognised Engineering Bachelor's degree (AQF Level 7) in the specific disciplinary area of the major.
2. Evidence of an appropriate level of industrial experience and possession of a Bachelor's degree (AQF Level 7) in a technical, non-engineering area as judged adequate by the Academic Chair or their designate.
3. Applicants without the necessary qualifications and/or background may be admitted with the caveat that they will be required to pass additional units as part of the course requirements, as judged by the Academic

Chair (or equivalent) or their designate. This entry option may increase the required duration to complete the degree.

To gain entry by either means 2 or 3, the applicant should provide educational and industrial experience details by a Curriculum Vitae, tertiary education transcripts, and a personal statement of no more than 300 words detailing why this course has been selected and how any extra-curricular experience has prepared the applicant to complete the course.

Restriction: All graduate courses are subject to restriction.

Course Codes: G1070

Graduate Diploma in Engineering (GradDipEng)

##### Availability:

- Murdoch campus (internal)

### Course Structure - 24 credit points

#### Major - 24 credit points

MJ-ICIG Instrumentation, Control and Industrial Computer Systems Engineering

- 24 points

OR

MJ-EPICG Electrical Power and Industrial Computer Systems Engineering - 24

points

OR

MJ-WTDG Water Treatment and Desalination - 24 points

#### Instrumentation, Control and Industrial Computer Systems Engineering

ENG502 Computer Based Measurement and Control - 3 points  
MURDOCH: S2-internal

ENG508 Instrumentation and Control II - 3 points  
MURDOCH: S2-internal

ENG525 Instrumentation and Control I - 3 points  
MURDOCH: S1-internal, S2-internal

ENG563 Processes, Simulation and Instrumentation - 3 points  
MURDOCH: S1-internal

ENG501 PLC Applications - 3 points  
MURDOCH: S1-internal

ENG514 Industrial Signals and Systems - 3 points  
MURDOCH: SUM-internal

ENG564 Instrumentation and Communication - 3 points  
MURDOCH: S2-internal

#### Instrumentation, Control and Industrial Computer Systems Engineering

##### Specified Electives - 3 credit points

Select from the Specified Elective Unit List below.

Students must meet the unit-specific prerequisites, if any, for the elective selected.

ENG550 Design Project - 3 points  
MURDOCH: S1-internal, S2-internal, SUM-internal, Y-internal

ICT616 Data Resources Management - 3 points  
MURDOCH: S1-internal, S2-internal

TLC501 Communication Skills for Postgraduate Study - 3 points  
MURDOCH: S1-internal, S2-internal

PEN590 Energy Systems - 3 points  
MURDOCH: S2-internal, S2-external

PEN594 Energy Auditing and Management - 3 points

MURDOCH: S1-internal, S1-external

PEN504 Greenhouse Gas Reporting and Life Cycle Assessment - 3 points

MURDOCH: S2-internal, S2-external

MBS538 Organisational Behaviour and Management - 3 points

MURDOCH: S1-internal, S1-external, S2-internal, S2-external, SUM-internal, SUM-external

MBS673 Entrepreneurship and Innovation Management - 3 points

MURDOCH: S1-internal, S1-external, SUM-internal, SUM-external

### **Electrical Power and Industrial Computer Systems Engineering**

ENG502 Computer Based Measurement and Control - 3 points

MURDOCH: S2-internal

ENG501 PLC Applications - 3 points

MURDOCH: S1-internal

ENG514 Industrial Signals and Systems - 3 points

MURDOCH: SUM-internal

ENG564 Instrumentation and Communication - 3 points

MURDOCH: S2-internal

ENG557 Distributed Energy Resources and Demand Response - 3 points

MURDOCH: S1-internal

ENG556 Power System Modelling and Analysis - 3 points

MURDOCH: S2-internal

ENG558 Advanced Power Electronics - 3 points

MURDOCH: S1-internal

### **Electrical Power and Industrial Computer Systems Engineering**

#### **Specified Electives - 3 credit points**

Select from the Specified Elective Unit List below. Students must meet the unit-specific prerequisites, if any, for the elective selected.

ENG550 Design Project - 3 points

MURDOCH: S1-internal, S2-internal, SUM-internal, Y-internal

ICT616 Data Resources Management - 3 points

MURDOCH: S1-internal, S2-internal

TLC501 Communication Skills for Postgraduate Study - 3 points

MURDOCH: S1-internal, S2-internal

PEN590 Energy Systems - 3 points

MURDOCH: S2-internal, S2-external

PEN594 Energy Auditing and Management - 3 points

MURDOCH: S1-internal, S1-external

PEN504 Greenhouse Gas Reporting and Life Cycle Assessment - 3 points

MURDOCH: S2-internal, S2-external

MBS538 Organisational Behaviour and Management - 3 points

MURDOCH: S1-internal, S1-external, S2-internal, S2-external, SUM-internal, SUM-external

MBS673 Entrepreneurship and Innovation Management - 3 points

MURDOCH: S1-internal, S1-external, SUM-internal, SUM-external

### **Water Treatment and Desalination**

ENG507 Environmental Water Chemistry - 3 points

MURDOCH: S1-internal

ENG509 Water Regulation, Finance and Management - 3 points

MURDOCH: S1-internal

ENG524 Process Unit Operations - 3 points

MURDOCH: S1-internal, S1-external

ENG510 Physicochemical Water Treatment Operations - 3 points

MURDOCH: S2-internal

ENG515 Biological Water Treatment Operations - 3 points

MURDOCH: S2-internal

ENG516 Water Engineering Intuition and Analysis - 3 points

MURDOCH: S1-internal

ENG517 Water Treatment Technology Practical - 3 points

MURDOCH: S2-internal

### **Water Treatment and Desalination**

#### **Specified Electives - 3 credit points**

Select from the Specified Elective Unit List below. Students must meet the unit-specific prerequisites, if any, for the elective selected.

