

Course progression map for 2021 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: 23 September 2021

E6011 Master of Professional Engineering

Specialisation – Chemical engineering Bioprocessing and food engineering stream

Entry level 1 →	YEAR 1 Semester 1	CHE2163 Heat and mass transfer	CHE2162 Materials and energy balance	CHE3161 Chemistry and chemical thermodynamics	ENG5100 Professional engineer in organisation and society	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	CHE2161 Mechanics of fluids	CHE3164 Reaction engineering	CHE3166 Process design	CHE3162 Process control	
Entry level 2 →	YEAR 2 Semester 1	CHE5110 Advanced thermodynamics	CHE5881 Advanced reaction engineering	Entry level 1 CHE3165 Separations processes	Chemical engineering enhancement unit	
				Entry level 2 ENG5100 Professional engineer in organisation and society		
	YEAR 2 Semester 2	CHE5112 Advanced fluid dynamics	CHE5889 Food engineering and processing	CHE5113 Advanced separation processes	CHE5888 Sustainability and innovation	
	YEAR 3 Semester 1	CHE5884 Process modelling and optimisation	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	Chemical engineering enhancement unit	
YEAR 3 Semester 2	ENG5105 Integrated design	CHE5882 Biomass and biorefineries	ENG5006 Research practice	Chemical engineering enhancement unit		

<input type="checkbox"/> Part A. Engineering foundation knowledge and application	<input type="checkbox"/> Part B. Engineering specialist knowledge and application	<input type="checkbox"/> Enhancement learning
<input type="checkbox"/> Part D. Research and knowledge skills	<input type="checkbox"/> Part E. Professional practice	

Chemical engineering enhancement units

ENG5002 Engineering entrepreneurship <small>No offering in 2022</small>	ENG5008 Work integrated learning
CHE5321 Advanced bioprocess technology	MEC5888 Renewable energy systems
CHE5322 Advanced biochemical engineering	MTE5882 Advanced polymeric materials
CHE5883 Nanostructured membranes for separation and energy production	MTE5887 Additive manufacturing of polymeric and functional materials
CHE5886 Advanced biopolymers	

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E6011 Master of Professional Engineering

Specialisation – Chemical engineering

Engineering design stream

Entry level 1 →	YEAR 1 Semester 1	CHE2163 Heat and mass transfer	CHE2162 Materials and energy balance	CHE3161 Chemistry and chemical thermodynamics	ENG5100 Professional engineer in organisation and society	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	CHE2161 Mechanics of fluids	CHE3164 Reaction engineering	CHE3166 Process design	CHE3162 Process control	
Entry level 2 →	YEAR 2 Semester 1	CHE5110 Advanced thermodynamics	CHE5881 Advanced reaction engineering	Entry level 1 CHE3165 Separations processes	Chemical engineering enhancement unit	
				Entry level 2 ENG5100 Professional engineer in organisation and society		
	YEAR 2 Semester 2	CHE5112 Advanced fluid dynamics	CHE5888 Sustainability and innovation	CHE5113 Advanced separation processes	Chemical engineering enhancement unit	
	YEAR 3 Semester 1	CHE5884 Process modelling and optimisation	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	Chemical engineering enhancement unit	
YEAR 3 Semester 2	ENG5106 Integrated design project (12 points)		ENG5006 Research practice	Chemical engineering enhancement unit		

<input type="checkbox"/> Part A. Engineering foundation knowledge and application	<input type="checkbox"/> Part B. Engineering specialist knowledge and application	<input type="checkbox"/> Enhancement learning
<input type="checkbox"/> Part D. Research and knowledge skills	<input type="checkbox"/> Part E. Professional practice	

Chemical engineering enhancement units

ENG5002 Engineering entrepreneurship <small>No offering in 2022</small>	MEC5888 Renewable energy systems
CHE5883 Nanostructured membranes for separation and energy production	MTE5882 Advanced polymeric materials
CHE5886 Advanced biopolymers	MTE5887 Additive manufacturing of polymeric and functional materials
ENG5008 Work integrated learning	

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E6011 Master of Professional Engineering

