

ELECTRICAL ENGINEERING, TESTAMUR MAJOR (T102)

Western Sydney University Major Code: T102

Previous Code: KT3172, MT3053

Available to students in other Western Sydney University programs?

No

Handbook Summary

Summary 2022-2023

The Electrical Engineering major includes core subjects from all branches of electrical engineering. Graduates will work in the fields of electronic components, computers, electro-magnetics, power generation and distribution systems, power and control in public utilities, telecommunications, manufacturing, and electrical systems. This major includes a mandatory 12-week industrial placement as a completion requirement.

Summary 2024

The Electrical Engineering major includes core subjects from all branches of electrical engineering. Graduates will work in the fields of electronic components, computers, electro-magnetics, power generation and distribution systems, power and control in public utilities, telecommunications, manufacturing, and electrical systems. All students complete a mandatory 300 to 450 hour industrial placement.

Location

Campus	Mode	Advice	Year 1	Credit Points
Parramatta Campus - Victoria Road	Internal	Major Advice (edbe@westernsydney.edu.au)	Students who finish MATH 1021 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021) Mathematics for Engineers Preliminary will then use this subject as an elective.	
Parramatta City Campus-Macquarie Street	Internal	Major advice (edbe@westernsydney.edu.au)		
Penrith Campus	Internal	Major Advice (edbe@westernsydney.edu.au)		
Sydney City Campus*	Internal	Major Advice (edbe@westernsydney.edu.au)	Autumn session Select one of the following:	10
Surabaya Campus - Indonesia	Internal	Major Advice (https://hbook.westernsydney.edu.au/majors-minors/electrical-engineering-ug-testamur-major/edbe@westernsydney.edu.au)	MATH 1021 Mathematics for Engineers Preliminary MATH 1016 Mathematics for Engineers 1 ELEC 1006 Engineering Computing ENGR 1011 Engineering Physics ENGR 1024 Introduction to Engineering Practice	10 10 10 10 10
			Credit Points	40

* Curriculum delivered through an agreement with another party

Recommended Sequence 2022-23

If you commenced in 2024 or later please refer to the Sequence 2024 tab for details.

This major is included in Bachelor of Engineering Science, Bachelor of Engineering (Honours), Bachelor of Engineering Advanced (Honours) and Bachelor of Engineering (Honours)/Bachelor of Business.

Please follow the recommended sequence for your program as noted below.

3691 Bachelor of Engineering Science

This major will be offered at Parramatta South, Penrith and Sydney City campuses

Qualification for this award requires the successful completion of 240 credit points, which include the subjects listed in the recommended sequence below.

*** All students undertaking the Bachelor of Engineering Science are required to enrol in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021) Mathematics for Engineers Preliminary and undertake a readiness test at the beginning of their study.**

The readiness test will be conducted at the beginning of the first semester of enrolment and the result will be used to determine whether a student will remain in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021) Mathematics for Engineers Preliminary or be transferred by the School to MATH 1016 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201016) Mathematics for Engineers 1.

Students remaining in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021) Mathematics for Engineers Preliminary will be required to complete MATH 1016 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201016) Mathematics for Engineers 1 during second semester and will be encouraged to complete MATH 1019 (https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201019) Mathematics for Engineers 2 during the Summer session.

Start-year intake	Course	Title	Credit Points
Year 1			
Autumn session	MATH 1021	Mathematics for Engineers Preliminary	10
Select one of the following:	MATH 1016	Mathematics for Engineers 1	
	ELEC 1006	Engineering Computing	10
	ENGR 1011	Engineering Physics	10
	ENGR 1024	Introduction to Engineering Practice	10
	Credit Points		40
Spring session			
Select one of the following:			10
	MATH 1019	Mathematics for Engineers 2	
	MATH 1016	Mathematics for Engineers 1	
	ELEC 1003	Electrical Fundamentals	10
	ENGR 1018	Fundamentals of Mechanics	10
Select one elective			10
	Credit Points		40
Year 2			
Autumn session			
	ENGR 3029	Specialisation Workshop 1	10
	ELEC 2001	Circuit Theory	10
	ELEC 2011	Signals and Systems	10

ELEC 1001	Digital Systems 1	10	ELEC 2001	Circuit Theory	10
	Credit Points	40	ELEC 2011	Signals and Systems	10
Spring session			ELEC 1001	Digital Systems 1	10
ENGR 3030	Specialisation Workshop 2	10		Credit Points	40
ELEC 2009	Microprocessor Systems	10	Year 3		
ELEC 2010	Power and Machines	10	Spring session		
ENGR 3006	Control Systems	10	ENGR 3013	Engineering Science Project 1	10
	Credit Points	40	ELEC 3009	Power Systems	10
Year 3			ELEC 3003	Digital Signal Processing	10
Autumn session			Select one elective (Level 2 or higher)		10
ENGR 3013	Engineering Science Project 1	10		Credit Points	40
ELEC 3001	Communication Systems	10	Autumn session		
ELEC 3006	Electrical Machines 1	10	ENGR 3014	Engineering Science Project 2	10
ELEC 2004	Electronics	10	ELEC 3001	Communication Systems	10
	Credit Points	40	ELEC 3006	Electrical Machines 1	10
Spring session			ELEC 2004	Electronics	10
ENGR 3014	Engineering Science Project 2	10	Industrial Experience		
ELEC 3009	Power Systems	10	ENGR 2033	Industrial Experience (Engineering Technologist)	0
ELEC 3003	Digital Signal Processing	10		Credit Points	40
Select one elective (Level 2 or higher)		10		Total Credit Points	240
Industrial Experience					
ENGR 2033	Industrial Experience (Engineering Technologist)	0			
	Credit Points	40			
	Total Credit Points	240			

