Credit

**Points** 

# **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	F
Parramatta Campus - Victoria Road	Internal	Major Advice (edbe@westernsydney.e	F
Parramatta City Campus-Macquarie Street	Internal	Major advice (edbe@westernsydney.e	edu. <mark>S</mark> S
Penrith Campus	Internal	Major Advice (edbe@westernsydney.e	edu
Sydney City Campus	Internal	Major Advice (edbe@westernsydney.e	E du <sub>E</sub>

### **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

		Points
Year 1		
Autumn session		
Select one of the foll	•	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
way.	Credit Points	40
Spring session		
Select one of the foll	owing:	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	oreant outle	.0
ENGR 3014	Engineering Science Project 2	10
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Select one elective (I		10
Industrial Experience		10

ENGR 2033	Industrial Experience (Engineering Technologist)	0
	Credit Points	40
	Total Credit Points	240
Mid-year intak	e	
Course	Title	Credit Points
Year 1		
Spring session		
Select one of the fo	ollowing:	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 fo	ollowing:	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 m	ust 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		

Engineering Science Project 1

Engineering Science Project 2

**Communication Systems** 

Electrical Machines 1

**Digital Signal Processing** 

**Power Systems** 

**Credit Points** 

Electronics

Select one elective (Level 2 or higher)

ENGR 3013 ELEC 3009

**ELEC 3003** 

**ELEC 3001** 

**ELEC 3006** 

**ELEC 2004** 

**Industrial Experience** 

Autumn session ENGR 3014 10

10

10

10

40

10

10

10

10

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
of completion of 160	maintain a minimum GPA of 5.0 at the end D Credit Points, and again at the completion will be automatically transferred to the B. rs) (3740) program.	
3 3 (	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 Experien	ce	
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 alternat	e subject	10
Select one elective		10
	Credit Points	40
Spring session		
ELEC 3008	Instrumentation and Measurement	10
From Spring 2022 Instrumentation an	ELEC 3008 is replaced with ELEC 4009 d Measurement	
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10
Select two alternat	e 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		
of completion of 160	maintain a minimum GPA of 5.0 at the end D Credit Points, and again at the completion will be automatically transferred to the B. rs) (3740) program.	

Credit Points

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 Experienc	e	
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 E Instrumentation and	LEC 3008 is replaced with ELEC 4009 I 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 inta	ke		Spring session	
Course	Title	Credit	ELEC 3008	Instrumentation and Measurement
Year 1		Points	From Spring 2022 El Instrumentation and	LEC 3008 is replaced with ELEC 4009 I Measurement
Autumn session			ENGR 4026	Final Year Project 2 (UG Engineering)
Select one of the fo	ollowina:	10	Select one alternate	subject
MATH 1021	Mathematics for Engineers Preliminary		Select one elective	
MATH 1016	Mathematics for Engineers 1			Credit Points
ENGR 1011	Engineering Physics	10		Total Credit Points
ENGR 1024	Introduction to Engineering Practice	10		
ELEC 1006	Engineering Computing	10	Mid-year intake	!
	Credit Points	40	Course	Title
Spring session				
Select one of the fo	ollowing:	10	Year 1	
MATH 1019	Mathematics for Engineers 2		Spring session	
MATH 1016	Mathematics for Engineers 1		Select one of the fol	lowing:
ENGR 1018	Fundamentals of Mechanics	10	MATH 1021	Mathematics for Engineers Preliminary
ELEC 1003	Electrical Fundamentals	10	MATH 1016	Mathematics for Engineers 1
Select one elective		10	ENGR 1018	Fundamentals of Mechanics
	Credit Points	40	ELEC 1003	Electrical Fundamentals
Year 2	orear romes	40	ENGR 1024	Introduction to Engineering Practice
Autumn session				Credit Points
ELEC 2001	Circuit Theory	10	Autumn session	
ELEC 2004	Electronics	10	Select one of the fol	lowing:
ELEC 2011	Signals and Systems	10	MATH 1019	Mathematics for Engineers 2
ELEC 1001	Digital Systems 1	10	MATH 1016	Mathematics for Engineers 1
LLLO 1001	Credit Points	40	ENGR 1011	Engineering Physics
Spring session	Credit Foliits	40	ELEC 1006	Engineering Computing
ELEC 2009	Microprocessor Systems	10	Select one elective	
ELEC 2006	Engineering Electromagnetics	10	Elective unit must	st be Level 1 or higher
ELEC 2010	Power and Machines	10		
ENGR 3006	Control Systems	10	V0	Credit Points
LITOITOGGG	Credit Points	40	Year 2	
Year 3	orealt i onits	40	Spring session	M:
Autumn session			ELEC 2009	Microprocessor Systems
ELEC 3001	Communication Systems	10	ELEC 2004	Electronics
ELEC 3006	Electrical Machines 1	10	ELEC 2010	Power and Machines
Select one alternat		10	ELEC 3006	Electrical Machines 1
Select one elective	•	10		Credit Points
Select one elective	Credit Points		Autumn session	
Coming a services	Credit Points	40	ELEC 2011	Signals and Systems
Spring session	D	10	ELEC 1001	Digital Systems 1
ELEC 3009	Power Systems	10	ELEC 2006	Engineering Electromagnetics
ELEC 3003	Digital Signal Processing	10	ELEC 2001	Circuit Theory
ELEC 3005	Electrical Drives	10		Credit Points
Select one alternat	-	10	Year 3	
Industrial Experien			Spring session	
ENGR 3017	Industrial Experience (Engineering)	0	ELEC 3009	Power Systems
	Credit Points	40	ELEC 3003	Digital Signal Processing
Year 4			ELEC 3005	Electrical Drives
Autumn session			Select one alternate	subject
ELEC 4002	Power Electronics	10		Credit Points
ENGR 4025	Final Year Project 1 (UG Engineering)	10	Autumn session	
Select one alternat	•	10	ELEC 3001	Communication Systems
Select one elective		10	ELEC 3006	Electrical Machines 1
	Credit Points	40	Select one alternate	subject
			0.1	

