MONASH University

Course progression map for 2022 commencing students

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 does not substitute for the list of required units as described in the course 'Requirements' section of the Handbook. Please note that the map is subject to updates. Update version: 26 August 2021

E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Common first year

If no foundation units are required:				
YEAR 1 Semester 1	ENG1014 Engineering numerical analysis	ENG1005 Engineering mathematics *Required: ENG1090 **	Science unit	Science unit
YEAR 1 Semester 2	ENG1012 Engineering design	ENG1013 Engineering smart systems	Science unit	Science unit
YEAR 2 Semester 1	ENG1011 Engineering methods	First Year engineering technical elective	Science unit	Science unit
Tip: You can swap the semester of ENG1013 and your Engineering elective unit.				

If you need to enrol in foundation physics and maths*:					
YEAR 1 Semester 1	PHS1001 Foundation physics* *Corequisite: ENG1090 **	ENG1090 Foundation mathematics*	Science unit	Science unit	
YEAR 1 Semester 2	ENG1012 Engineering design	ENG1005 Engineering mathematics	Science unit	Science unit	
YEAR 2 Semester 1	ENG1011 Engineering methods	ENG1014 Engineering numerical analysis	Science unit	Science unit	ENG1013 Engineering smart systems
1. If you require two foundation units, you will need to take the remaining core unit ENG1013 Engineering smart systems in semester one of year two as an overload, and increase the total credit points needed for the double by 6 points. Tip: You can swap the semesters of ENG1013 and ENG1005.					

If you need to enrol in foundation maths:				
YEAR 1 Semester 1	ENG1012 Engineering design	ENG1090 Foundation mathematics*	Science unit	Science unit
YEAR 1 Semester 2	ENG1014 Engineering numerical analysis	ENG1005 Engineering mathematics *Required: ENG1090 **	Science unit	Science unit
YEAR 2 Semester 1	ENG1011 Engineering methods	ENG1013 Engineering smart systems	Science unit	Science unit
Tip: You can swap the semesters of ENG1013 and ENG1005.				

If you need to enrol in foundation physics:				
YEAR 1 Semester 1	ENG1012 Engineering design	PHS1001 Foundation physics*	Science unit	Science unit
YEAR 1 Semester 2	ENG1014 Engineering numerical analysis	ENG1005 Engineering mathematics *Required: ENG1090 **	Science unit	Science unit
YEAR 2 Semester 1	ENG1011 Engineering methods	ENG1013 Engineering smart systems	Science unit	Science unit
Tip: You can swap the semesters of ENG1013 and ENG1005.				

NOTE:

- * Foundation units: You enrol in the foundation units ENG1090 and/or PHS1001 if you have not completed the Australian Year 12 equivalent to Specialist mathematics and/or Physics with the required study score.
- For enrolment advice, please refer to the Course advisers webpage.

Source: *Monash University 2022 Handbook* –http://www.monash.edu.au/pubs/2020handbooks/maps/map-e3007.pdf
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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Aerospace Engineering

	Bachelor of Aerospace Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	MAE2402 Thermodynamics and gas dynamics	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	MAE2401 Aerospace structures and materials	MAE2412 Aerospace design	Level three science major unit	Science elective	
YEAR 3 Semester 2	MAE2404 Aerodynamics I	MAE2505 Aerospace dynamics	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	MAE3401 Aerodynamics 2	MAE3404 Flight vehicle dynamics	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	MAE3411 Aerospace structural mechanics	MAE3405 Flight vehicle propulsion *Unit title change from 2022*	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	ENG4701 Final year project A	MAE4410 Flight vehicle design	MAE4416 Orbital mechanics and spaceflight dynamics	MAE3456 Aerospace computational mechanics	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	ENG4702 Final year project B	MAE4404 Aerospace practices *Unit title change from 2023*	MAE4426 Finite element analysis and composite materials	MAE3408 Aerospace control	

NOTE:

- **MAE2505** - If you have completed MAE2505 as a First Year technical elective, you must replace the core with another unit from the aerospace engineering technical electives list.
- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Chemical Engineering