Mid-year intake

Course	Title	Credit Points
Year 1		
Spring session		
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
ELEC 1003	Electrical Fundamentals	10
ENGR 1018	Fundamentals of Mechanics	10
ENGR 1024	Introduction to Engineering Practice	10
	Credit Points	40
Autumn session		
Select one of the following:		10
MATH 1019	Mathematics for Engineers 2	
MATH 1016	Mathematics for Engineers 1	
ELEC 1006	Engineering Computing	10
ENGR 1011	Engineering Physics	10
Select one elective		10
• Elective unit must be Level 1 or higher		
	Credit Points	40

Year 2

Course	Title	Credit Points
Spring session		
ENGR 3029	Specialisation Workshop 1	10
ELEC 2009	Microprocessor Systems	10
ELEC 2010	Power and Machines	10
ENGR 3006	Control Systems	10
	Credit Points	40
Autumn session		
ENGR 3030	Specialisation Workshop 2	10

3771 Bachelor of Engineering Advanced (Honours)

This major will be offered at Engineering Innovation Hub which is part of Parramatta City campus.

Qualification for this award requires the successful completion of 320 credit points, which include the subjects listed in the recommended sequence below.

Start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
MATH 1034	Mathematics for Engineers 1 (Advanced)	10
ENGR 1024	Introduction to Engineering Practice	10
ENGR 1047	Advanced Engineering Physics 1	10
ENGR 1045	Engineering Programming Fundamentals	10
	Credit Points	40
Spring session		
ELEC 1009	Electrical Circuit Fundamentals	10
MATH 1035	Mathematics for Engineers 2 (Advanced)	10
ENGR 2023	Advanced Engineering Physics 2	10
COMP 2008	Computer Organisation	10
	Credit Points	40

Year 2

Course	Title	Credit Points
Autumn session		
ELEC 2013	Circuits and Signals	10
ELEC 1001	Digital Systems 1	10
ELEC 2004	Electronics	10
ELEC 2014	Mathematics for Electrical Engineers 1	10
	Credit Points	40
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2015	Mathematics for Electrical Engineers 2	10

ELEC 2010	Power and Machines	10	ELEC 4006	Sustainable Energy Systems	10		
Select one elective		10	ELEC 4007	Wireless Communications	10		
Students who fail to maintain a minimum GPA of 5.0 at the end of completion of 160 Credit Points, and again at the completion of 200 Credit points will be automatically transferred to the B. Engineering (Honours) (3740) program.							
	Credit Points	40					
Year 3			Year 1				
Autumn session							
ELEC 3001	Communication Systems	10	MATH 1034	Mathematics for Engineers 1 (Advanced)	10		
ELEC 3006	Electrical Machines 1	10	ELEC 1009	Electrical Circuit Fundamentals	10		
Select one alternate subject		10	ENGR 2023	Advanced Engineering Physics 2	10		
Select one elective		10	ENGR 1024	Introduction to Engineering Practice	10		
	Credit Points	40		Credit Points	40		
Spring session							
ELEC 3009	Power Systems	10	MATH 1035	Mathematics for Engineers 2 (Advanced)	10		
ELEC 3003	Digital Signal Processing	10	ELEC 1001	Digital Systems 1	10		
ELEC 3005	Electrical Drives	10	ENGR 1047	Advanced Engineering Physics 1	10		
From Spring 2022 ELEC 3005 is replaced with ELEC 4008							
Electrical Drives							
Select one elective		10	ENGR 1045	Engineering Programming Fundamentals	10		
	Credit Points	40		Credit Points	40		
Year 4			Year 2				
Autumn session							
ELEC 4002	Power Electronics	10	ELEC 2014	Mathematics for Electrical Engineers 1	10		
ENGR 4037	Advanced Engineering Thesis 1: Preliminary Investigations	10	ELEC 2009	Microprocessor Systems	10		
Select one alternate subject		10	COMP 2008	Computer Organisation	10		
Select one elective		10	Select one elective		10		
	Credit Points	40		Credit Points	40		
Spring session							
ELEC 3008	Instrumentation and Measurement	10	ELEC 2015	Mathematics for Electrical Engineers 2	10		
From Spring 2022 ELEC 3008 is replaced with ELEC 4009							
Instrumentation and Measurement							
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10	ELEC 2013	Circuits and Signals	10		
Select two alternate subjects		20	ELEC 2004	Electronics	10		
	Credit Points	40	select one elective				
Students who fail to maintain a minimum GPA of 5.0 at the end of completion of 160 Credit Points, and again at the completion of 200 Credit points will be automatically transferred to the B. Engineering (Honours) (3740) program.							
	Total Credit Points	320		Credit Points	30		
Alternate Subjects							
Subject	Title	Credit Points	Year 3				
HLTH 2003	Biomechanics	10	Autumn session				
ENGR 3003	Biomedical Electronics	10	ELEC 3001	Communication Systems	10		
ENGR 3004	Biomedical Signals and Data Analysis	10	ELEC 3006	Electrical Machines 1	10		
ELEC 3002	Data Communications	10	Select one alternate subject		10		
ELEC 3004	Digital Systems 2	10	Select one elective		10		
ELEC 2007	Engineering Visualization	10	Industrial Experience				
BIOS 1022	Introduction to Human Biology	10	ENGR 3017	Industrial Experience (Engineering)	0		
ELEC 4003	Power Quality	10		Credit Points	40		
ELEC 4004	Radio and Satellite Communication	10	Year 4				
ELEC 4005	Smart Grids and Distributed Generation	10	Spring session				
			ENGR 4037	Advanced Engineering Thesis 1: Preliminary Investigations	10		
			ELEC 3008	Instrumentation and Measurement	10		

