

School of Electrical Engineering & Telecommunications

Faculty of Engineering

UNSW Sydney

Postgraduate by Coursework Programs

8338 – Master of Engineering Science (2 years)

5373 – Graduate Diploma of Engineering Science (1.5 years)

7373 – Graduate Certificate of Engineering Science (1 year)

The School of Electrical Engineering and Telecommunications offer the following areas of Specialisations (PLANS) for each of the above programs:

Electrical Engineering
Energy Systems
Systems and Control
Space Systems Engineering
Telecommunications

ELECWS8338 and ELECXS5373 and ELECYS7373
ELECZS8338 and ELECAT5373 and ELECBT7373
ELECCT8338 and ELEDT5373 and ELECET7373
ELECFT8338 and ELEGT5373 and ELECHT7373
TELEES8338 and TELEFS5373 and TELEGS7373

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Kensington, Sydney

Postgraduate by coursework program guideline – School of Electrical Engineering & Telecommunications

Master of Engineering Science (2 years)

Program code: 8338

Specialisation: ELECWS8338 (Electrical Engineering)

Students choose		UOC
Foundational Core	2 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	4 from List C	24
Project	Project Report* (ELEC9771+ELEC9772) or Capstone Project (ELEC9773)	12
Research-related	GSOE9010 or GSOE9011 or GSOE9220	6
ETM	1 from List D	6
Total UOC		96

Graduate Diploma of Engineering Science (1.5 years)

Program code: 5373

Specialisation: ELECXS5373 (Electrical Engineering)

Students choose		UOC
Foundational Core	2 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	3 from List C	18
ETM	1 from List D	6
Total UOC		72

Graduate Certificate of Engineering Science (1 year)

Program code: 7373

Specialisation: ELECYS7373 (Electrical Engineering)

Students choose		UOC
Foundational Core	2 from List A	12
Disciplinary	5 from List B	30
ETM	1 from List D	6
Total UOC		48

* ELEC9771 must be taken after completion of 48 UOC and ELEC9772 must be taken immediately after ELEC9771.

List A – Foundation Core courses

ELEC3104 Digital Signal Processing

ELEC3105 Electrical Energy

ELEC3115 Electromagnetic Engineering

ELEC3117 Electrical Engineering Design

List B – Disciplinary Knowledge Elective (DKE) courses

MICROELECTRONICS

ELEC4601 Digital & Embedded System Design

ELEC4602 Microelectronic Design and Technology

ELEC4603 Solid State Electronics

ELEC4604 RF Electronics

ELEC4605 Quantum Devices and Computers

ENERGY SYSTEMS

ELEC4611 Power System Equipment

ELEC4612 Power System Analysis

ELEC4613 Electrical Drive Systems

ELEC4614 Power Electronics

ELEC4617 Power System Protection

SIGNAL PROCESSING

ELEC4621 Advanced Digital Signal Processing

ELEC4622 Multimedia Signal Processing

ELEC4623 Biomedical Instrumentation, Measurement and Design

SYSTEMS AND CONTROL

ELEC4631 Continue-Time Control Systems Design

ELEC4632 Computer Control Systems

ELEC4633 Real-Time Engineering

TELECOMMUNICATIONS

PHTN4661 Optical Circuits and Fibres
TELE4642 Network Performance
TELE4651 Wireless Communication Technology
TELE4652 Mobile & Satellite Communications Systems
TELE4653 Digital Modulation and Coding

List C – Advanced Disciplinary Knowledge Elective (ADKE) courses

ENERGY SYSTEMS

ELEC4617 Power System Protection
GSOE9141 Smart Grids and Networks
GSOE9142 Energy Efficient Lighting & Equipment

MICROELECTRONICS

ELEC9701 Mixed Signal Microelectronic Design
ELEC9702 Radio Frequency Integrated Circuits
ELEC9703 microsystems Design and Technology
ELEC9704 VLSI Technology

ENERGY SYSTEMS

ELEC9711 Power Electronics for Renewable Energy
ELEC9712 High Voltage Systems
ELEC9713 Industrial and Commercial Power
ELEC9714 Electricity Industry Planning
ELEC9715 Electricity Industry Operation
ELEC9716 Electrical Safety
ELEC9719 Real-Time Digital Simulations

SIGNAL PROCESSING

ELEC9721 Digital Signal Processing Theory and Applications
ELEC9722 Digital Image Processing
ELEC9723 Speech Processing
ELEC9741 Electrical Engineering Data Science

