ROBOTICS AND MECHATRONICS, TESTAMUR MAJOR (T037)

Western Sydney University Major Code: T037

Previous Codes: KT3127.1, KT3158.1, KT3163.1, KT7003.1

Available to students in other Western Sydney University programs?
No

This major provides the skills necessary for the design of smart machines of all types: cruise control in automobiles, pilotless spacecraft, automated factories and medical telerobotics. The major, accompanied by an extensive and integrated hands-on laboratory program, is essentially concerned with the design of intelligent mechanical systems and automation, and includes the study of robotics, computer control, automated manufacturing, microprocessor applications and machine design. Graduates in the major acquire the combined skills of mechanical and computer/electrical engineering that are needed in leading-edge industries such as aerospace systems, the car industry, automation and robotic applications, biomedical engineering, laser systems, and building materials manufacture.

Select the link for your program below for the locations of your major

- Bachelor of Engineering (Honours)
- Bachelor of Engineering Science
- Diploma in Aerotropolis Industry 4.0 (Mechatronics Skills)/Bachelor of Engineering Science
- Diploma in Engineering/Bachelor of Engineering Studies

Location

Campus	Mode	Advice
Parramatta Campus - Victoria Road	Internal	beng@westernsydney.edu.au
Penrith Campus	Internal	beng@westernsydney.edu.au

Associate Degree in Engineering

Location

Campus	Mode	Advice
	Online	Miriam Krakovska (https://directory.westernsydney.edu.au/search/email/m.krakovska@uws.edu.au)

Recommended Sequence

Select the link for your program below to see details of the major

Associate Degree in Engineering

Major Structure

Students must complete three units as follows

Subject	Title	Credit Points
Select at least one of the following subjects:		
MECH 2002	Kinematics and Kinetics of Machines (WSTC AssocD)	10
MECH 2004	Mechanics of Materials (WSTC AssocD)	10
Choose either one or two of the following subjects depending on how many subjects have been completed from the list above.		
ELEC 2002	Circuit Theory (WSTC AssocD)	10
ELEC 1002	Digital Systems 1 (WSTC AssocD)	10
ELEC 2005	Electronics (WSTC AssocD)	10
MATH 1020	Mathematics for Engineers 2 (WSTC AssocD)	10

Please note: Offerings of alternate units are dependent on there being sufficient student enrolment numbers. If enrolments are low, the College may cancel delivery of the alternate unit.

Bachelor of Engineering (Honours)

Major Structure

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

* All students undertaking the Bachelor of Engineering (Honours) are required to enrol in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2024-2025/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/2024-2025/search/?P=MATH%201021) Mathematics for Engineers Preliminary or be transferred by the School to MATH 1016 (https://hbook.westernsydney.edu.au/archives/2024-2025/search/?P=MATH%201016) Mathematics for Engineers 1

Students remaining in MATH 1021 (https://hbook.westernsydney.edu.au/archives/2024-2025/search/?P=MATH%201021) Mathematics for Engineers Preliminary will be required to complete MATH 1016 (https://hbook.westernsydney.edu.au/archives/2024-2025/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/2024-2025/search/?P=MATH%201019) Mathematics for Engineers 2 during the Summer session.

Full-time 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
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
	Credit Points	**40**
Spring session		
MATH 1019	Mathematics for Engineers 2	10
ENGR 1018	Fundamentals of Mechanics	10
ELEC 1003	Electrical Fundamentals	10

Select one elective		10
	Credit Points	**40**
Year 2		
Autumn session		
MECH 2001	Kinematics and Kinetics of Machines	10
MECH 2003	Mechanics of Materials	10
ELEC 2001	Circuit Theory	10
ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Spring session		
MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
ELEC 3011	Power and Machines	10
ELEC 2008	Microcontrollers and PLCs	10
Students may transfer to 3691 Bachelor of Engineering Science at the end of Year 2 of study.		
	Credit Points	**40**
Year 3		
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
ELEC 2004	Electronics	10
One Alternate Subject		10
	Credit Points	**40**
Spring session		
MECH 4003	Mobile Robotics	10
MECH 3006	Mechatronic Design	10
One Alternative Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subjects)		
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 4		
Autumn session		
MECH 4004	Robotics	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
One Alternative Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subjects)		
	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
One Alternative Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subjects)		
	Credit Points	**40**
	Total Credit Points	**320**

Alternate Subjects

Alternate subjects may be used to complete one of the minors listed below.