From Spring 2022 ELEC 3008 is replaced with ELEC 4009			MATH 1021	Mathematics for Engineers Preliminary
Instrumentation and Measurement			MATH 1016	Mathematics for Engineers 1
ELEC 3005 Electrical Drives 10			ENGR 1011	Engineering Physics 10
From Spring 2022 ELEC 3005 is replaced with ELEC 4008			ENGR 1024	Introduction to Engineering Practice 10
Electrical Drives			ELEC 1006	Engineering Computing 10
Select one alternate subject 10			Credit Points	
Credit Points			40	
Autumn session			Spring session	
ENGR 4036 Advanced Engineering Thesis 2: Detailed Investigations 10			Select one of the following: 10	
ELEC 4002 Power Electronics 10			MATH 1019	Mathematics for Engineers 2
Select one elective 10			MATH 1016	Mathematics for Engineers 1
Select one alternate subject 10			ENGR 1018	Fundamentals of Mechanics 10
Credit Points			ELEC 1003	Electrical Fundamentals 10
Total Credit Points			Select one elective (Level 1 or higher) 10	
310			Credit Points	
Alternate Subjects			40	
Subject	Title	Credit Points	Year 2	
HLTH 2003	Biomechanics	10	Autumn session	
ENGR 3003	Biomedical Electronics	10	ELEC 2001	Circuit Theory 10
ENGR 3004	Biomedical Signals and Data Analysis	10	ELEC 2004	Electronics 10
ELEC 3002	Data Communications	10	ELEC 2011	Signals and Systems 10
ELEC 3004	Digital Systems 2	10	ELEC 1001	Digital Systems 1 10
ELEC 2007	Engineering Visualization	10	Credit Points	
BIOS 1022	Introduction to Human Biology	10	40	
ELEC 4003	Power Quality	10	Spring session	
ELEC 4004	Radio and Satellite Communication	10	ELEC 2009	Microprocessor Systems 10
ELEC 4005	Smart Grids and Distributed Generation	10	ELEC 2006	Engineering Electromagnetics 10
ELEC 4006	Sustainable Energy Systems	10	ELEC 2010	Power and Machines 10
ELEC 4007	Wireless Communications	10	ENGR 3006	Control Systems 10
Credit Points			Credit Points	
3740 Bachelor of Engineering (Honours)			40	

3740 Bachelor of Engineering (Honours)

Qualification for this award requires the successful completion of 320 credit points which include the subjects listed in the recommended sequences below.

*** All students undertaking the Bachelor of Engineering (Honours) are required to enrol in MATH 1021 Mathematics for Engineers Preliminary and undertake a readiness test at the beginning of their study.**

The readiness test will be conducted at the beginning of the first semester of enrolment and the result will be used to determine whether a student will remain in MATH 1021 Mathematics for Engineers Preliminary or be transferred by the School to MATH 1016 Mathematics for Engineers 1.

Students remaining in MATH 1021 Mathematics for Engineers Preliminary will be required to complete MATH 1016 Mathematics for Engineers 1 during second semester and will be encouraged to complete MATH 1019 Mathematics for Engineers 2 during the Summer session.

Start-year intake

Course	Title	Credit Points	Credit Points
Year 1			
Autumn session			
Select one of the following:		10	
			Spring session
			ELEC 3008 Instrumentation and Measurement 10
			From Spring 2022 ELEC 3008 is replaced with ELEC 4009
			Instrumentation and Measurement
			ENGR 4026 Final Year Project 2 (UG Engineering) 10