SYSTEMS AND CONTROL

ELEC9731 Robust and Linear Control Systems
ELEC9732 Analysis and Design of Non-linear
ELEC9733 Real Computing and Control

TELECOMMUNICATIONS

ELEC9725 Satellite Navigation: Systems, Signals & Receivers
ELEC9781 Special Topics in EE 1
ELEC9782 Special Topics in EE 2

List D – Engineering Technical Management (ETM) courses

GSOE9210 Engineering Decision Structures
GSOE9445 Entrepreneurial Engineering
GSOE9510 Ethics & Leadership in Engineering
GSOE9820 Engineering Project Management
GSOE9830 Economic Decision Analysis in Engineering
GSOE9997 Engineering Work Related Learning for Postgraduates

Notes:

Each course is worth 6 units of credit (6 UOC).

Please note that not all courses are offered in every term. You should refer to the timetable website to find out each course's availability in each term: <https://timetable.unsw.edu.au/>

Courses exemption: Students may apply for course exemptions. Those holding a four-year honours degree (e.g., in Electrical Engineering) may be granted up a maximum of 48 UOC of exemptions.

Courses substitution: Students have limited flexibility to substitute one or two courses outside the official handbook, provided they obtain approval before enrolling in the relevant course and present reasonable justification.

Please note that retrospective substitution requests (i.e., requests submitted after enrolment in or completion of the course) will not be approved.

Postgraduate by coursework program guideline – School of Electrical Engineering & Telecommunications

Master of Engineering Science (2 years)

Program code: 8338

Specialisation: ELECZS8338 (Energy Systems)

Students choose		UOC
Foundational Core	ELEC3105 AND 1 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	4 from List C	24
Project	Project Report* (ELEC9771+ELEC9772) or Capstone Project (ELEC9773)	12
Research-related	GSOE9010 or GSOE9011 or GSOE9220	6
ETM	1 from List D	6
Total UOC		96

Graduate Diploma of Engineering Science (1.5 years)

Program code: 5373

Specialisation: ELECAT5373 (Energy Systems)

Students choose		UOC
Foundational Core	ELEC3105 AND 1 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	3 from List C	18
ETM	1 from List D , excluding GSOE9997	6
Total UOC		72

Graduate Certificate of Engineering Science (1 year)

Program code: 7373

Specialisation: ELECBT7373 (Energy Systems)

Students choose		UOC
Foundational Core	ELEC3105 AND 1 from List A	12
Disciplinary	5 from List B	30
ETM	1 from List D , excluding GSOE9997	6
Total UOC		48

* ELEC9771 must be taken after completion of 48 UOC and ELEC9772 must be taken immediately after ELEC9771.

List A – Foundation Core courses

ELEC3104 Digital Signal Processing
ELEC3115 Electromagnetic Engineering
ELEC3117 Electrical engineering Design

List B – Disciplinary Knowledge Elective (DKE) courses

ELEC4602 Microelectronic Design and Technology
ELEC4611 Power System Equipment
ELEC4612 Power System Analysis
ELEC4613 Electrical Drive Systems
ELEC4614 Power Electronics
ELEC4617 Power System Protection
ELEC4621 Advanced Digital Signal Processing
ELEC4631 Continue-Time Control Systems Design
PHTN4661 Optical Circuits and Fibres
TELE4652 Mobile & Satellite Communications Systems

List C – Advanced Disciplinary Knowledge Elective (ADKE) courses

ELEC9711 Power Electronics for Renewable Energy
ELEC9712 High Voltage Systems
ELEC9713 Industrial and Commercial Power
ELEC9714 Electricity Industry Planning
ELEC9715 Electricity Industry Operation
ELEC9716 Electrical Safety
ELEC9719 Real-Time Digital simulations
ELEC9741 Electrical Engineering Data Science
GSOE9141 Smart Grids and Networks
GSOE9142 Energy Efficient Lighting & Equipment

List D – Engineering Technical Management (ETM) courses

GSOE9210 Engineering Decision Structures
GSOE9445 Entrepreneurial Engineering
GSOE9510 Ethics & Leadership in Engineering
GSOE9820 Engineering Project Management
GSOE9830 Economic Decision Analysis in Engineering
GSOE9997 Engineering Work Related Learning for Postgraduates

Notes:

Each course is worth 6 units of credit (6 UOC).

Please note that not all courses are offered in every term. You should refer to the timetable website to find out each course's availability in each term: <https://timetable.unsw.edu.au/>

Courses exemption: Students in 8338 programs may apply for course exemptions. Those holding a four-year honours degree (e.g., in Electrical Engineering) may be granted up a maximum of 48 UOC of exemptions.

