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

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.

Location

Campus	Mode	Advice
Parramatta Campus - Victoria Road	Internal	Major Advice (edbe@westernsydney.edu.au)
Parramatta City Campus-Macquarie Street	Internal	Major advice (edbe@westernsydney.edu.au)
Penrith Campus	Internal	Major Advice (edbe@westernsydney.edu
Sydney City Campus	Internal	Major Advice (edbe@westernsydney.edu

Recommended Sequence

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/2022-2023/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/2022-2023/search/?P=MATH%201021) Mathematics for Engineers Preliminary or be transferred by the School to MATH 1016 (https://hbook.westernsydney.edu.au/archives/2022-2023/search/?P=MATH%201016) Mathematics for Engineers 1.

Students remaining in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2022-2023/search/?P=MATH%201021) Mathematics for Engineers Preliminary will be required to complete MATH 1016 (https://hbook.westernsydney.edu.au/archives/2022-2023/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/2022-2023/search/?P=MATH%201019) Mathematics for Engineers 2 during the Summer session.

Students who finish MATH 1021 (https://hbook.westernsydney.edu.au/archives/2022-2023/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		
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
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
	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**
Year 3		
Autumn session		
ENGR 3013	Engineering Science Project 1	10
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
ELEC 2004	Electronics	10
	Credit Points	**40**
Spring session		
ENGR 3014	Engineering Science Project 2	10
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Select one elective (Level 2 or higher)		10
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		
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
ELEC 2001	Circuit Theory	10
ELEC 2011	Signals and Systems	10
ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Year 3		
Spring session		
ENGR 3013	Engineering Science Project 1	10
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Select one elective (Level 2 or higher)		10
	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
Industrial Experience		
ENGR 2033	Industrial Experience (Engineering Technologist)	0
	Credit Points	**40**
	Total Credit Points	**240**

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		
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
Select one elective		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		
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10

ELEC 3005	Electrical Drives	10
Select one elective		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 4		
Autumn session		
ELEC 4002	Power Electronics	10
ENGR 4037	Advanced Engineering Thesis 1: Preliminary Investigations	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
Spring session		
ELEC 3008	Instrumentation and Measurement	10
From Spring 2022 ELEC 3008 is replaced with ELEC 4009 Instrumentation and Measurement		
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10
Select two alternate subjects		20
	Credit Points	**40**
	Total Credit Points	**320**

Mid-year intake

Course	Title	Credit Points
Year 1		
Spring session		
MATH 1034	Mathematics for Engineers 1 (Advanced)	10
ELEC 1009	Electrical Circuit Fundamentals	10
ENGR 2023	Advanced Engineering Physics 2	10
ENGR 1024	Introduction to Engineering Practice	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
ENGR 1045	Engineering Programming Fundamentals	10
	Credit Points	**40**
Year 2		
Spring session		
ELEC 2014	Mathematics for Electrical Engineers 1	10
ELEC 2009	Microprocessor Systems	10
COMP 2008	Computer Organisation	10
Select one elective		10
	Credit Points	**40**
Autumn session		
ELEC 2015	Mathematics for Electrical Engineers 2	10
ELEC 2013	Circuits and Signals	10
ELEC 2004	Electronics	10
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.		
	Credit Points	**30**
Year 3		
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
ELEC 2010	Power and Machines	10
Select one alternate subject		10
	Credit Points	**40**
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Select one alternate subject		10
Select one elective		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 4		
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 Instrumentation and Measurement		
ELEC 3005	Electrical Drives	10
Select one alternate subject		10
	Credit Points	**40**
Autumn session		
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10
ELEC 4002	Power Electronics	10
Select one elective		10
Select one alternate subject		10
	Credit Points	**40**
	Total Credit Points	**310**

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
Year 1		
Autumn session		
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
ENGR 1011	Engineering Physics	10
ENGR 1024	Introduction to Engineering Practice	10
ELEC 1006	Engineering Computing	10
	Credit Points	**40**
Spring session		
Select one of the following:		10
MATH 1019	Mathematics for Engineers 2	
MATH 1016	Mathematics for Engineers 1	
ENGR 1018	Fundamentals of Mechanics	10
ELEC 1003	Electrical Fundamentals	10
Select one elective (Level 1 or higher)		10
	Credit Points	**40**
Year 2		
Autumn session		
ELEC 2001	Circuit Theory	10
ELEC 2004	Electronics	10
ELEC 2011	Signals and Systems	10
ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2006	Engineering Electromagnetics	10
ELEC 2010	Power and Machines	10
ENGR 3006	Control Systems	10
	Credit Points	**40**
Year 3		
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
ELEC 3005	Electrical Drives	10
Select one alternate subject		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 4		
Autumn session		
ELEC 4002	Power Electronics	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
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
Select one elective		10
	Credit Points	**40**
	Total Credit Points	**320**