Select one alternate subject	10	Year 4
Select one elective	10	Spring session
Credit Points	40	ELEC 3008 Instrumentation and Measurement 10
Total Credit Points	320	From Spring 2022 ELEC 3008 is replaced with ELEC 4009 Instrumentation and Measurement
Mid-year intake		ENGR 4025 Final Year Project 1 (UG Engineering) 10
Course	Title	Credit Points
Year 1		
Spring session		Credit Points
Select one of the following:	10	Autumn session
MATH 1021 Mathematics for Engineers Preliminary		ELEC 4002 Power Electronics 10
MATH 1016 Mathematics for Engineers 1		ENGR 4026 Final Year Project 2 (UG Engineering) 10
ENGR 1018 Fundamentals of Mechanics	10	Select one alternate subject 10
ELEC 1003 Electrical Fundamentals	10	Select one elective 10
ENGR 1024 Introduction to Engineering Practice	10	Credit Points
Credit Points	40	Total Credit Points
Autumn session		320
Select one of the following:	10	3728 Bachelor of Engineering (Honours)/ Bachelor of Business (3728)
MATH 1019 Mathematics for Engineers 2		Qualification for this award requires the successful completion of 400 credit points, which include the subjects listed in the recommended sequence below.
MATH 1016 Mathematics for Engineers 1		
ENGR 1011 Engineering Physics	10	Start-year intake
ELEC 1006 Engineering Computing	10	Course
Select one elective	10	Title
• Elective unit must be Level 1 or higher		Credit Points
Credit Points	40	Year 1
Year 2		Autumn session
Spring session		MATH 1016 Mathematics for Engineers 1 10
ELEC 2009 Microprocessor Systems	10	ENGR 1011 Engineering Physics 10
ELEC 2004 Electronics	10	Business Core Subject 1 10
ELEC 2010 Power and Machines	10	Business Core Subject 2 10
ELEC 3006 Electrical Machines 1	10	Credit Points
Credit Points	40	Spring session
Autumn session		MATH 1019 Mathematics for Engineers 2 10
ELEC 2011 Signals and Systems	10	PROC 1008 Introduction to Materials Engineering 10
ELEC 1001 Digital Systems 1	10	Business Core Subject 3 10
ELEC 2006 Engineering Electromagnetics	10	Business Core Subject 4 10
ELEC 2001 Circuit Theory	10	Credit Points
Credit Points	40	Year 2
Year 3		Autumn session
Spring session		ELEC 1006 Engineering Computing 10
ELEC 3009 Power Systems	10	Business Professional Subject 1 10
ELEC 3003 Digital Signal Processing	10	Business Professional Subject 2 10
ELEC 3005 Electrical Drives	10	Business Major Subject 1 10
From Spring 2022 ELEC 3005 is replaced with ELEC 4008 Electrical Drives		Credit Points
Select one alternate subject	10	Spring session
Credit Points	40	ELEC 1003 Electrical Fundamentals 10
Autumn session		ENGR 1018 Fundamentals of Mechanics 10
ELEC 3001 Communication Systems	10	Business Major Subject 2 10
ELEC 3006 Electrical Machines 1	10	Business Major Subject 3 10
Select one alternate subject	10	Credit Points
Select one elective	10	Year 3
Industrial Experience		Autumn session
ENGR 3017 Industrial Experience (Engineering)	0	ELEC 2001 Circuit Theory 10
Credit Points	40	ELEC 2004 Electronics 10

ELEC 2011	Signals and Systems	10	Business Core Subject 2	10
ELEC 1001	Digital Systems 1	10	Credit Points	40
	Credit Points	40	Autumn session	
Spring session			MATH 1019	Mathematics for Engineers 2
ELEC 2009	Microprocessor Systems	10	ENGR 1011	Engineering Physics
ELEC 2006	Engineering Electromagnetics	10	Business Core Subject 3	10
ELEC 2010	Power and Machines	10	Business Core Subject 4	10
ENGR 3006	Control Systems	10	Credit Points	40
	Credit Points	40	Year 2	
Year 4			Spring session	
Autumn session			ELEC 1003	Electrical Fundamentals
ELEC 3001	Communication Systems	10	ENGR 1018	Fundamentals of Mechanics
ELEC 3006	Electrical Machines 1	10	Business Major Subject 1	10
Business Major Subject 4		10	Business Major Subject 2	10
Business Major Subject 5		10	Credit Points	40
	Credit Points	40	Autumn session	
Spring session			ELEC 1006	Engineering Computing
ELEC 3009	Power Systems	10	ELEC 2004	Electronics
ELEC 3003	Digital Signal Processing	10	Business Major Subject 3	10
Business Major Subject 6		10	Business Professional Subject 1	10
Business Major Subject 7		10	Credit Points	40
Industrial Experience			Year 3	
ENGR 3017	Industrial Experience (Engineering)	0	Spring session	
	Credit Points	40	ELEC 2009	Microprocessor Systems
Year 5			ELEC 2006	Engineering Electromagnetics
Autumn session			ELEC 2010	Power and Machines
ELEC 4002	Power Electronics	10	ENGR 3006	Control Systems
ENGR 4025	Final Year Project 1 (UG Engineering)	10	Credit Points	40
Business Professional Subject 3		10	Autumn session	
Business Major Subject 8		10	ELEC 1001	Digital Systems 1
	Credit Points	40	ELEC 2001	Circuit Theory
Spring session			ELEC 2011	Signals and Systems
ELEC 3005	Electrical Drives	10	Business Professional Subject 2	10
From Spring 2022 ELEC 3005 is replaced with ELEC 4008			Credit Points	40
Electrical Drives			Year 4	
ENGR 4026	Final Year Project 2 (UG Engineering)	10	Spring session	
ELEC 3008	Instrumentation and Measurement	10	ELEC 3009	Power Systems
From Spring 2022 ELEC 3008 is replaced with ELEC 4009			ELEC 3003	Digital Signal Processing
Instrumentation and Measurement			Business Major Subject 4	10
Business Professional Subject 4		10	Business Major Subject 5	10
	Credit Points	40	Credit Points	40
	Total Credit Points	400	Autumn session	
Equivalent Subjects			ELEC 3001	Communication Systems
The subjects listed below count towards completion of this program for			ELEC 3006	Electrical Machines 1
students who passed these subjects in Autumn 2022 or earlier.			Business Major Subject 6	10
ENGR 1008 - Engineering Materials, replaced by PROC 1008 -			Business Major Subject 7	10
Introduction to Materials Engineering			Industrial Experience	
			ENGR 3017	Industrial Experience (Engineering)
Mid-year intake				Credit Points
Course	Title	Credit Points	Year 5	
Year 1			Spring session	
Spring session			ELEC 3005	Electrical Drives
MATH 1016	Mathematics for Engineers 1	10	From Spring 2022 ELEC 3005 is replaced with ELEC 4008	
PROC 1008	Introduction to Materials Engineering	10	Electrical Drives	
Business Core Subject 1		10	ENGR 4025	Final Year Project 1 (UG Engineering)
			ELEC 3008	Instrumentation and Measurement