Courses substitution: Students have limited flexibility to substitute one or two courses outside the official handbook, provided they obtain approval before enrolling in the relevant course and present reasonable justification.

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Postgraduate by coursework program guideline – School of Electrical Engineering & Telecommunications

Master of Engineering Science (2 years)

Program code: 8338

Specialisation: ELECCT8338 (Systems & Control)

Students choose		UOC
Foundational Core	ELEC3114 AND 1 from List A	12
Disciplinary Core	ELEC4631 AND ELEC4632 AND ELEC4633	18
Disciplinary Elective	3 from List B	18
Advanced Disciplinary Core	ELEC9731 AND ELEC9732	12
Advanced Disciplinary Elective	2 from List C	12
Project	Project Report* (ELEC9771+ELEC9772) or Capstone Project (ELEC9773)	12
Research-related	GSOE9010 or GSOE9011 or GSOE9220	6
ETM	1 from List D	6
Total UOC		96

Graduate Diploma of Engineering Science (1.5 years)

Program code: 5373

Specialisation: ELECDT5373 (Systems & Control)

Students choose		UOC
Foundational Core	ELEC3114 AND 1 from List A	12
Disciplinary Core	ELEC4631 AND ELEC4632 AND ELEC4633	18
Disciplinary Elective	3 from List B	18
Advanced Disciplinary Core	ELEC9731 AND ELEC9732	12
Advanced Disciplinary Elective	1 from List C	6
ETM	1 from List D , excluding GSOE9997	6
Total UOC		72

Graduate Certificate of Engineering Science (1 year)

Program code: 7373

Specialisation: ELECET7373 (Systems & Control)

Students choose		UOC
Foundational Core	ELEC3114 AND 1 from List A	12
Disciplinary Core	ELEC4631 AND ELEC4632 AND ELEC4633	18
Disciplinary Elective	2 from List B	12
ETM	1 from List D , excluding GSOE9997	6
Total UOC		48

* ELEC9771 must be taken after completion of 48 UOC and ELEC9772 must be taken immediately after ELEC9771.

List A – Foundation Core courses

ELEC3104 Digital Signal Processing
ELEC3115 Electromagnetic Engineering
ELEC3117 Electrical engineering Design

List B – Disciplinary Knowledge Elective (DKE) courses

ELEC4601 Digital & Embedded Systems Design
ELEC4602 Microelectronic Design and Technology
ELEC4603 Solid State Electronics
ELEC4604 RF Electronics
ELEC4605 Quantum Devices and Computers
ELEC4611 Power System Equipment
ELEC4612 Power System Analysis
ELEC4613 Electrical Drive Systems
ELEC4614 Power Electronics
ELEC4621 Advanced Digital Signal Processing
ELEC4622 Multimedia Signal Processing

ELEC4623 Biomedical Instrumentation, Measurement & Design
PHTN4661 Optical Circuits and Fibres
TELE4642 Network Performance
TELE4651 Wireless Communication Technology
TELE4652 Mobile & Satellite Communications Systems

List C – Advanced Disciplinary Knowledge Elective (ADKE) courses

CEIC8102 Advanced Process Control
COMP9517 Computer Vision
COMP9814 Extended Artificial Intelligence
ELEC9716 Electrical Safety
ELEC9719 Real-Time Digital Simulations
ELEC9721 Digital Signal Processing Theory and Applications
ELEC9725 Satellite Navigation: Systems, Signals & Receivers
ELEC9741 Electrical Engineering Data Science
GSOE9141 Smart Grids and Networks
GSOE9142 Energy Efficient Lighting and Equipment

List D – Engineering Technical Management (ETM) courses

ELEC4122 Strategic Leadership and Ethics
ELEC4445 Entrepreneurial Engineering
GSOE9210 Engineering Decision Structures
GSOE9820 Engineering Project Management
GSOE9830 Economic Decision Analysis in Engineering
GSOE9997 Engineering Work Related Learning for Postgraduates

Notes:

Each course is worth 6 units of credit (6 UOC).

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Postgraduate by coursework program guideline – School of Electrical Engineering & Telecommunications

Master of Engineering Science (2 years)

Program code: 8338

Specialisation: ELECFT8338 (Space Systems Eng.)

Students choose		UOC
Foundational Core	List A	24
Advanced Disciplinary Core	AERO9500, AERO9610, ELEC9762, ELEC9764, ELEC9765, 1 from List B	36
Advanced Disciplinary Elective	2 from List C	12
Project	Project Report* (ELEC9771+ELEC9772) or Capstone Project (ELEC9773)	12
Research-related	GSOE9010 or 9011 or 9220	6
ETM	1 from List D	6
Total UOC		96

Graduate Diploma of Engineering Science (1.5 years)

Program code: 5373

Specialisation: ELECGT5373 (Space Systems Eng.)

