

MECHANICAL, TESTAMUR MAJOR (T036)

Western Sydney University Major Code: T036

Previous Codes: KT3142.1, KT3157.1, KT3162.1, KT7004.1, ST3095.1

Available to students in other Western Sydney University programs?
No

Select the link for your program below for the major summary and locations

Associate Degree in Engineering

The Associate Degree in Engineering is a two-year program (full-time) in Engineering designed for people who have workplace experience and wish to upgrade their qualifications in Engineering and possibly continue to the full Bachelor degree program. The Associate Degree in Engineering has a common first year program for all engineering disciplines, exposing students to a wide range of experiences in the first year. In the second year students may choose from the majors in Civil, Electrical, Mechanical or Robotics & Mechatronics. If students choose to apply to study in the the Bachelor of Engineering (Honours) after graduating from the Associate Degree in Engineering they may be given advanced standing in up to 12 subjects.

Location

Campus	Mode	Advice
Penrith Campus	Online	Miriam Krakovska (https://directory.westernsydney.edu.au/search/email/m.krakovska@westernsydney.edu.au)
The College - Nirimba Education Precinct	Online	Miriam Krakovska (https://directory.westernsydney.edu.au/search/email/m.krakovska@westernsydney.edu.au)

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

In addition to providing training in conventional mechanical engineering subjects, the major introduces students to subjects of study that address sustainability including sustainable design and sustainable energy engineering. Graduates will be well equipped with broad-based skills that meet the demand of Australian industries and are conscious of the need to promote sustainable design and practices. Examples include mechanical and machinery design; manufacturing; energy production; and marketing and management activities. Skills gained are required in industries such as manufacturing, materials handling, automobile, aerospace, mining, building services and infrastructure development.

Location

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

- Bachelor of Engineering (Honours) - Bachelor of Engineering Science

In addition to providing training in conventional mechanical engineering subjects, the major introduces students to subjects of study that address sustainability including sustainable design and sustainable energy engineering. Graduates will be well equipped with broad-based skills that meet the demand of Australian industries and are conscious of the need to promote sustainable design and practices. Examples include mechanical and machinery design; manufacturing; energy production; and marketing and management activities. Skills gained are required in industries such as manufacturing, materials handling, automobile, aerospace, mining, building services and infrastructure development.

Location

Campus	Mode	Advice
Parramatta Campus - Victoria Road	Internal	beng@westernsydney.edu.au
Penrith Campus	Internal	beng@westernsydney.edu.au
Sydney City Campus	Internal	Peter Lendrum (https://directory.westernsydney.edu.au/search/email/p.lendrum@city.westernsydney.edu.au)

- Graduate Certificate in Engineering - Graduate Diploma in Engineering (exit only) - Master of Engineering

Location

Campus	Mode	Advice
Parramatta Campus - Victoria Road	Internal	Engineering@westernsydney.edu.au
Parramatta City Campus-Macquarie Street	Internal	Engineering@westernsydney.edu.au

Recommended Sequence

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

Associate Degree in Engineering

Major Structure

Subject	Title	Credit Points
Students must complete three subjects as follows		
MECH 3009	Thermodynamics and Heat Transfer (WSTC AssocD)	10
AND select two subjects from the following:		20
MECH 2004	Mechanics of Materials (WSTC AssocD)	
CIVL 2004	Fluid Mechanics (WSTC AssocD)	

MECH 2002	Kinematics and Kinetics of Machines (WSTC AssocD)	
MATH 1020	Mathematics for Engineers 2 (WSTC AssocD)	
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.		
Total Credit Points		30

Bachelor of Engineering (Honours)

Major Structure

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

Full-time start-year intake

* 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.

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
PROC 1008	Introduction to Materials Engineering	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
CIVL 2003	Fluid Mechanics	10
ENGR 2025	Design Graphics: Engineering Documentation	10
Credit Points		40
Spring session		
MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
MECH 3002	Advanced Mechanics of Materials	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
Major Alternate Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subject)		
Credit Points		40
Spring session		
MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	10
MECH 3006	Mechatronic Design	10
Major Alternate Subject		10
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
Major Alternate Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subject)		
Credit Points		40
Spring session		
MECH 4002	Computer Aided Engineering	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
Major Alternate Subject		10
Select one elective		10
*Elective subjects must be level 2 or higher (an exception applies for students completing Mathematics for Engineers Preliminary subject)		
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
ENGR 2024	Design Graphics: Communication for Manufacture	10
ENGR 2013	Graphics 4: Kinetic Narratives	10
INFO 3003	Human-Computer Interaction	10
BIOS 1022	Introduction to Human Biology	10
ELEC 2008	Microcontrollers and PLCs	10

MECH 4003	Mobile Robotics	10
ENGR 3025	Designing for Circular Economy (Advanced)	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 Autumn 2022 or earlier.

