

Course progression map for 2020 commencing students – MARCH AND JULY ADMISSION

This progression map provides advice on the suitable sequencing of units and guidance on how to plan unit enrolment for each semester of study. It should be used in conjunction with the requirements of the course as specified in the [Handbook](#). This map is subject to updates. Update version: 13 December 2023

E3001 Bachelor of Engineering (Honours)

Common first year

If no foundation units are required:					
Year	Sem	Units			
1	1	ENG1001 Engineering design: lighter, faster, stronger	ENG1005 Engineering mathematics	ENG1060 Computing for engineers	Elective
	2	ENG1002 Engineering design: cleaner, safer, smarter	ENG1003 Engineering mobile apps	First Year engineering elective	Elective
If you need to enrol in foundation physics and maths:					
1	1	ENG1002 Engineering design: cleaner, safer, smarter	ENG1003 Engineering mobile apps	PHS1001 Foundation physics	ENG1090 Foundation mathematics
	2	ENG1001 Engineering design: lighter, faster, stronger	ENG1005 Engineering mathematics	ENG1060 Computing for engineers	First Year engineering elective unit
If you need to enrol in foundation maths:					
1	1	ENG1002 Engineering design: cleaner, safer, smarter	ENG1003 Engineering mobile apps	ENG1090 Foundation mathematics	First Year engineering elective unit
	2	ENG1001 Engineering design: lighter, faster, stronger	ENG1005 Engineering mathematics	ENG1060 Computing for engineers	Elective unit
If you need to enrol in foundation physics:					
1	1	ENG1002 Engineering design: cleaner, safer, smarter	ENG1003 Engineering mobile apps	PHS1001 Foundation physics	First Year engineering elective unit
	2	ENG1001 Engineering design: lighter, faster, stronger	ENG1005 Engineering Mathematics	ENG1060 Computing for engineers	Elective unit

Notes:

- You are required to complete either the [Continuous Professional Development](#) (if you studying in Australia) or [Industrial training](#) (if you are studying in Malaysia) in order to graduate.
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E3001 Bachelor of Engineering (Honours)

Specialisation – Aerospace Engineering

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	MAE2412 Aerospace design <small>Replace with MEC2402 from 2023</small>	MAE2401 Aerospace structures and materials <small>Replace with MEC2403 from 2023</small>	ENG2005 Advanced engineering mathematics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	MAE2402 Thermodynamics and gas dynamics	MAE2404 Aerodynamics 1	MAE2505 Aerospace dynamics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
3	1	MAE3401 Aerodynamics 2	MAE3404 Flight vehicle dynamics	MAE3456 Aerospace computational mechanics <small>Replace with MEC3456 from 2023</small>	Engineering minor or level 3 or 4 aerospace engineering technical elective	
	2	MAE3405 Aerospace propulsion	MAE3408 Aerospace control	MAE3411 Aerospace structural mechanics	Engineering minor or level 3 or 4 aerospace engineering technical elective	
4	1	ENG4701 Final year project A	MAE4416 Orbital mechanics and spaceflight dynamics	MAE4404 Aerospace practices and airworthiness <small>Replace with MEC4404 from 2023</small>	Engineering minor or level 3, 4 or 5 aerospace engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2	ENG4702 Final year project B	MAE4426 Finite element analysis and composite structures	MAE4410 Flight vehicle design	Engineering minor or level 3, 4 or 5 aerospace engineering technical elective	

Notes:

- [MINORS AND ELECTIVES LIST](#) is located on the Faculty's current student course information webpage.
- The placement of units may be rearranged to support sequencing for double degree courses but care should be taken to ensure sequenced units are maintained in sequence.
- You are required to complete at least 420 hours of Continuous Professional Development (CPD) in order to graduate. For further information, refer to the [CPD webpage](#).
- For enrolment advice, please refer to the [Course Advisers webpage](#).