Students choose		UOC
Foundational Core	List A	24
Advanced Disciplinary Core	AERO9500, AERO9610, ELEC9762, ELEC9764, ELEC9765, 1 from List B	36
Advanced Disciplinary Elective	2 from List C	12
Total UOC		72

Graduate Certificate of Engineering Science (1 year)

Program code: 7373

Specialisation: ELECHT7373 (Space Systems Eng.)

Students choose		UOC
Foundational Core	List A	24
Advanced Disciplinary Core	AERO9500, AERO9610, ELEC9762, ELEC9764, ELEC9765, GSOE9841	24
Total UOC		48

* ELEC9771 must be taken after completion of 48 UOC and ELEC9772 must be taken immediately after ELEC9771.

List A – Foundation Core courses

COMP1521 Computer Systems Fundamentals
 DESN2000 Engineering Design and Professional Practice
 MATH2069 Mathematics 2A
 PHYS1121 Physics 1A

List B – Advanced Disciplinary Knowledge Core (ADKC) courses

GSOE9210 Engineering Decision Structures
 GSOE9445 Entrepreneurial Engineering
 GSOE9820 Engineering Project Management
 GSOE9830 Economic Decision Analysis in Engineering
 GSOE9841 Systems Engineering Fundamentals

List C – Advanced Disciplinary Knowledge Elective (ADKE) courses

AERO9660 Advanced Aerospace Propulsion
 CEIC6712 Pharmaceutical Design and Engineering
 CEIC6714 Hydrogen Systems Engineering and Economics
 CEIC6789 Data-driven Decision Making in Chemical Engineering and Food Science

CEIC8204 Entrepreneurship and the Innovation Cycle
CEIC8330 Process Engineering in the Petroleum Industry
CEIC8341 Membrane Processes
CHEN6701 Advanced Reaction Engineering
CHEN6703 Advanced Particle Systems Engineering
CHEN6706 Advanced Transport Phenomena
COMP4418 Knowledge Representation and Reasoning
COMP9024 Data Structures and Algorithms
COMP9101 Algorithm Design and Analysis
COMP9331 Computer Networks and Applications
CVEN4102 Operations and Projects
CVEN4103 Engineering Contracts
CVEN4104 Sustainability in Construction
CVEN4201 Rock and Slope Engineering
CVEN4202 Advanced Topics in Geotechnical Engineering
CVEN4204 Ground Improvement and Monitoring Techniques
CVEN4301 Advanced Concrete Structures
CVEN4308 Structural Dynamics
CVEN4402 Transport Networks
CVEN4507 Resilient Flood Design
CVEN9898 Fundamentals of Sustainable Infrastructure
ELEC3104 Digital Signal Processing
ELEC3106 Electronics
ELEC3114 Control Systems
ELEC3145 Real Time Instrumentation
ELEC4601 Digital and Embedded Systems Design
ELEC4602 Microelectronic Design and Technology
ELEC4603 Solid State Electronics
ELEC4604 RF Circuit Design - Theory and Applications
ELEC4605 Quantum Devices and Computers
ELEC4611 Power System Equipment
ELEC4612 Power System Analysis
ELEC4613 Electrical Drive Systems
ELEC4614 Power Electronics
ELEC4621 Advanced Digital Signal Processing
ELEC4622 Multimedia Signal Processing
ELEC4623 Biomedical Instrumentation, Measurement and Design
ELEC4631 Continuous - Time Control System Design
ELEC4632 Computer Control Systems
ELEC4633 Real-Time Engineering
FOOD8450 Industry Applications of Food Processing Unit Operations
MANF4430 Reliability and Maintenance Engineering
MANF4611 Process Modelling and Simulation
MECH4100 Mechanical Design 2
MECH4305 Fundamental and Advanced Vibration Analysis
MECH4320 Engineering Mechanics 3
MECH4620 Computational Fluid Dynamics
MECH4880 Refrigeration and Air Conditioning 1
MECH4900 Mechanics of Fracture and Fatigue
MMAN3200 Linear Systems and Control
MMAN4400 Engineering Management
MMAN4410 Finite Element Methods
MTRN3100 Robot Design
MTRN3500 Computing Applications in Mechatronics Systems
MTRN4231 Robotics Project
PHTN4661 Optical Circuits and Fibres

