

MECHANICAL ENGINEERING, TESTAMUR MAJOR

Western Sydney University Major Code: T103

Previous Code: KT3173.1, MT3054

Available to students in other Western Sydney University programs?
No

Mechanical engineering is a dynamic area involving the design and build of moving machines including engines that power transportation, industrial machinery, and a range of tools. Students put the core concepts of mechanical engineering, energy, thermodynamics, mechanics, kinematics, and fluid mechanics, into practical application in workshops, industry projects, and work integrated learning. Students design and construct machines and tools, monitor and evaluate their performance. Employment opportunities include automotive or mechanical engineer, control and instrumentation engineer. This major includes a mandatory 12 weeks of industrial placement as a completion requirement.

Location

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

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 course as noted below.

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 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 1018	Fundamentals of Mechanics	10
MANU 2001	Design and Manufacturing	10
Credit Points		40

Year 2

Autumn session

ENGR 2027	Engineering Design	10
MECH 2003	Mechanics of Materials	10
MECH 2001	Kinematics and Kinetics of Machines	10
CIVL 2003	Fluid Mechanics	10
Credit Points		40

Spring session

MECH 2005	Mathematics for Mechanical and Mechatronic Engineers	10
MECH 3008	Thermodynamics and Heat Transfer	10
ENGR 2025	Design Graphics: Engineering Documentation	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
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Year 3

Autumn session

MECH 3002	Advanced Mechanics of Materials	10
MECH 3005	Mechanical Design	10
Select one Alternate Subject		10
Select one elective		10
Credit Points		40

Spring session

MECH 3007	Thermal and Fluid Engineering	10
MECH 3006	Mechatronic Design	10
ENGR 3020	Numerical Methods in Engineering	10
Select one Alternate Subject		10

Industrial Experience

ENGR 3017	Industrial Experience (Engineering)	0
Credit Points		40

Year 4

Autumn session

MECH 4004	Robotics	10
ENGR 4037	Advanced Engineering Thesis 1: Preliminary Investigations	10
Select one Alternate Subject		20
Select one elective		

Credit Points		40
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Spring session

MECH 4002	Computer Aided Engineering	10
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10
Select one Alternate Subject		20
Select one elective		

Credit Points		40
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Total Credit Points		320
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Alternate Subjects

Subject	Title	Credit Points
ENGR 3025	Designing for Circular Economy (Advanced)	10
ENGR 2024	Design Graphics: Communication for Manufacture	10
ENGR 2022	Design Practice: Sustainable Manufacturing	10
MECH 4003	Mobile Robotics	10
INFO 3003	Human-Computer Interaction	10
HLTH 2003	Biomechanics	10
ENGR 3003	Biomedical Electronics	10
ENGR 3004	Biomedical Signals and Data Analysis	10
MECH 4001	Computational Fluid Dynamics	10
BIOS 1022	Introduction to Human Biology	10
MECH 4003	Mobile Robotics	10

Minors

SM3072 Automation

SM3091 Biomedical Engineering

SM3099 Computer Aided Design (Mechanical)

Optional Electives

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.

Subject	Title	Credit Points
ENGR 3022	Special Technical Project	10

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

Mid-year intake

Course	Title	Credit Points
Year 1		
Spring session		
MATH 1034	Mathematics for Engineers 1 (Advanced)	10
ENGR 1018	Fundamentals of Mechanics	10
MANU 2001	Design and Manufacturing	10
ELEC 1009	Electrical Circuit Fundamentals	10
Credit Points		40
Autumn session		
MATH 1035	Mathematics for Engineers 2 (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

Year 2		
Spring session		
MECH 2005	Mathematics for Mechanical and Mechatronic Engineers	10
MECH 3008	Thermodynamics and Heat Transfer	10
ENGR 2025	Design Graphics: Engineering Documentation	10
Select one elective		10
Credit Points		40

Autumn session		
ENGR 2027	Engineering Design	10
MECH 2003	Mechanics of Materials	10
MECH 2001	Kinematics and Kinetics of Machines	10
CIVL 2003	Fluid Mechanics	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		
Spring session		
MECH 3007	Thermal and Fluid Engineering	10
MECH 3006	Mechatronic Design	10
ENGR 3020	Numerical Methods in Engineering	10
One alternate subject		10
Credit Points		40

Autumn session		
MECH 3002	Advanced Mechanics of Materials	10
MECH 3005	Mechanical Design	10
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
MECH 4002	Computer Aided Engineering	10
One alternate subject		10
Select one elective		10
Credit Points		40