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E3001 Bachelor of Engineering (Honours)

Specialisation – Chemical Engineering

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	ENG2005 Advanced engineering mathematics	CHM1011 Chemistry 1 or CHM1051 Chemistry 1 Advanced	CHE2164 Thermodynamics 1	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	CHE2162 Materials and energy balances	CHE2161 Mechanics of fluids	CHE2163 Heat and mass transfer	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	CHE3161 Chemistry and chemical thermodynamics	CHE3165 Separation processes	CHE3167 Transport phenomena and numerical methods	Engineering minor or level 3 or 4 chemical engineering technical elective
	2	CHE3162 Process control	CHE3164 Reaction engineering	CHE3166 Process design	Engineering minor or level 3 or 4 chemical engineering technical elective
4	1	ENG4701 Final year project A	CHE4162 Particle technology	CHE4161 Engineer in society	Engineering minor or level 3, 4 or 5 chemical engineering technical elective
	2	ENG4702 Final year project B	CHE4170 Design project (12 points)		Engineering minor or level 3, 4 or 5 chemical engineering technical elective

Malaysia students enrol in [ENG0002](#) Industrial training (0 credit points)

Clayton students enrol in [ENG0001](#) Continuous Professional Development (0 credit points)

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- [CHE4164](#) and [CHE4165](#) are integrated industrial project units for select students only. The units are undertaken in place of the final year project units ENG4701 and ENG4702. Depending on placement location, you may have to overload a semester or extend an additional semester in order to complete your course.
- CHE4170 - You should not overload in the semester when undertaking this unit.
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E3001 Bachelor of Engineering (Honours)

Specialisation – Civil Engineering

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	CIV2206 Structural mechanics	CIV2282 Transport and traffic engineering	CIV2263 Water systems	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	ENG2005 Advanced engineering mathematics	CIV2242 Geomechanics 1	CIV2235 Structural materials	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
3	1	CIV3248 Groundwater and environmental geomechanics	CIV3294 Structural design	CIV3285 Engineering hydrology	Engineering minor or level 3 or 4 civil engineering technical elective	
	2	CIV3283 Road engineering	CIV3221 Building structures and technology	CIV3247 Geomechanics 2	Engineering minor or level 3 or 4 civil engineering technical elective	Malaysia students enrol in ENG0002 Industrial training (0 credit points)
4	1	ENG4701 Final year project A	CIV4286 Project management for civil engineers	CIV4280 Bridge design and assessment	Engineering minor or level 3 or 4 civil engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2	ENG4702 Final year project B	CIV4212 Civil and environmental engineering practice	CIV4288 Water treatment	Engineering minor or level 3 or 4 civil engineering technical elective	

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E3001 Bachelor of Engineering (Honours)

Specialisation – Electrical and Computer Systems Engineering

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	ECE2071 Computer organisation and programming	ECE2131 Electrical circuits	ENG2005 Advanced engineering mathematics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	ECE2072 Digital systems	ECE2111 Signals and systems	ECE2191 Probability models in engineering	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	ECE3073 Computer systems	ECE3141 Information and networks	ECE3161 Analogue electronics	Engineering minor or level 3 or 4 ECSE technical elective
	2	ECE4132 Control system design	ECE3121 Engineering electromagnetics Clayton students: Replace ECE3121 with ECE3122 in 2024	Level 4 or 5 ECE-coded core elective*	Engineering minor or level 3 or 4 ECSE technical elective
4	1	ENG4701 Final year project A	ECE3051 Electrical energy systems	Level 4 or 5 ECE-coded core elective	Engineering minor or level 3, 4 or 5 ECSE technical elective
	2	ENG4702 Final year project B	ECE4191 Engineering integrated design	ECE4099 Professional practice	Engineering minor or level 3, 4 or 5 ECSE technical elective

Malaysia students enrol in [ENG0002](#) Industrial training (0 credit points)

Clayton students enrol in [ENG0001](#) Continuous Professional Development (0 credit points)

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E3001 Bachelor of Engineering (Honours)