Select one elective

Credit Points

Industrial Experie	ence	
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	40
Year 4		
Spring session		
ELEC 3008	Instrumentation and Measurement	10
	2 ELEC 3008 is replaced with ELEC 4009 and Measurement	
ENGR 4025	Final Year Project 1 (UG Engineering)	10
Select one altern	ate subject	10
Select one elective	ve	10
	Credit Points	40
Autumn session		
ELEC 4002	Power Electronics	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
Select one altern	ate subject	10
Select one elective	ve	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 Su	bject 1	10
Business Core Su	bject 2	10
	Credit Points	40
Spring session		
MATH 1019	Mathematics for Engineers 2	10
PROC 1008	Introduction to Materials Engineering	10
Business Core Su	bject 3	10
Business Core Su	bject 4	10
	Credit Points	40
Year 2		
Autumn session		
ELEC 1006	Engineering Computing	10
<b>Business Profess</b>	ional Subject 1	10
Business Profess	ional Subject 2	10
Business Major S	ubject 1	10
	Credit Points	40
Spring session		
ELEC 1003	Electrical Fundamentals	10
ENGR 1018	Fundamentals of Mechanics	10
Business Major S	ubject 2	10
Business Major S	ubject 3	10
	Credit Points	40

ELEC 2001 ELEC 2004	Circuit Theory Electronics	10 10
ELEC 2004 ELEC 2011		
ELEC 2011	Signals and Systems	10
ELEC 1001	Digital Systems 1  Credit Points	10
O	Credit Points	40
Spring session	M:	10
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 S	Subject 4	10
Business Major S	Subject 5	10
	Credit Points	40
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Business Major S	Subject 6	10
Business Major S	Subject 7	10
Industrial Experie	ence	
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 Profess	sional Subject 3	10
Business Major S	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
	2 ELEC 3008 is replaced with ELEC 4009	
	and Measurement	
Business Profes	sional Subject 4	10
	Credit Points	40
	Total Credit Points	400

### **Equivalent Subjects**

Year 3

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 Sub	ject 1	10
Business Core Sub	ject 2	10
	Credit Points	40
Autumn session		
MATH 1019	Mathematics for Engineers 2	10
ENGR 1011	Engineering Physics	10
Business Core Sub		10
Business Core Sub	<u> </u>	10
	Credit Points	40
Year 2		
Spring session		
ELEC 1003	Electrical Fundamentals	10
ENGR 1018	Fundamentals of Mechanics	10
Business Major Su	•	10
Business Major Su		10
A	Credit Points	40
Autumn session	Fraince wines Occurrenting	10
ELEC 1006	Engineering Computing Electronics	10
ELEC 2004		10
Business Major Su		10
Business Profession	Credit Points	10
Year 3	Credit Points	40
Spring session		
ELEC 2009	Microprocessor Systems	10
ELEC 2006	Microprocessor Systems Engineering Electromagnetics	10
ELEC 2010	Power and Machines	10
ENGR 3006	Control Systems	10
LINGIT 3000	Credit Points	40
Autumn session	Credit Politis	40
ELEC 1001	Digital Systems 1	10
ELEC 2001	Circuit Theory	10
ELEC 2011	Signals and Systems	10
Business Profession		10
	Credit Points	40
Year 4		
Spring session		
ELEC 3009	Power Systems	10
ELEC 3003	Digital Signal Processing	10
Business Major Su		10
Business Major Su	bject 5	10
	Credit Points	40
Autumn session		
ELEC 3001	Communication Systems	10
ELEC 3006	Electrical Machines 1	10
Business Major Su	bject 6	10
Business Major Su	bject 7	10
Industrial Experien	ce	
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

	22 ELEC 3008 is replaced with ELEC 4009 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		
Business Major Subject 8		10
	Credit Points	40
Total Credit Points		

### **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/bachelorengineering-advanced-honours/)

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