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	
ENGR 1018	Fundamentals of Mechanics	10
ELEC 1003	Electrical Fundamentals	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	
ENGR 1011	Engineering Physics	10
ELEC 1006	Engineering Computing	10
Select one elective		10
• Elective unit must be Level 1 or higher		
	Credit Points	**40**
Year 2		
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2004	Electronics	10
ELEC 2010	Power and Machines	10
ELEC 3006	Electrical Machines 1	10
	Credit Points	**40**
Autumn session		
ELEC 2011	Signals and Systems	10
ELEC 1001	Digital Systems 1	10
ELEC 2006	Engineering Electromagnetics	10
ELEC 2001	Circuit Theory	10
	Credit Points	**40**
Year 3		
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
ELEC 3005	Electrical Drives	10
Select one alternate subject		10
	Credit Points	**40**
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Select one alternate subject		10
Select one elective		10

Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 4		
Spring session		
ELEC 3008	Instrumentation and Measurement	10
From Spring 2022 ELEC 3008 is replaced with ELEC 4009 Instrumentation and Measurement		
ENGR 4025	Final Year Project 1 (UG Engineering)	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
Autumn session		
ELEC 4002	Power Electronics	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
Select one alternate subject		10
Select one elective		10
	Credit Points	**40**
	Total Credit Points	**320**

3728 Bachelor of Engineering (Honours)/ Bachelor of Business

Qualification for this award requires the successful completion of 400 credit points, which include the subjects listed in the recommended sequence below.

Start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
MATH 1016	Mathematics for Engineers 1	10
ENGR 1011	Engineering Physics	10
Business Core Subject 1		10
Business Core Subject 2		10
	Credit Points	**40**
Spring session		
MATH 1019	Mathematics for Engineers 2	10
PROC 1008	Introduction to Materials Engineering	10
Business Core Subject 3		10
Business Core Subject 4		10
	Credit Points	**40**
Year 2		
Autumn session		
ELEC 1006	Engineering Computing	10
Business Professional Subject 1		10
Business Professional Subject 2		10
Business Major Subject 1		10
	Credit Points	**40**
Spring session		
ELEC 1003	Electrical Fundamentals	10
ENGR 1018	Fundamentals of Mechanics	10
Business Major Subject 2		10
Business Major Subject 3		10
	Credit Points	**40**
Year 3		
Autumn session		
ELEC 2001	Circuit Theory	10
ELEC 2004	Electronics	10
ELEC 2011	Signals and Systems	10
ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2006	Engineering Electromagnetics	10
ELEC 2010	Power and Machines	10
ENGR 3006	Control Systems	10
	Credit Points	**40**
Year 4		
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Business Major Subject 4		10
Business Major Subject 5		10
	Credit Points	**40**
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Business Major Subject 6		10
Business Major Subject 7		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 5		
Autumn session		
ELEC 4002	Power Electronics	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
Business Professional Subject 3		10
Business Major Subject 8		10
	Credit Points	**40**
Spring session		
ELEC 3005	Electrical Drives	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
ELEC 3008	Instrumentation and Measurement	10
From Spring 2022 ELEC 3008 is replaced with ELEC 4009 Instrumentation and Measurement		
Business Professional Subject 4		10
	Credit Points	**40**
	Total Credit Points	**400**

Equivalent Subjects

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

Mid-year intake

Course	Title	Credit Points
Year 1		
Spring session		
MATH 1016	Mathematics for Engineers 1	10

PROC 1008	Introduction to Materials Engineering	10
Business Core Subject 1		10
Business Core Subject 2		10
	Credit Points	**40**
Autumn session		
MATH 1019	Mathematics for Engineers 2	10
ENGR 1011	Engineering Physics	10
Business Core Subject 3		10
Business Core Subject 4		10
	Credit Points	**40**
Year 2		
Spring session		
ELEC 1003	Electrical Fundamentals	10
ENGR 1018	Fundamentals of Mechanics	10
Business Major Subject 1		10
Business Major Subject 2		10
	Credit Points	**40**
Autumn session		
ELEC 1006	Engineering Computing	10
ELEC 2004	Electronics	10
Business Major Subject 3		10
Business Professional Subject 1		10
	Credit Points	**40**
Year 3		
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2006	Engineering Electromagnetics	10
ELEC 2010	Power and Machines	10
ENGR 3006	Control Systems	10
	Credit Points	**40**
Autumn session		
ELEC 1001	Digital Systems 1	10
ELEC 2001	Circuit Theory	10
ELEC 2011	Signals and Systems	10
Business Professional Subject 2		10
	Credit Points	**40**
Year 4		
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Business Major Subject 4		10
Business Major Subject 5		10
	Credit Points	**40**
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Business Major Subject 6		10
Business Major Subject 7		10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 5		
Spring session		
ELEC 3005	Electrical Drives	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
ELEC 3008	Instrumentation and Measurement	10
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)	10
ELEC 4002	Power Electronics	10
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/2022-2023/majors-minors/power-engineering-minor/)
Telecommunications, Minor (https://hbook.westernsydney.edu.au/archives/2022-2023/majors-minors/telecommunications-minor/)
Biomedical Engineering, Minor (https://hbook.westernsydney.edu.au/archives/2022-2023/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

Related Programs

Bachelor of Engineering Advanced (Honours) (3771) (https://hbook.westernsydney.edu.au/archives/2022-2023/programs/bachelor-engineering-advanced-honours/)

Bachelor of Engineering Science (3691) (https://hbook.westernsydney.edu.au/archives/2022-2023/programs/bachelor-engineering-science/)