Specialisation – Environmental Engineering

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	ENE2021 Energy and the environment	CHE2164 Thermodynamics 1	CIV2263 Water systems	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	CHE2162 Material and energy balances	ENG2005 Advanced engineering mathematics	ENE2503 Material properties and recycling	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	CIV3248 Groundwater and environmental geomechanics	CIV3285 Engineering hydrology	BTX3100 Sustainability regulation for business	Engineering minor or level 3 or 4 environmental engineering technical elective
	2	ENE3606 The air environment	ENE3032 Fate and transport of contaminants	ENE3031 Building sustainability	Engineering minor or level 3 or 4 environmental engineering technical elective
4	1	ENG4701 Final year project A	CIV4286 Project management for civil engineers	ENE4042 Environment impact and risk assessment	Engineering minor or level 3 or 4 environmental engineering technical elective
	2	ENG4702 Final year project B	CIV4212 Civil and environmental engineering practice	ENE4041 Soil remediation and solid waste management	Engineering minor or level 3 or 4 environmental engineering technical elective

Clayton students enrol in [ENG0001](#) Continuous Professional Development (0 credit points)

Notes:

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- The placement of units may be rearranged to support sequencing for double degree courses but care should be taken to ensure sequenced units are maintained in sequence.
- The Sustainable processing stream is not available in a double degree as it requires extra prerequisites in the elective space.
- You are required to complete at least 420 hours of Continuous Professional Development (CPD) in order to graduate. For further information, refer to the [CPD webpage](#).
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E3001 Bachelor of Engineering (Honours)

Specialisation – Materials Engineering

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	MTE2101 Atomic-scale structure of materials	MTE2102 Phase equilibria and phase transformations	MTE2103 Mechanical properties of materials	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	MTE2202 Functional materials 1	MTE2201 Polymers	ENG2005 Advanced engineering mathematics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
3	1	MTE3103 Materials life cycle	MTE3102 Plasticity of metals and alloys	MTE3101 Materials in a complex world 1: People, projects and data	Engineering minor or level 3 or 4 materials engineering technical elective	
	2	MTE3202 Functional materials 2	MTE3203 Introduction to ceramics, Properties, processing and applications	MTE3201 Materials in a complex world 2: Characterisation, identification and selection	Engineering minor or level 3 or 4 materials engineering technical elective	
4	1	ENG4701 Final year project A	MTE4102 Advanced materials processing and manufacturing	MTE4101 Integrated design project	Engineering minor or level 3, 4 or 5 materials engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2	ENG4702 Final year project B	Level 4 or 5 MTE-coded materials engineering core elective	MTE4201 Materials in a complex world 3: Impact in society	Engineering minor or level 3, 4 or 5 materials engineering technical elective	

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- The placement of units may be rearranged to support sequencing for double degree courses but care should be taken to ensure sequenced units are maintained in sequence.
- You are required to complete at least 420 hours of Continuous Professional Development (CPD) in order to graduate. For further information, refer to the [CPD webpage](#).
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E3001 Bachelor of Engineering (Honours)

Specialisation – Mechanical Engineering

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	MEC2403 Mechanics of materials	MEC2401 Dynamics 1	MEC2402 Design methods	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	ENG2005 Advanced engineering mathematics	MEC2404 Mechanics of fluids	MEC2405 Thermodynamics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
3	1	MEC3455 Solid mechanics	MEC3451 Fluid mechanics 2	MEC3456 Engineering computational mechanics	Engineering minor or level 3 or 4 mechanical engineering technical elective	
	2	MEC3453 Dynamics 2	MEC3416 Machine design	MEC3457 Systems and control	Engineering minor or level 3 or 4 mechanical engineering technical elective	Malaysia students enrol in ENG0002 Industrial training (0 credit points)
4	1	ENG4701 Final year project A	MEC4404 Professional practice	MEC4408 Thermodynamics and heat transfer	Engineering minor or level 3, 4 or 5 mechanical engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2	ENG4702 Final year project B	MEC4407 Design project	MEC4426 Computer-aided design	Engineering minor or level 3, 4 or 5 mechanical engineering technical elective	

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E3001 Bachelor of Engineering (Honours)