From Spring 2022 ELEC 3008 is replaced with ELEC 4009
Instrumentation and Measurement

Business Professional Subject 3	10
Credit Points	40
Autumn session	
ENGR 4026	Final Year Project 2 (UG Engineering)
ELEC 4002	Power Electronics
Business Professional Subject 4	10
Business Major Subject 8	10
Credit Points	40
Total Credit Points	400

Alternate Subjects

Subject	Title	Credit Points
ELEC 3004	Digital Systems 2	10
ELEC 4003	Power Quality	10
ELEC 4006	Sustainable Energy Systems	10
ELEC 4005	Smart Grids and Distributed Generation	10
ELEC 4004	Radio and Satellite Communication	10
ELEC 4007	Wireless Communications	10
HLTH 2003	Biomechanics	10
ENGR 3003	Biomedical Electronics	10
ENGR 3004	Biomedical Signals and Data Analysis	10
BIOS 1022	Introduction to Human Biology	10
ELEC 3002	Data Communications	10
ELEC 2007	Engineering Visualization	10

Minors

Power Engineering, Minor (<https://hbook.westernsydney.edu.au/archives/2023-2024/majors-minors/power-engineering-minor/>)
Telecommunications, Minor (<https://hbook.westernsydney.edu.au/archives/2023-2024/majors-minors/telecommunications-minor/>)
Biomedical Engineering, Minor (<https://hbook.westernsydney.edu.au/archives/2023-2024/majors-minors/biomedical-engineering-minor/>)

Optional Elective

The following subject is an optional elective unit offered to students who are engaged in a School approved project. This subject can be taken during the third year of this program, however, permission is required to enrol in the subject.

ENGR 3022 Special Technical Project

Equivalent Subjects

The subjects listed below count towards completion of this program for students who passed these subjects in 2021 or earlier.

MECH 4005 Advanced Engineering Thesis 1: Preliminary Investigations, replaced by ENGR 4037 Advanced Engineering Thesis 1: Preliminary Investigations

MECH 4006 Advanced Engineering Thesis 2: Detailed Investigations, replaced by ENGR 4036 Advanced Engineering Thesis 2: Detailed Investigations

The subjects listed below count towards completion of this program for students who passed these subjects in Autumn 2022 or earlier.

ENGR 1008 - Engineering Materials, replaced by PROC 1008 - Introduction to Materials Engineering

Replaced Subjects

The subjects listed below count towards completion of this program for students who passed these subjects in 2022 or earlier.

ELEC 3008 Instrumentation and Measurement, replaced by ELEC 4009 Instrumentation and Measurement

ELEC 3005 Electrical Drives, replaced with ELEC 4008 Electrical Drives

Major Sequence 2024

This major sequence applies to students who commenced in 2024 or later. If you commenced prior to 2024 please refer to the Sequence 2022-23 tab for details.

This major is included in Bachelor of Engineering Science, Bachelor of Engineering (Honours), Bachelor of Engineering Advanced (Honours) and Bachelor of Engineering (Honours)/Bachelor of Business.

Please follow the recommended sequence for your program as noted below.

Bachelor of Engineering Science (3691)

This major will be offered at Parramatta South, Penrith, Sydney City and Surabaya Indonesia campuses.

Qualification for this award requires the successful completion of 240 credit points, which include the subjects listed in the recommended sequence below.

*** All students undertaking the Bachelor of Engineering Science are required to enrol in MATH 1021 (<https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021>) Mathematics for Engineers Preliminary and undertake a readiness test at the beginning of their study.**

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Students remaining in MATH 1021 (<https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021>) Mathematics for Engineers Preliminary will be required to complete MATH 1016 (<https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201016>) Mathematics for Engineers 1 during second semester and will be encouraged to complete MATH 1019 (<https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201019>) Mathematics for Engineers 2 during the Summer session.

Students who finish MATH 1021 (<https://hbook.westernsydney.edu.au/archives/2023-2024/search/?P=MATH%201021>) Mathematics for Engineers Preliminary will then use this subject as an elective.