Autumn session		
ENGR 4036	Advanced Engineering Thesis 2: Detailed Investigations	10
MECH 4004	Robotics	10
One alternate subject		10
Select one elective		10
Credit Points		40
Total Credit Points		320

Alternate Subjects

Subject	Title	Credit Points
ENGR 3025	Designing for Circular Economy (Advanced)	10
ENGR 2024	Design Graphics: Communication for Manufacture	10

ENGR 2022	Design Practice: Sustainable Manufacturing	10
MECH 4003	Mobile Robotics	10
INFO 3003	Human-Computer Interaction	10
HLTH 2003	Biomechanics	10
ENGR 3003	Biomedical Electronics	10
ENGR 3004	Biomedical Signals and Data Analysis	10
MECH 4001	Computational Fluid Dynamics	10
BIOS 1022	Introduction to Human Biology	10
MECH 4003	Mobile Robotics	10

Minors

SM3072 Automation

SM3091 Biomedical Engineering

SM3099 Computer Aided Design (Mechanical)

Optional Electives

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.

Subject	Title	Credit Points
ENGR 3022	Special Technical Project	10

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

Bachelor of Engineering Science

This Major will be offered at Parramatta City, 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 sequences below.

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	

Note: All students are required to enrol in MATH 1021 Mathematics for Engineers Preliminary first and undertake a readiness test at the beginning of their study.

This test will be conducted at the beginning of the first semester of enrolment and the result will 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.

The students who finish MATH 1021 Mathematics for Engineers Preliminary will then use this unit as an elective.

Credit Points		40
Spring session		
ENGR 1018	Fundamentals of Mechanics	10
PROC 1008	Introduction to Materials Engineering	10
Select one of the following:		10
MATH 1016	Mathematics for Engineers 1	
MATH 1019	Mathematics for Engineers 2	

Select one elective 10

Note: Students who remained in MATH 1021 Mathematics for Engineers Preliminary during the first semester will be required to complete MATH 1016 Mathematics for Engineers 1 during second semester.

These students must then complete MATH 1019 Mathematics for Engineers 2 during the Summer session.

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 3029	Specialisation Workshop 1	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
ENGR 3030	Specialisation Workshop 2	10

Credit Points 40

Year 3		
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
ENGR 3013	Engineering Science Project 1	10
ENGR 2024	Design Graphics: Communication for Manufacture	10

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

Industrial Experience		
ENGR 2033	Industrial Experience (Engineering Technologist)	0

Note: Elective subjects must be level 2 or higher

Credit Points		40
Total Credit Points		240

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		
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
ENGR 1018	Fundamentals of Mechanics	10
PROC 1008	Introduction to Materials Engineering	10
ENGR 1024	Introduction to Engineering Practice	10
Credit Points		40
Autumn session		
Select one of the following:		10
MATH 1016	Mathematics for Engineers 1	
MATH 1019	Mathematics for Engineers 2	
ELEC 1006	Engineering Computing	10
ENGR 1011	Engineering Physics	10
Select one elective		10
• Elective must be Level 1 or higher		
Credit Points		40
Year 2		
Spring session		
ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
ENGR 3029	Specialisation Workshop 1	10
Select one elective		10
• Elective must be Level 2 or higher		
Credit Points		40
Autumn session		
MECH 2001	Kinematics and Kinetics of Machines	10
MECH 2003	Mechanics of Materials	10
CIVL 2003	Fluid Mechanics	10
ENGR 3030	Specialisation Workshop 2	10
Industrial Experience		
ENGR 2033	Industrial Experience (Engineering Technologist)	0
Credit Points		40
Year 3		
Spring session		
MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	10
ENGR 3014	Engineering Science Project 2	10
MECH 3004	Dynamics of Mechanical Systems	10
Credit Points		40
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
ENGR 3013	Engineering Science Project 1	10

ENGR 2024	Design Graphics: Communication for Manufacture	10
Credit Points		40
Total Credit Points		240

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

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		
ENGR 1011	Engineering Physics	10
Business Core Subject 1		10
Business Core Subject 2		10
MATH 1016	Mathematics for Engineers 1	10
Credit Points		40
Spring session		
PROC 1008	Introduction to Materials Engineering	10
Business Core Subject 3		10
Business Core Subject 4		10
MATH 1019	Mathematics for Engineers 2	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		
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
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
Credit Points		40
Year 4		
Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
Business Major Subject 4		10
Business Major Subject 5		10
Credit Points		40
Spring session		
MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	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		
MECH 4004	Robotics	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		
MECH 4002	Computer Aided Engineering	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
MECH 3006	Mechatronic Design	10
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		
PROC 1008	Introduction to Materials Engineering	10
MATH 1016	Mathematics for Engineers 1	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
MECH 2003	Mechanics of Materials	10
Business Professional Subject 1		10
Business Major Subject 3		10
Credit Points		40