Specialisation – Resources and mining engineering

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	CIV2206 Structural mechanics	CIV2263 Water systems	EAE2511 Deep earth processes	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	CIV2242 Geomechanics 1	RSE2010 Fixed plant engineering and project management	ENG2005 Advanced engineering mathematics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	RSE3020 Resource estimation	RSE3060 Rock breakage	ENE4042 Environmental impact and risk assessment	Engineering minor or level 3 or 4 resources and mining technical elective
	2	RSE3010 Mine geotechnical engineering	RSE3030 Ventilation for surface and underground spaces	RSE3040 Mining systems	Engineering minor or level 3 or 4 resources and mining engineering technical elective
4	1	ENG4701 Final year project A	RSE4010 Mine planning and scheduling	RSE4120 Instrumentation, automation and asset management	Engineering minor or level 3 or 4 resources and mining engineering technical elective
	2	ENG4702 Final year project B	RSE4020 Mine design and feasibility project	RSE4040 Mineral processing	Engineering minor or level 3 or 4 resources and mining engineering technical elective

Clayton students enrol in
[ENG0001](#) Continuous Professional Development (0 credit points)

Notes:

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- The Resources and mining engineering specialisation is not offered in a double degree course.
- You are required to complete at least 420 hours of Continuous Professional Development (CPD) in order to graduate. For further information, refer to the [CPD webpage](#).
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E3001 Bachelor of Engineering (Honours)

Specialisation – Resources and renewable energy engineering

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	CIV2206 Structural mechanics	CIV2263 Water systems	EAE2511 Deep earth processes	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	CIV2242 Geomechanics 1	RSE2010 Fixed plant engineering and project management	ENG2005 Advanced engineering mathematics	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	ECE2131 Electrical circuits	RSE3141 Solar energy	ENE4042 Environmental impact and risk assessment	Engineering minor or level 3 or 4 resources and renewable energy engineering technical elective
	2	RSE3241 Hydropower	RSE3242 Geothermal energy	RSE3243 Bioenergy	Engineering minor or level 3 or 4 resources and renewable energy engineering technical elective
4	1	ENG4701 Final year project A	RSE4050 Energy systems and design	ECE3051 Electrical energy systems	Engineering minor or level 3 or 4 resources and renewable energy engineering technical elective
	2	ENG4702 Final year project B	ECE4053 Power system analysis	MEC4459 Wind engineering	Engineering minor or level 3 or 4 resources and renewable energy engineering technical elective

Clayton students enrol in [ENG0001](#) Continuous Professional Development (0 credit points)

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- The Resources and renewable energy engineering specialisation is not offered in a double degree course.
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E3001 Bachelor of Engineering (Honours)

Specialisation – Robotics and Mechatronics Engineering – *Artificial intelligence stream*

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	ECE2131 Electrical circuits	MEC2402 Design methods	ECE2071 Computer organisation and programming	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	ENG2005 Advanced engineering mathematics	TRC2201 Mechanics	ECE2072 Digital systems	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	ECE3161 Analogue electronics	TRC3200 Dynamical systems	TRC3500 Sensors and artificial perception	Engineering minor or level 3 or 4 robotics and mechatronics engineering technical elective
	2	TRC3600 Modelling and control	ECE4078 Intelligent robotics	ECE4179 Neural networks and deep learning	Engineering minor or level 3 or 4 robotics and mechatronics engineering technical elective
4	1	ENG4701 Final year project A	TRC4800 Robotics	ECE4076 Computer vision	Engineering minor or level 3, 4 or 5 robotics and mechatronics engineering technical elective
	2	ENG4702 Final year project B	TRC4002 Professional practice	ECE4191 Engineering integrated design	Engineering minor or level 3, 4 or 5 robotics and mechatronics engineering technical elective

Malaysia students enrol in
[ENG0002](#) Industrial training (0 credit points)

Clayton students enrol in
[ENG0001](#) Continuous Professional Development (0 credit points)

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E3001 Bachelor of Engineering (Honours)

Specialisation – Robotics and Mechatronics Engineering – Automation stream

Year	Sem	Units			
1	1	Common first year			
	2				
2	1	ECE2131 Electrical circuits	MEC2402 Design methods	ECE2071 Computer organisation and programming	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	ENG2005 Advanced engineering mathematics	TRC2201 Mechanics	ECE2072 Digital systems	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
3	1	ECE3161 Analogue electronics	TRC3200 Dynamical systems	TRC3500 Sensors and artificial perception	Engineering minor or level 3 or 4 robotics and mechatronics engineering technical elective
	2	TRC3600 Modelling and control	TRC3000 Automation project	TRC4802 Thermo-fluids and power systems	Engineering minor or level 3 or 4 robotics and mechatronics engineering technical elective
4	1	ENG4701 Final year project A	TRC4800 Robotics	TRC4200 Engineering cyber-physical systems	Engineering minor or level 3, 4 or 5 robotics and mechatronics engineering technical elective
	2	ENG4702 Final year project B	TRC4002 Professional practice	TRC4902 Mechatronics and manufacturing	Engineering minor or level 3, 4 or 5 robotics and mechatronics engineering technical elective