Start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
ELEC 1006	Engineering Computing	10
ENGR 1011	Engineering Physics	10
ENGR 1024	Introduction to Engineering Practice	10

Select one of the following:	10	ENGR 1011	Engineering Physics	10
MATH 1021 Mathematics for Engineers Preliminary		ENGR 1024	Introduction to Engineering Practice	10
MATH 1016 Mathematics for Engineers 1		Select one of the following:		10
		MATH 1019	Mathematics for Engineers 2	
		MATH 1016	Mathematics for Engineers 1	
Credit Points	40		Credit Points	40
Spring session				
ELEC 1003 Electrical Fundamentals	10			
ENGR 1018 Fundamentals of Mechanics	10			
PROC 1008 Introduction to Materials Engineering	10			
Select one of the following:	10			
MATH 1019 Mathematics for Engineers 2				
MATH 1016 Mathematics for Engineers 1				
			Credit Points	40
Year 2				
Spring session				
ENGR 3029 Specialisation Workshop 1	10			
ELEC 2009 Microprocessor Systems	10			
ELEC 2010 Power and Machines	10			
ENGR 3006 Control Systems	10			
			Credit Points	40
Autumn session				
ENGR 3029 Specialisation Workshop 1	10			
ELEC 2001 Circuit Theory	10			
ELEC 2011 Signals and Systems	10			
ELEC 1001 Digital Systems 1	10			
			Credit Points	40
Credit Points	40			
Spring session				
ENGR 3030 Specialisation Workshop 2	10			
ELEC 2009 Microprocessor Systems	10			
ELEC 2010 Power and Machines	10			
ENGR 3006 Control Systems	10			
			Credit Points	40
Credit Points	40			
Year 3				
Autumn session				
ENGR 3013 Engineering Science Project 1	10			
ELEC 3003 Digital Signal Processing	10			
Select two electives (Level 2 or higher)	20			
			Credit Points	40
Credit Points	40			
Spring session				
ENGR 3014 Engineering Science Project 2	10			
ELEC 3001 Communication Systems	10			
ELEC 3006 Electrical Machines 1	10			
ELEC 2004 Electronics	10			
			Credit Points	40
Credit Points	40			
Autumn session				
ENGR 3014 Engineering Science Project 2	10			
ELEC 3001 Communication Systems	10			
ELEC 3006 Electrical Machines 1	10			
ELEC 2004 Electronics	10			
			Credit Points	40
Industrial Experience				
ENGR 2033 Industrial Experience (Engineering Technologist)	0			
			Credit Points	40
Total Credit Points	240			
Surabaya Campus Indonesia				
Course		Title		Credit Points
Year 1				
Semester 1				
MATH 1016 Mathematics for Engineers 1				
ELEC 1003 Electrical Fundamentals				
ENGR 1018 Fundamentals of Mechanics				
ENGR 1011 Engineering Physics				
TBA Pancasila				5
Semester 2				
MATH 1019 Mathematics for Engineers 2				
ELEC 1006 Engineering Computing				
ENGR 1024 Introduction to Engineering Practice				
ELEC 1001 Digital Systems 1				
TBA Civic Education				5
			Credit Points	90
Year 2				
Semester 3				
ENGR 3029 Specialisation Workshop 1				

PROC 1008	Introduction to Materials Engineering	10	Spring session	
ELEC 2009	Microprocessor Systems	10	ELEC 2009	Microprocessor Systems
TBA	Indonesian Language	5	ELEC 2010	Power and Machines
Semester 4			COMP 2008	Computer Organisation
ENGR 3030	Specialisation Workshop 2	10	Select one elective** or Minor subject	10
ELEC 2001	Circuit Theory	10	Students who fail to maintain a minimum GPA of 5.0 at the end of completion of 160 Credit Points, and again at the completion of 200 Credit points will be automatically transferred to the B. Engineering (Honours) (3740) program.	
ELEC 2011	Signals and Systems	10		
TBA	Religion	5		
	Credit Points	70	Credit Points	40
Year 3			Year 3	
Semester 5			Autumn session	
ENGR 3013	Engineering Science Project 1	10	ELEC 3001	Communication Systems
ELEC 3011	Power and Machines	10	ELEC 3006	Electrical Machines 1
ELEC 3003	Digital Signal Processing	10	BUSM 2049	Creative and Innovative Thinkers
ENGR 3006	Control Systems	10	Select one elective** or Minor subjects	10
Semester 6			Credit Points	40
ENGR 3014	Engineering Science Project 2	10	Spring session	
ELEC 3001	Communication Systems	10	ELEC 3009	Power Systems
ELEC 3006	Electrical Machines 1	10	ELEC 3003	Digital Signal Processing
ELEC 2004	Electronics	10	ELEC 3005	Electrical Drives
Industrial Experience			From Spring 2022 ELEC 3005 is replaced with ELEC 4008 Electrical Drives	
ENGR 2033	Industrial Experience (Engineering Technologist)	0	ELEC 3004	Digital Systems 2
	Credit Points	80	Industrial Experience	
	Total Credit Points	240	Credit Points	40

Bachelor of Engineering Advanced (Honours) (3771)

Qualification for this award requires the successful completion of 320 credit points, which include the subjects listed in the recommended sequence below.