	Bachelor of Chemical Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	CHE2161 Mechanics of fluids	CHE2163 Heat and mass transfer	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	CHM1011 Chemistry 1 (if not already completed at level 1) or CHM1051 Chemistry 1 Advanced	CHE2164 Thermodynamics 1	Level three science major unit	Science elective	
YEAR 3 Semester 2	CHE2162 Materials and energy balances	ENG2005 Advanced engineering mathematics	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	CHE3161 Chemistry and chemical thermodynamics	CHE3165 Separation processes	Level three science major unit	Level two or three science elective	CHE3167 Transport phenomena and numerical methods (for students planning to enrol in CHE4164)
YEAR 4 Semester 2	CHE3166 Process design	CHE3164 Reaction engineering	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	CHE4164 Integrated industrial project (18 points) For selected students taking a period of integrated industrial training in the first semester of their final year. This will replace the three core units below [CHE4181, CHE4182 and CHE4161]				ENG0001 Continuous Professional Development (0 credit points)
OR					
YEAR 5 Semester 1	ENG4701 Final year project A	CHE4162 Particle technology	CHE4161 Engineer in society	CHE3167 Transport phenomena and numerical methods	
YEAR 5 Semester 2	ENG4702 Final year project B	CHE4170 Design project		CHE3162 Process control	

NOTE:

- **CHM1011 or CHM1051** - If you have completed either unit as a First Year technical elective, you must replace the core with another unit from the chemical engineering technical electives list.
- If you choose CHE4164 and depending on placement location, you may have to overload a semester or extend an additional semester in order to complete your course requirement.
- You should not overload in the semester of undertaking CHE4170.
- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Civil Engineering

	Bachelor of Civil Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	Science elective	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	CIV2282 Transport and traffic engineering	CIV2263 Water systems	CIV2206 Structural mechanics	Level three science major unit	
YEAR 3 Semester 2	CIV2242 Geomechanics 1	CIV2235 Structural materials	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	CIV3285 Engineering hydrology	CIV3294 Structural design	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	CIV3247 Geomechanics 2	CIV3221 Building structures and technology	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	CIV3248 Groundwater and environmental geomechanics	ENG4701 Final year project A	CIV4286 Project management for civil engineers	CIV4280 Bridge design and assessment	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	CIV3283 Road engineering	CIV4212 Civil engineering practice 4	CIV4287 Road engineering	CIV4288 Water treatment	

NOTE:

- Engineering minors are not available in the Engineering double degree courses.
- 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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Course progression map for 2022 commencing students

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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Electrical and Computer Systems Engineering

	Bachelor of Electrical and Computer Systems Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	ECE2072 Digital systems	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	ECE2071 Computer organisation and programming	ECE2131 Electrical circuits	Level three science major unit	Science elective	
YEAR 3 Semester 2	ECE2111 Signals and systems	ECE2191 Probability models in engineering	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	ECE3073 Computer systems	ECE3141 Information and networks	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	ECE3121 Engineering electromagnetics	ECE4132 Control system design	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	ENG4701 Final year project A	ECE3161 Analogue electronics	ECE3051 Electrical energy systems	ECSE technical elective at level 4	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	ENG4702 Final year project B	ECE4191 Engineering integrated design	ECSE technical elective at level 4	ECE4099 Professional Practice	

NOTE:

- **ECE2071 or ECE2072** - If you have completed either unit as a First Year elective, you must replace the core with another unit from the electrical and computer systems engineering technical electives list.
- Engineering minors are not available in the Engineering double degree courses
- 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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Course progression map for 2022 commencing students

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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Environmental Engineering

	Bachelor of Environmental Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	CHE2162 Material and energy balances	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	ENE2021 Energy and the environment	CIV2263 Water systems	Level three science major unit	Science elective	
YEAR 3 Semester 2	CHE2164 Thermodynamics 1	ENE2503 Materials properties and recycling	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	CIV3248 Groundwater and environmental geomechanics	ENE3031 Building sustainability	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	ENE3606 The air environment	ENE3032 Fate and transport of contaminants	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	CIV4210 Project A	BTX3100 - Sustainability regulation for business	CIV3285 Engineering hydrology	ENE4042 Environment impact and risk assessment	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	Environmental engineering elective at level 4	CIV4286 Project management for civil engineers	CIV4212 Civil and environmental engineering practice	ENE4041 Soil remediation and solid waste management	

NOTE:

- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Materials Engineering

	Bachelor of Materials Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	MTE2201 Polymers	ENG2005 Advanced engineering mathematics	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	MTE2101 Atomic-scale structure of materials	MTE2102 Phase equilibria and phase transformations	MTE2103 Mechanical properties of materials	Level three science major unit	
YEAR 3 Semester 2	MTE2202 Functional materials 1	MTE3203 Ceramics	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	MTE3101 Materials in a complex world 1: Data and modelling	MTE3103 Materials life-cycle	MTE3102 Structural materials	Level two or three science elective	
YEAR 4 Semester 2	MTE3201 Materials in a complex world 2: Characterisation, identification and selection	MTE3202 Functional materials 2	Science elective	Level two or three science elective	
YEAR 5 Semester 1	ENG4701 Final year project A	MTE4101 Materials in a complex world 3: Design, build and create	MTE4102 Advanced materials processing and manufacturing	Level three science major unit	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	ENG4702 Final year project B	MTE4201 Materials in a complex world 4: Impact in society	Materials technical elective at level 4 or above	Level three science major unit	