Subject	Title	Credit Points
HLTH 2003	Biomechanics	10
ENGR 4038	Biomedical Electronics	10
ENGR 3004	Biomedical Signals and Data Analysis	10
MECH 4001	Computational Fluid Dynamics	10
MECH 4002	Computer Aided Engineering	10
ELEC 2007	Engineering Visualization	10
CIVL 2003	Fluid Mechanics	10
ENGR 2025	Design Graphics: Engineering Documentation	10
ENGR 2024	Design Graphics: Communication for Manufacture	10
BIOS 1022	Introduction to Human Biology	10
BIOS 1035	Anatomy and Physiology in Health	10
MECH 3007	Thermal and Fluid Engineering	10
MECH 3008	Thermodynamics and Heat Transfer	10

Equivalent Subjects

The subjects listed below count towards completion of this Major for students who passed these subjects in 2019 or earlier.

ENGR 2011 - Graphics 2: Visual Simulation
ENGR 2012 - Graphics 3: 3D Engineering Specifications and Visualisation

The subjects listed below count towards completion of this program for students who passed these subjects in 2020 or earlier.

BIOS 1022 Introduction to Human Biology, replaced by BIOS 1035 Anatomy and Physiology in Health

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 2010 Power and Machines, replaced by ELEC 3011 Power and Machines

Minors

SM3093 Computer Aided Design (Mechatronics)
SM3074 Thermal and Fluid Systems
SM3091 Biomedical Engineering

Bachelor of Engineering Science

Full-time start-year intake

Course	Title	Credit Points
Year 2		
Autumn session		
MECH 2001	Kinematics and Kinetics of Machines	10
MECH 2003	Mechanics of Materials	10
ELEC 2001	Circuit Theory	10

ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Spring session		
MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
ELEC 3011	Power and Machines	10
ELEC 2008	Microcontrollers and PLCs	10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 3		
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
MECH 4004	Robotics	10
ENGR 3013	Engineering Science Project 1	10
	Credit Points	**40**
Spring session		
MECH 4003	Mobile Robotics	10
ENGR 3014	Engineering Science Project 2	10
Select two electives		20
• Elective subjects must be level 2 or higher		
	Credit Points	**40**
	Total Credit Points	**160**

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 major, however, permission is required to enrol in the subject.

ENGR 3022 Special Technical Project

Replaced Subjects

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

ELEC 2010 Power and Machines, replaced by ELEC 3011 Power and Machines

- Diploma in Aerotropolis Industry 4.0 (Mechatronics Skills)/Bachelor of Engineering Science
- Diploma in Engineering/Bachelor of Engineering Studies

Course	Title	Credit Points
Year 2		
Autumn session		
MECH 2001	Kinematics and Kinetics of Machines	10
MECH 2003	Mechanics of Materials	10
ELEC 2001	Circuit Theory	10
ELEC 1001	Digital Systems 1	10
	Credit Points	**40**
Spring session		
MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
ELEC 3011	Power and Machines	10
ELEC 2010 replaced by ELEC 3011, Spring 2022		
ELEC 2008	Microcontrollers and PLCs	10
Industrial Experience		
ENGR 3017	Industrial Experience (Engineering)	0
	Credit Points	**40**
Year 3		
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
MECH 4004	Robotics	10
ENGR 3013	Engineering Science Project 1	10
	Credit Points	**40**
Spring session		
MECH 4003	Mobile Robotics	10
ENGR 3014	Engineering Science Project 2	10
MATH 1019	Mathematics for Engineers 2	10
Select one elective		10
• Elective subjects must be level 2 or higher		
	Credit Points	**40**
	Total Credit Points	**160**

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 major, however, permission is required to enrol in the subject.

ENGR 3022 Special Technical Project

Related Programs

Associate Degree in Engineering (7022) (https://hbook.westernsydney.edu.au/archives/2024-2025/programs/associate-degree-engineering/)

Bachelor of Engineering (Honours) (3740) (https://hbook.westernsydney.edu.au/archives/2024-2025/programs/bachelor-engineering-honours/)

Diploma in Aerotropolis Industry 4.0 (Mechatronics Skills)/Bachelor of Engineering Science (6046) (https://hbook.westernsydney.edu.au/archives/2024-2025/programs/diploma-aerotropolis-industry-40-mechatronics-skillsbachelor-engineering-science/)

Diploma in Engineering/Bachelor of Engineering Studies (6033) (https://hbook.westernsydney.edu.au/archives/2024-2025/programs/diploma-engineering-bachelor-engineering-studies/)