** Electives must be Level 2 or higher

Start-year intake

Course	Title	Credit Points	
Year 1			
Autumn session			
MATH 1034	Mathematics for Engineers 1 (Advanced)	10	Autumn session
ENGR 1024	Introduction to Engineering Practice	10	ELEC 4002
ENGR 1047	Advanced Engineering Physics 1	10	ENGR 4043
ELEC 1006	Engineering Computing	10	Select one elective** or Minor subject
	Credit Points	40	Credit Points
Spring session			40
ELEC 1003	Electrical Fundamentals	10	Spring session
MATH 1035	Mathematics for Engineers 2 (Advanced)	10	ELEC 4009
ENGR 2023	Advanced Engineering Physics 2	10	ENGR 4044
ENGR 1018	Fundamentals of Mechanics	10	Select one elective** or Minor subject
	Credit Points	40	Credit Points
Year 2			Total Credit Points
Autumn session			320
ELEC 2001	Circuit Theory	10	Optional Elective
ELEC 1001	Digital Systems 1	10	The following subject is an optional elective subject, offered to students who are engaged in a School approved project. This subject can be taken during the third year of this program, however, permission is required to enrol in the subject.
ELEC 2004	Electronics	10	ENGR 3022 Special Technical Project
ELEC 2011	Signals and Systems	10	
	Credit Points	40	Equivalent Subjects
			The subjects listed below count towards completion of this program for students who passed these subjects in 2023 or earlier.
			BUSM 2047 Venture Makers Foundations, replaced by BUSM 2049 Creative and Innovative Thinkers

Mid-year intake

Course	Title	Credit Points
Year 1		
Spring session		
MATH 1034	Mathematics for Engineers 1 (Advanced)	10
ELEC 1003	Electrical Fundamentals	10
ENGR 2023	Advanced Engineering Physics 2	10
ENGR 1018	Fundamentals of Mechanics	10
	Credit Points	40
Autumn session		
MATH 1035	Mathematics for Engineers 2 (Advanced)	10
ELEC 1001	Digital Systems 1	10
ENGR 1047	Advanced Engineering Physics 1	10
ELEC 1006	Engineering Computing	10
	Credit Points	40
Year 2		
Spring session		
ELEC 2011	Signals and Systems	10
ELEC 2009	Microprocessor Systems	10
COMP 2008	Computer Organisation	10
ENGR 1024	Introduction to Engineering Practice	10
	Credit Points	40
Autumn session		
ELEC 2001	Circuit Theory	10
ELEC 2004	Electronics	10
Select two electives** or Minor subjects		20
Students who fail to maintain a minimum GPA of 5.0 at the end of completion of 160 Credit Points, and again at the completion of 200 Credit points will be automatically transferred to the B. Engineering (Honours) (3740) program.		
	Credit Points	40
Year 3		
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
ELEC 2010	Power and Machines	10
ELEC 3004	Digital Systems 2	10
	Credit Points	40
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
BUSM 2049	Creative and Innovative Thinkers	10
Select one elective** or Minor subject		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	40
Year 4		
Spring session		
ENGR 4043	Advanced Engineering Thesis 1: Preliminary Investigations	20
ELEC 4009	Instrumentation and Measurement	10
ELEC 3005	Electrical Drives	10
From Spring 2022 ELEC 3005 is replaced with ELEC 4008 Electrical Drives		
	Credit Points	40

Autumn session

ENGR 4044	Advanced Engineering Thesis 2: Detailed Investigations	20
ELEC 4002	Power Electronics	10
Select one elective** or minor subject		10
Credit Points		40
Total Credit Points		320

Optional Elective

The following subject is an optional elective unit offered to students who are engaged in a School approved project. This subject can be taken during the third year of this program, however, permission is required to enrol in the subject.

ENGR 3022 Special Technical Project

Equivalent Subjects

The subjects listed below count towards completion of this program for students who passed these subjects in 2023 or earlier.

BUSM 2047 Venture Makers Foundations, replaced by BUSM 2049 Creative and Innovative Thinkers

Bachelor of Engineering (Honours) (3740)

Qualification for this award requires the successful completion of 320 credit points which include the subjects listed in the recommended sequences below.

* All students undertaking the Bachelor of Engineering (Honours) are required to enrol in MATH 1021 Mathematics for Engineers Preliminary and undertake a readiness test at the beginning of their study.

The readiness test will be conducted at the beginning of the first semester of enrolment and the result will be used to determine whether a student will remain in MATH 1021 Mathematics for Engineers Preliminary or be transferred by the School to MATH 1016 Mathematics for Engineers 1.

Students remaining in MATH 1021 Mathematics for Engineers Preliminary will be required to complete MATH 1016 Mathematics for Engineers 1 during second semester and will be encouraged to complete MATH 1019 Mathematics for Engineers 2 during the Summer session.

** Electives must be Level 2 or higher (An exception applies for students completing MATH 1021 Mathematics for Engineers Preliminary. This subject will then count as one of the elective subjects)

Start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
ENGR 1011	Engineering Physics	10
ENGR 1024	Introduction to Engineering Practice	10
ELEC 1006	Engineering Computing	10
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
	Credit Points	40