Year 3

Spring session

ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
MECH 3002	Advanced Mechanics of Materials	10
Business Major Subject 4		10
Credit Points		40

Autumn session

MECH 2001	Kinematics and Kinetics of Machines	10
CIVL 2003	Fluid Mechanics	10
ENGR 2024	Design Graphics: Communication for Manufacture	10
Business Professional Subject 2		10
Credit Points		40

Year 4

Spring session

MECH 3007	Thermal and Fluid Engineering	10
ENGR 3020	Numerical Methods in Engineering	10
MECH 3004	Dynamics of Mechanical Systems	10
Business Major Subject 5		10
Credit Points		40

Autumn session

MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	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

MECH 4002	Computer Aided Engineering	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
MECH 3006	Mechatronic Design	10
Business Professional Subject 3		10
Credit Points		40

Autumn session

ENGR 4026	Final Year Project 2 (UG Engineering)	10
MECH 4004	Robotics	10
Business Professional Subject 4		10

Business Major Subject 8	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

Bachelor of Engineering (Honours)

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		
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 1016	Mathematics for Engineers 1	
MATH 1019	Mathematics for Engineers 2	
ENGR 1018	Fundamentals of Mechanics	10
PROC 1008	Introduction to Materials Engineering	10
Select one elective		10
• Elective must be Level 1 or higher		
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 2003	Mechanics of Materials	10
Credit Points		40

Year 3

Autumn session		
MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
One alternate subject		10
Select one elective		10

- Elective 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
MECH 3006	Mechatronic Design	10
One 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
One alternate subject		10
Select one elective		10
• Elective must be Level 2 or higher		
Credit Points		40
Spring session		
MECH 4002	Computer Aided Engineering	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
One alternate subject		10
Select one elective		10
• Elective must be Level 2 or higher		
Credit Points		40
Total Credit Points		320

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		
Select one of the following:		10
MATH 1021	Mathematics for Engineers Preliminary	
MATH 1016	Mathematics for Engineers 1	
ENGR 1018	Fundamentals of Mechanics	10
PROC 1008	Introduction to Materials Engineering	10
ENGR 1024	Introduction to Engineering Practice	10
Credit Points		40
Autumn session		
Select one of the following:		10
MATH 1016	Mathematics for Engineers 1	
MATH 1019	Mathematics for Engineers 2	
ELEC 1006	Engineering Computing	10
ENGR 1011	Engineering Physics	10
Select one elective		10
• Elective must be Level 1 or higher		
Credit Points		40

Year 2**Spring session**

ENGR 2001	Automated Manufacturing	10
MECH 3008	Thermodynamics and Heat Transfer	10
One alternate subject		10
Select one elective		10
• Elective must be Level 2 or higher		
Credit Points		40

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

Year 3**Spring session**

MECH 3007	Thermal and Fluid Engineering	10
MECH 3002	Advanced Mechanics of Materials	10
ENGR 3020	Numerical Methods in Engineering	10
MECH 3004	Dynamics of Mechanical Systems	10
Credit Points		40

Autumn session

MECH 3005	Mechanical Design	10
MECH 3001	Advanced Dynamics	10
One alternate subject		10
Select one elective		10
• Elective must be Level 2 or higher		

Industrial Experience

ENGR 3017	Industrial Experience (Engineering)	0
Credit Points		40

Year 4**Spring session**

MECH 4002	Computer Aided Engineering	10
ENGR 4026	Final Year Project 2 (UG Engineering)	10
MECH 3006	Mechatronic Design	10
One alternate subject		10
Credit Points		40

Autumn session

MECH 4004	Robotics	10
ENGR 4025	Final Year Project 1 (UG Engineering)	10
One alternate subject		10
Select one elective		10
• Elective must be Level 2 or higher		

Credit Points **40**

Total Credit Points **320**

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

Related Programs

Bachelor of Engineering Advanced (Honours) (3771) (<https://hbook.westernsydney.edu.au/archives/2021-2022/programs/bachelor-engineering-advanced-honours/>)

Bachelor of Engineering Science (3691) (<https://hbook.westernsydney.edu.au/archives/2021-2022/programs/bachelor-engineering-science/>)