Specialisation – Civil Engineering

Structure stream

Entry level 1 →	YEAR 1 Semester 1	CIV2206 Structural mechanics	CIV2282 Transport and traffic engineering	CIV2263 Water systems	CIV3285 Engineering hydrology	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	CIV2242 Geomechanics 1	CIV4286 Project management for civil engineers	CIV2235 Structural materials	CIV3294 Structural design	
Entry level 2 →	YEAR 2 Semester 1	CIV5170 Bridge design and assessment	CIV5178 Advanced water treatment	ENG5100 Professional engineer in organisation and society	CIV5134 Advanced structural analysis	
	YEAR 2 Semester 2	CIV5147 Advanced geomechanics	CIV5121 Building structures and technology	CIV5177 Road engineering <small>Unit title change from 2022</small>	CIV5135 Advanced structural design	
	YEAR 3 Semester 1	ENG5008 Work integrated learning or CIV5899 Infrastructure information management	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	CIV5885 Infrastructure dynamics	
	YEAR 3 Semester 2	ENG5105 Integrated design	CIV5888 Advanced computational methods	ENG5006 Research practice	CIV5887 Infrastructure rehabilitation and monitoring	

<input type="checkbox"/>	Part A. Engineering foundation knowledge and application	<input type="checkbox"/>	Part B. Engineering specialist knowledge and application	<input type="checkbox"/>	Enhancement learning
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E6011 Master of Professional Engineering

Specialisation – Civil Engineering

Transport stream

Entry level 1	YEAR 1 Semester 1	CIV2206 Structural mechanics	CIV2282 Transport and traffic engineering	CIV2263 Water systems	CIV3285 Engineering hydrology	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	CIV2242 Geomechanics 1	CIV4286 Project management for civil engineers	CIV2235 Structural materials	CIV3294 Structural design	
Entry level 2	YEAR 2 Semester 1	CIV5170 Bridge design and assessment	CIV5178 Advanced water treatment	ENG5100 Professional engineer in organisation and society	CIV5302 Traffic engineering and management	
	YEAR 2 Semester 2	CIV5147 Advanced geomechanics	CIV5121 Building structures and technology	CIV5177 Road engineering <i>Unit title change from 2022</i>	CIV5301 Advanced traffic engineering	
	YEAR 3 Semester 1	ENG5008 Work integrated learning or CIV5899 Infrastructure information management	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	CIV5304 Intelligent transport systems	
	YEAR 3 Semester 2	ENG5105 Integrated design	CIV5888 Advanced computational methods	ENG5006 Research practice	CIV5314 Planning urban transport systems	

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|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
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E6011 Master of Professional Engineering

Specialisation – Civil Engineering

Water stream

Entry level 1	YEAR 1 Semester 1	CIV2206 Structural mechanics	CIV2282 Transport and traffic engineering	CIV2263 Water systems	CIV3285 Engineering hydrology	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	CIV2242 Geomechanics 1	CIV4286 Project management for civil engineers	CIV2235 Structural materials	CIV3294 Structural design	
Entry level 2	YEAR 2 Semester 1	CIV5170 Bridge design and assessment	CIV5178 Advanced water treatment	ENG5100 Professional engineer in organisation and society	CIV5881 Ground water hydraulics	
	YEAR 2 Semester 2	CIV5147 Advanced geomechanics	CIV5121 Building structures and technology	CIV5177 Road engineering <small>Unit title change from 2022</small>	CIV5882 Flood hydraulics and hydrology	
	YEAR 3 Semester 1	ENG5008 Work integrated learning or CIV5899 Infrastructure information management	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	CIV5884 Water sensitive stormwater design	
	YEAR 3 Semester 2	ENG5105 Integrated design	CIV5888 Advanced computational methods	ENG5006 Research practice	CIV5883 Surface water hydrology	

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E6011 Master of Professional Engineering