Spring session			PROC 1008	Introduction to Materials Engineering	10
ENGR 1018 Fundamentals of Mechanics		10	Select one of the following:		10
ELEC 1003 Electrical Fundamentals		10	MATH 1021	Mathematics for Engineers Preliminary	
PROC 1008 Introduction to Materials Engineering		10	MATH 1016	Mathematics for Engineers 1	
Select one of the following:		10	Credit Points		40
MATH 1019 Mathematics for Engineers 2			Autumn session		
MATH 1016 Mathematics for Engineers 1			ENGR 1011	Engineering Physics	10
Credit Points		40	ELEC 1006	Engineering Computing	10
Year 2			ELEC 1001	Digital Systems 1	10
Autumn session			Select one of the following:		10
ELEC 2001 Circuit Theory		10	MATH 1019	Mathematics for Engineers 2	
ELEC 2004 Electronics		10	MATH 1016	Mathematics for Engineers 1	
ELEC 2011 Signals and Systems		10	Credit Points		40
ELEC 1001 Digital Systems 1		10	Year 2		
Credit Points		40	Spring session		
Spring session			ELEC 2009	Microprocessor Systems	10
ELEC 2009 Microprocessor Systems		10	ELEC 2006	Engineering Electromagnetics	10
ELEC 2006 Engineering Electromagnetics		10	ELEC 3004	Digital Systems 2	10
ELEC 3011 Power and Machines		10	Select one elective** or major subject		10
ENGR 3006 Control Systems		10	Credit Points		40
Credit Points		40	Autumn session		
Year 3			ELEC 2011	Signals and Systems	10
Autumn session			ELEC 2004	Electronics	10
ELEC 3001 Communication Systems		10	ELEC 2001	Circuit Theory	10
ELEC 3006 Electrical Machines 1		10	ENGR 1024	Introduction to Engineering Practice	10
ELEC 2007 Engineering Visualization		10	Credit Points		40
Select one elective** or major subject		10	Year 3		
Credit Points		40	Spring session		
Spring session			ELEC 3002	Data Communications	10
ELEC 3002 Data Communications		10	ELEC 3003	Digital Signal Processing	10
ELEC 3003 Digital Signal Processing		10	ELEC 3011	Power and Machines	10
ELEC 3004 Digital Systems 2		10	ENGR 3006	Control Systems	10
Select one elective** or major subject		10	Credit Points		40
Industrial Experience			Autumn session		
ENGR 3017 Industrial Experience (Engineering)		0	ELEC 3001	Communication Systems	10
Credit Points		40	ELEC 3006	Electrical Machines 1	10
Year 4			ELEC 2007	Engineering Visualization	10
Autumn session			Select one elective** or major subject		10
ELEC 4002 Power Electronics		10	Industrial Experience		
ENGR 4041 Final Year Project 1 (UG Engineering)		20	ENGR 3017	Industrial Experience (Engineering)	0
Select one elective** or major subject		10	Credit Points		40
Credit Points		40	Year 4		
Spring session			Spring session		
ELEC 4009 Instrumentation and Measurement		10	ELEC 4009	Instrumentation and Measurement	10
ENGR 4042 Final Year Project 2 (UG Engineering)		20	ENGR 4041	Final Year Project 1 (UG Engineering)	20
Select one elective** or major subject		10	Select one elective** or major subject		10
Credit Points		40	Credit Points		40
Total Credit Points		320	Autumn session		
Mid-year intake			ELEC 4002	Power Electronics	10
Course	Title	Credit Points	ENGR 4042	Final Year Project 2 (UG Engineering)	20
Year 1			Select one elective** or major subject		10
Spring session			Credit Points		40
ENGR 1018 Fundamentals of Mechanics		10	Total Credit Points		320
ELEC 1003 Electrical Fundamentals		10			

Bachelor of Engineering (Honours)/ Bachelor of Business (3800)

Qualification for this award requires the successful completion of 440 credit points, which include the subjects listed in the recommended sequence below.

Start-year intake

Course	Title	Credit Points	Credit Points	40		
Year 1						
Autumn session						
MATH 1016	Mathematics for Engineers 1	10	ELEC 2006	Engineering Electromagnetics 10		
ENGR 1011	Engineering Physics	10	ENGR 3006	Control Systems 10		
BBus Core Subject 1		10	ELEC 3003	Digital Signal Processing 10		
BBus Core Subject 2		10	BBus Major Subject 6	10		
Credit Points			Credit Points			
Year 5						
Autumn session						
ELEC 3006	Electrical Machines 1	10	ELEC 3006	Electrical Machines 1		
BBus Professional Subject 3		10	BBus Professional Subject 3	10		
BBus Major Subject 7		10	BBus Major Subject 7	10		
BBus Major Subject 8		10	BBus Major Subject 8	10		
Credit Points			Credit Points			
Year 6						
Autumn session						
ELEC 4009	Instrumentation and Measurement	10	ELEC 4009	Instrumentation and Measurement 10		
ENGR 4041	Final Year Project 1 (UG Engineering)	20	ENGR 4041	Final Year Project 1 (UG Engineering) 20		
BBus Professional Subject 4		10	BBus Professional Subject 4	10		
Credit Points			Credit Points			
Total Credit Points						
440						
Related Programs						
Bachelor of Engineering (Honours)/Bachelor of Business (3728) (https://hbook.westernsydney.edu.au/archives/2023-2024/programs/bachelor-engineering-honours-bachelor-business/)						
Bachelor of Engineering (Honours) (3740) (https://hbook.westernsydney.edu.au/archives/2023-2024/programs/bachelor-engineering-honours/)						
Bachelor of Engineering Advanced (Honours) (3771) (https://hbook.westernsydney.edu.au/archives/2023-2024/programs/bachelor-engineering-advanced-honours/)						
Bachelor of Engineering Science (3691) (https://hbook.westernsydney.edu.au/archives/2023-2024/programs/bachelor-engineering-science/)						

Year 4

Autumn session

ELEC 3001	Communication Systems	10
ELEC 2007	Engineering Visualization	10
BBus Professional Subject 2		10
BBus Major Subject 5		10
Credit Points		