ENG550 Design Project - 3 points

MURDOCH: S1-internal, S2-internal, SUM-internal, Y-internal

ICT616 Data Resources Management - 3 points

MURDOCH: S1-internal, S2-internal

TLC501 Communication Skills for Postgraduate Study - 3 points

MURDOCH: S1-internal, S2-internal

ENV536 Education for Sustainability - 3 points

MURDOCH: S2-internal, S2-external

ENV554 Land and Water Management - 3 points

MURDOCH: S1-internal, S1-external

PEN504 Greenhouse Gas Reporting and Life Cycle Assessment - 3 points

MURDOCH: S2-internal, S2-external

MBS538 Organisational Behaviour and Management - 3 points

MURDOCH: S1-internal, S1-external, S2-internal, S2-external, SUM-internal, SUM-external

MBS673 Entrepreneurship and Innovation Management - 3 points

MURDOCH: S1-internal, S1-external, SUM-internal, SUM-external

## **PREREQUISITES**

### **Advanced Power Electronics (ENG558)**

Enrolment in Graduate Diploma of Engineering or Master of Engineering or permission of the Engineering Academic Chair.

### **Biological Water Treatment Operations (ENG515)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator. CHE144 Foundations of Chemistry or equivalent.

### **Communication Skills for Postgraduate Study (TLC501)**

Nil.

### **Computer Based Measurement and Control (ENG502)**

Enrolment in the Master of Engineering or Graduate Diploma in Engineering.

### **Data Resources Management (ICT616)**

Enrolment in a graduate-level IT course.

### **Design Project (ENG550)**

Enrolment in the Master of Engineering or Graduate Diploma in Engineering.

### **Distributed Energy Resources and Demand Response (ENG557)**

Enrolment in Graduate Diploma of Engineering or Master of Engineering.

### **Education for Sustainability (ENV536)**

Enrolment in Graduate Certificate in Environmental Science or Graduate Certificate in Protected Area Administration or Graduate

Diploma in Environmental Science or Bachelor of Marine Science or Master of Sustainable Development, or Doctor of Education, or Masters in Education, or Graduate Diploma in Education.

**Energy Auditing and Management (PEN594)**

Enrolment in the Graduate Certificate in Energy Studies, Graduate Certificate in Energy and Carbon Studies, Graduate Diploma in Energy Studies, Graduate Diploma in Energy and Carbon Studies, Graduate Diploma in Energy and the Environment, Master of Renewable Energy or Master of Renewable and Sustainable Energy

**Energy Systems (PEN590)**

Enrolment in the Graduate Certificate in Energy Studies, Graduate Certificate in Energy and Carbon Studies, Graduate Diploma in Energy Studies, Graduate Diploma in Energy and Carbon Studies, Graduate Diploma in Energy and the Environment, Master of Renewable Energy or Master of Renewable and Sustainable Energy and Master of Engineering.

**Entrepreneurship and Innovation Management (MBS673)**

Enrolment in a graduate-level course.

**Environmental Water Chemistry (ENG507)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator.

**Greenhouse Gas Reporting and Life Cycle Assessment (PEN504)**

Enrolment in an Honours or Graduate-level course. Recommended PEN597 Climate Change Science and Policy (may be concurrent enrolment).

**Industrial Signals and Systems (ENG514)**

Enrolment in the Master of Engineering or Graduate Diploma in Engineering.

**Instrumentation and Communication (ENG564)**

Enrolment in Master of Engineering or Graduate Diploma in Engineering.

**Instrumentation and Control I (ENG525)**

Enrolment in Master of Engineering or Graduate Diploma in Engineering.

**Instrumentation and Control II (ENG508)**

ENG525 Instrumentation and Control I; ENG563 Processes Simulation and Instrumentation.

**Land and Water Management (ENV554)**

Enrolment in a graduate-level (AQF level 8) course.

**Organisational Behaviour and Management (MBS538)**

Enrolment in a graduate-level course.

**PLC Applications (ENG501)**

Enrolment in the Master of Engineering or Graduate Diploma in Engineering or MBA+ME or ME+MIT.

**Physicochemical Water Treatment Operations (ENG510)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator.

**Power System Modelling and Analysis (ENG556)**

Enrolment in Graduate Diploma of Engineering or Master of Engineering.

**Process Unit Operations (ENG524)**

Enrolment in G1034 Graduate Diploma in Extractive Metallurgy, G1070 Graduate Diploma in Engineering, M1259 Master of Water Treatment and Desalination or M1193 Master of Engineering.

**Processes, Simulation and Instrumentation (ENG563)**

Enrolment in Master of Engineering or Graduate Diploma in Engineering.

**Water Engineering Intuition and Analysis (ENG516)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator.

**Water Regulation, Finance and Management (ENG509)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator.

**Water Treatment Technology Practical (ENG517)**

Enrolment in graduate coursework in a Murdoch Environmental, Energy, Physics, Electrical, Chemical or Metallurgical Engineering discipline. Other Murdoch graduate students with equivalent qualifications may be enrolled with permission from the unit coordinator.