NOTE:

- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Mechanical Engineering

	Bachelor of Mechanical Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	Science elective	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	MEC2402 Design methods	MEC2403 Mechanics of materials	MEC2401 Dynamics I	Level three science major unit	
YEAR 3 Semester 2	MEC2404 Mechanics of fluids	MEC2405 Thermodynamics	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	MEC3455 Solid Mechanics	MEC3456 Engineering computational analysis	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	MEC3416 Machine design	MEC3457 Systems and control	Level three science major unit	Level two or three science elective	
YEAR 5 Semester 1	ENG4701 Final year project A	MEC4408 Thermodynamics and heat transfer	MEC3451 Fluid Mechanics 2	MEC4404 Professional practice	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	ENG4702 Final year project B	MEC4426 Computer-aided design	MEC3453 Dynamics 2	MEC4407 Design project	

NOTE:

- **MEC2404** - If you have completed MEC2404 as a First Year elective, you must replace the core with another unit from the mechanical engineering technical electives list.
- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation – Robotics and Mechatronics Engineering

	Bachelor of Robotics and Mechatronics Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	ENG2005 Advanced engineering mathematics	Science elective	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	ECE2071 Computer organisation and programming	MEC2402 Design methods	ECE2131 Electrical circuits	Level three science major unit	
YEAR 3 Semester 2	TRC2201 Mechanics	ECE2072 Digital systems	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 1	TRC3500 Sensors and artificial perception	TRC3200 Dynamical systems	Level three science major unit	Level two or three science elective	
YEAR 4 Semester 2	TRC3600 Modelling and control	**Automation stream** TRC3000 Automation project **Artificial intelligence stream** TRC4002 Professional practice	Level three science major unit	Level two or three science elective	

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YEAR 5 Semester 1	ENG4701 Final year project A	TRC4800 Robotics	ECE3161 Analogue electronics	**Automation stream** TRC4200 Engineering cyber-physical systems **Artificial intelligence stream** ECE4076 Computer vision	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	ENG4702 Final year project B	**Automation stream** TRC4902 Mechatronics and manufacturing **Artificial intelligence stream** ECE4078 Intelligent robotics	**Automation stream** TRC4802 Thermo-fluids and power systems **Artificial intelligence stream** ECE4179 Neural networks and deep learning	**Automation stream** TRC4002 Professional practice **Artificial intelligence stream** ECE4191 Engineering integrated design	

NOTE:

- **ECE2071 or ECE2072** - If you have completed either unit as a First Year technical elective, you must replace the core with another unit from the robotics and mechatronics engineering technical electives list.
- Engineering minors are not available in the Engineering double degree courses.
- 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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E3007 Bachelor of Engineering (Honours) and Bachelor of Science

Specialisation - Software Engineering

	Bachelor of Software Engineering (Honours)		Bachelor of Science		
YEAR 1 Semester 1	Common first year		Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 1 Semester 2			Level one approved science major sequence 1	Level one approved science sequence 2	
YEAR 2 Semester 1			Level two science major unit	Level one science unit	If two foundation units are required then overload is required for ENG1013 Engineering smart systems
YEAR 2 Semester 2	FIT2085 Introduction to computer science	FIT2101 Software engineering process and management	Level two science major unit	Level two or three science elective	
YEAR 3 Semester 1	MAT1830 Discrete mathematics for computer science	FIT2099 Object-oriented design and implementation	FIT2004 Algorithms and data structures	Level three science major unit	
YEAR 3 Semester 2	FIT2107 Software quality and testing	FIT2100 Operating systems	Level two or three science elective	Level three science major unit	
YEAR 4 Semester 1	FIT3170 Software engineering practice	FIT3077 Software engineering: architecture and design	FIT3159 Computer architecture	Level three science major unit	
YEAR 4 Semester 2		FIT3171 Databases	Science elective	Level three science major unit	
YEAR 5 Semester 1	FIT4165 Computer networks	Software engineering technical elective at level 4 or above	FIT4002 Software engineering industry experience studio project	Level two or three science elective	ENG0001 Continuous Professional Development (0 credit points)
YEAR 5 Semester 2	FIT4003 Software engineering research project			Level two or three science elective	

NOTE:

- **MAT1830 or FIT2085** - If you have completed either unit as a First Year technical elective, you must replace the core with another unit from the software engineering technical electives list.
- Engineering minors are not available in the Engineering double degree courses.
- 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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