PHTN4662 Photonic Networks
TELE3118 Network Technologies
TELE4642 Network Performance
TELE4651 Wireless Communication Technologies
TELE4652 Mobile and Satellite Communications Systems
TELE4653 Digital Modulation and Coding

List D – Engineering Technical Management (ETM) courses

CEIC8204 Entrepreneurship and the Innovation Cycle
COMP9021 Principles of Programming
CVEN9701 Engineering Economics and Financial Management
CVEN9731 Project Management Framework
CVEN9888 Environmental Management
CVEN9892 Sustainability Assessment and Risk Analysis
GSOE9017 Managing Energy Efficiency
GSOE9210 Engineering Decision Structures
GSOE9340 Life Cycle Engineering
GSOE9360 Academic Discourse in Engineering
GSOE9445 Entrepreneurial Engineering
GSOE9510 Ethics and Leadership in Engineering
GSOE9712 Engineering Statistics and Experiment Design
GSOE9810 Process and Product Quality in Engineering
GSOE9820 Engineering Project Management
GSOE9830 Economic Decision Analysis in Engineering
GSOE9997 Engineering Work Related Learning for Postgraduates
MATH5165 Optimization
MATH5846 Introduction to Probability and Stochastic Processes
SOLA5056 Sustainable Energy for Developing Countries
SOLA9103 Renewable Energy System Modelling & Analysis

Notes:

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Postgraduate by coursework program guideline – School of Electrical Engineering & Telecommunications

Master of Engineering Science (2 years)

Program code: 8338

Specialisation: TELEES8338 (Telecommunications)

Students choose		UOC
Foundational Core	(TELE3113 or TELE3118) AND 1 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	4 from List C	24
Project	Project Report* (ELEC9771+ELEC9772) or Capstone Project (ELEC9773)	12
Research-related	GSOE9010 or 9011 or 9220	6
ETM	1 from List D	6
Total UOC		96

Graduate Diploma of Engineering Science (1.5 years)

Program code: 5373

Specialisation: TELEFS5373 (Telecommunications)

Students choose		UOC
Foundational Core	(TELE3113 or TELE3118) AND 1 from List A	12
Disciplinary	6 from List B	36
Advanced Disciplinary	3 from List C	18
ETM	1 from List D , excluding GSOE9997	6
Total UOC		72

Graduate Certificate of Engineering Science (1 year)

Program code: 7373

Specialisation: TELEGS7373 (Telecommunications)

Students choose		UOC
Foundational Core	(TELE3113 or TELE3118) AND 1 from List A	12
Disciplinary	5 from List B	30
ETM	1 from List D , excluding GSOE9997	6
Total UOC		48

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List A – Foundation Core courses

ELEC3104 Digital Signal Processing
ELEC3115 Electromagnetic Engineering
ELEC3117 Electrical engineering Design

List B – Disciplinary Knowledge Elective (DKE) courses

ELEC4602 Microelectronic Design and Technology
ELEC4612 Power System Analysis
ELEC4621 Advanced Digital Signal Processing
ELEC4631 Continue-Time Control Systems Design
PHTN4661 Optical Circuits and Fibres
PHTN4662 Photonic Networks
TELE4642 Network Performance
TELE4651 Wireless Communication Technologies
TELE4652 Mobile & Satellite Communications Systems
TELE4653 Digital Modulation & Coding

List C – Advanced Disciplinary Knowledge Elective (ADKE) courses

ELEC9721 Digital Signal Processing Theory and Applications
ELEC9725 Satellite Navigation: Systems, Signals & Receivers
ELEC9741 Electrical Engineering Data Science
ELEC9762 Space Mission development
ELEC9764 The Ground segment and Space Operations

GSOE9758 Network Systems Architecture
TELE9751 Switching Systems Architecture
TELE9752 Network Operations and Control
TELE9753 Advanced Wireless Communications
TELE9754 Coding and Information Theory
TELE9755 Microwave Circuits, Theory and
TELE9756 Advanced Networking
TELE9757 Quantum Communications
TELE9781 Special Topics in Telecommunications 1
TELE9782 Special Topics in Telecommunications 2

List D – Engineering Technical Management (ETM) courses

GSOE9210 Engineering Decision Structures
GSOE9445 Entrepreneurial Engineering
GSOE9510 Ethics & Leadership in Engineering
GSOE9820 Engineering Project Management
GSOE9830 Economic Decision Analysis in Engineering
GSOE9997 Engineering Work Related Learning for Postgraduates

Notes:

Each course is worth 6 units of credit (6 UOC).

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