Malaysia students enrol in
[ENG0002](#) Industrial training (0 credit points)

Clayton students enrol in
[ENG0001](#) Continuous Professional Development (0 credit points)

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E3001 Bachelor of Engineering (Honours)

Specialisation – Software engineering

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	FIT2085 Introduction to computer science for engineers	MAT1830 Discrete mathematics for computer science	FIT2099 Object-oriented design and implementation	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	FIT2101 Software engineering process and management	FIT2004 Algorithms and data structures	FIT2107 Software quality and testing	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
3	1	FIT3159 Computer architecture	FIT3077 Software engineering: Architecture and design	FIT3170 Software engineering practice (12 points)	Level 3 or 4 software engineering technical elective	
	2	FIT2100 Operating systems	FIT3171 Databases		Level 3 or 4 software engineering technical elective	
4	1	FIT4002 Software engineering industry experience studio project (12 points)	FIT4003 Software engineering research project <i>Replace with FIT4701 from 2023</i>	FIT4165 Computer networks	Level 3, 4 or 5 software engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2		<i>Replace with FIT4702 from 2023</i>	Level 4 or 5 software engineering core elective	Level 3, 4 or 5 software engineering technical elective	

Notes:

- [MINORS AND ELECTIVES LIST](#) is located on the Faculty's current student course information webpage.
- The placement of units may be rearranged to support sequencing for double degree courses but care should be taken to ensure sequenced units are maintained in sequence.
- Engineering minors are not available within the Software engineering specialisation.
- You are required to complete either the [Continuous Professional Development](#) (if you studying in Australia) or [Industrial training](#) (if you are studying in Malaysia) in order to graduate. For enrolment advice, please speak with a course adviser in your specialisation. Refer to the [Course Advisers webpage](#) if you are in Clayton.

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E3001 Bachelor of Engineering (Honours)

Specialisation – Software engineering – *Industry-based learning*

Year	Sem	Units				
1	1	Common first year				
	2					
2	1	FIT2085 Introduction to computer science for engineers	MAT1830 Discrete mathematics for computer science	FIT2099 Object-oriented design and implementation	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)	
	2	FIT2101 Software engineering process and management	FIT2004 Algorithms and data structures	FIT2107 Software quality and testing	FIT2100 Operating systems	
3	1	FIT3159 Computer architecture	FIT3077 Software engineering: Architecture and design	FIT3171 Databases	Level 3 or 4 software engineering technical elective	Level 2 or 3 elective or engineering technical elective (Elective may also be level 1)
	2	FIT4042 Industry based learning (18 points)			*See footnote	Malaysia students enrol in ENG0002 Industrial training (0 credit points)
4	1	FIT3170 Software engineering practice (12 points)	FIT4003 Software engineering research project Replace with FIT4701 from 2023	FIT4165 Computer networks	Level 3, 4 or 5 software engineering technical elective	Clayton students enrol in ENG0001 Continuous Professional Development (0 credit points)
	2		Replace with FIT4702 from 2023	Level 3 or 4 software engineering technical elective	Level 3, 4 or 5 software engineering technical elective	

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- The placement of units may be rearranged to support sequencing for double degree courses but care should be taken to ensure sequenced units are maintained in sequence.
- Engineering minors are not available within the Software engineering specialisation.
- Depending on placement location when you undertake FIT4042, you will have to either overload a semester, undertake a summer unit or extend an additional semester in order to complete your course.
- You are required to complete either the [Continuous Professional Development](#) (if you studying in Australia) or [Industrial training](#) (if you are studying in Malaysia) in order to graduate.
- For enrolment advice, please speak with a course adviser in your specialisation. Refer to the [Course Advisers webpage](#) if you are in Clayton.