Specialisation – Electrical engineering

Entry level 1 →	YEAR 1 Semester 1	ECE2131 Electrical circuits	ECE3141 Information and networks	ECE3051 Electrical energy systems	ENG5001 Advanced engineering data analysis	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	ECE2072 Digital systems	ECE3121 Engineering electromagnetics	ECE2111 Signals and systems	ECE4132 Control system design	
Entry level 2 →	YEAR 2 Semester 1	ECE5883 Advanced signal processing	Entry level 1 ECE3161 Analogue electronics	ENG5100 Professional engineer in organisation and society	Electrical engineering enhancement units (Complete 24 points): ECE5143 Optical communications ECE5145 Network performance ECE5146 Multimedia technologies ECE5153 Power system analysis ECE5156 Advanced power electronics ECE5176 Computer vision ECE5178 Intelligent robotics ECE5179 Neural networks and deep learning ENG5008 Work integrated learning MEC5882 Instrumentation, sensing and monitoring MTE5884 Advanced photovoltaics and energy storage	
			Entry level 2 ENG5001 Advanced engineering data analysis			
	YEAR 2 Semester 2	ECE5122 Advanced electromagnetics	ECE5884 Wireless communications	ECE5886 Smart grids		
	YEAR 3 Semester 1	ECE5155 Power electronic converters	ECE5881 Real-time system design	ENG5005 Research methods		
YEAR 3 Semester 2	ENG5105 Integrated design	ECE5882 Advanced electronic design	ENG5006 Research practice			

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E6011 Master of Professional Engineering

Specialisation – Materials engineering

Entry level 1	YEAR 1 Semester 1	MTE2102 Phase equilibria and phase transformations	MTE2103 Mechanical properties of materials	ENG5001 Advanced engineering data analysis	ENG5100 Professional engineer in organisation and society	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	MTE2202 Functional materials 1	MTE3545 Functional materials and devices	MTE3546 Polymers and ceramics 2	MTE4596 Biomaterials 2	
Entry level 2	YEAR 2 Semester 1	MTE5882 Advanced polymeric materials	Entry level 1 MTE3102 Plasticity of metals and alloys	Entry level 1 MTE4102 Advanced materials processing and manufacturing	Materials engineering enhancement units (Complete 24 points): CHE5883 Nanostructured membranes for separation and energy production ENG5008 Work integrated learning MEC5885 Energy efficiency and sustainability engineering MEC5891 Design for additive manufacturing MTE5190 Advanced materials modelling MTE5193 Materials and sustainability MTE5194 Engineering alloy design, processing and selection MTE5887 Additive manufacturing of polymeric and functional materials	
			Entry level 2 ENG5001 Advanced engineering data analysis	Entry level 2 ENG5100 Professional engineer in organisation and society		
	YEAR 2 Semester 2	MTE5885 Biomaterials and biomechanics	MTE5883 Environmental durability and protection of metals and engineering materials	MTE5881 Applied crystallography in advanced materials characterisation		
	YEAR 3 Semester 1	MTE5197 Engineering with nanomaterials	MTE5884 Advanced photovoltaics and energy storage	ENG5005 Research methods		
	YEAR 3 Semester 2	ENG5105 Integrated design	MTE5886 Additive manufacturing of metallic materials	ENG5006 Research practice		

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Specialisation – Mechanical engineering

Entry level 1 →	YEAR 1 Semester 1	MEC2402 Design methods	MEC2403 Mechanics of materials	MEC3455 Solid mechanics	MEC3456 Engineering computational analysis	ENG0003 Continuous Professional Development
	YEAR 1 Semester 2	MEC3416 Machine design	MEC3453 Dynamics 2	MEC3457 Systems and control	TRC4802 Thermo-fluids and power systems	
Entry level 2 →	YEAR 2 Semester 1	MEC5883 Mechanical systems design	ENG5001 Advanced engineering data analysis	ENG5100 Professional engineer in organisation and society	Mechanical engineering enhancement units (Complete 24 points): ENG5002 Engineering entrepreneurship <small>No offering in 2022</small> ENG5008 Work integrated learning MEC5891 Design for additive manufacturing MEC5897 Lean manufacturing MTE5883 Environmental durability and protection of metals and engineering materials MTE5885 Biomaterials and biomechanics MTE5886 Additive manufacturing of metallic materials MTE5887 Additive manufacturing of polymeric and functional materials	
	YEAR 2 Semester 2	MEC5881 Engineering systems performance analysis	MEC5888 Renewable energy systems	MEC5156 Advanced robotics in manufacturing		
	YEAR 3 Semester 1	MEC5882 Instrumentation, sensing and monitoring	MEC5885 Energy efficiency and sustainability engineering	ENG5005 Research methods		
	YEAR 3 Semester 2	ENG5105 Integrated design	MEC5884 Sustainable engineering systems	ENG5006 Research practice		

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