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

Minors

Automation, Minor (<https://hbook.westernsydney.edu.au/archives/2022-2023/majors-minors/automation-concentration/>)

Biomedical Engineering, Minor (<https://hbook.westernsydney.edu.au/archives/2022-2023/majors-minors/biomedical-engineering-minor/>)

Computer Aided Design (Mechanical), Minor (<https://hbook.westernsydney.edu.au/archives/2022-2023/majors-minors/computer-aided-design-mechanical-minor/>)

Bachelor of Engineering Science

Major Structure

Students choose their key program at the end of first year. Mechanical engineering students will then undertake the following subjects.

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
CIVL 2003	Fluid Mechanics	10
ENGR 2024	Design Graphics: Communication for Manufacture	10

From 2020 ENGR 2012 Graphics 3: 3D Engineering Specifications and Visualisation was replaced by ENGR 2024 Design Graphics: Communication for Manufacture.

Credit Points		40
Spring session		
MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
MECH 3002	Advanced Mechanics of Materials	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
ENGR 3013	Engineering Science Project 1	10
Select one elective		10

*Elective subjects must be level 2 or higher

Credit Points 40

Spring session

MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	10
ENGR 3014	Engineering Science Project 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 subject offered to students who are engaged in a School approved project. This subject can be taken during the third year of this course, however, permission is required to enrol in the subject.

ENGR 3022 Special Technical Project

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

Full-time start-year intake

Course	Title	Credit Points
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Year 2

Autumn session

MECH 2001	Kinematics and Kinetics of Machines	10
MECH 2003	Mechanics of Materials	10
CIVL 2003	Fluid Mechanics	10
MATH 1019	Mathematics for Engineers 2	10

Credit Points 40

Spring session

MECH 3004	Dynamics of Mechanical Systems	10
ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
MECH 3002	Advanced Mechanics of Materials	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
ENGR 3013	Engineering Science Project 1	10
Select one elective		10

*Elective subjects must be level 2 or higher

Credit Points 40

Spring session

MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	10
ENGR 3014	Engineering Science Project 2	10
ENGR 2024	Design Graphics: Communication for Manufacture	10

Credit Points 40

Total Credit Points 160

Equivalent Subjects

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

ENGR 2012 - Graphics 3: 3D Engineering Specifications and Visualisation

Optional Elective

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

ENGR 3022 Special Technical Project

- Graduate Certificate in Engineering
- Graduate Diploma in Engineering (exit only)
- Master of Engineering

Postgraduate Major Structure

To complete some of the components within the subjects in this major, students may be required to travel to other Western Sydney University campuses.

Mechanical Major Alternate Subjects

Specialist alternate subject offerings are subject to sufficient student demand and may not be offered annually.

Students enrolled in 3693 Master of Engineering choose seven major subjects from the list below

Students exiting with 3694 Graduate Diploma in Engineering (exit only) choose six major alternate subjects

Students enrolled in 3695 Graduate Certificate in Engineering choose four major alternate subject

Subject	Title	Credit Points
MECH 7002	Advanced Computer Aided Engineering	10
MECH 7001	Advanced Computational Fluid Dynamics	10
MECH 7003	Advanced Dynamic Systems	10
CIVL 7005	Advanced Numerical Methods in Engineering	10
MECH 7005	Advanced Robotics	10
MECH 7006	Advanced Thermal and Fluid Engineering	10
MECH 7007	Mechanical System Design	10
MECH 7008	Mechatronic System Design	10

Related Programs

Associate Degree in Engineering (7022) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/associate-degree-engineering/>)

Bachelor of Engineering (Honours) (3740) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/bachelor-engineering-honours/>)

Diploma in Aerotropolis Industry 4.0 (Mechatronics Skills)/Bachelor of Engineering Science (6046) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/diploma-aerotropolis-industry-40-mechatronics-skillsbachelor-engineering-science/>)

Diploma in Engineering/Bachelor of Engineering Studies (6033) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/diploma-engineering-bachelor-engineering-studies/>)

Graduate Certificate in Engineering (3695) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/graduate-certificate-engineering/>)

Graduate Diploma in Engineering (exit only) (3694) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/graduate-diploma-engineering-exit-only/>)

Master of Engineering (3693) (<https://hbook.westernsydney.edu.au/archives/2022-2023/programs/master-engineering/>)