MONASH University

Course progression map for 2023 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 should be used in conjunction with the requirements of the course as specified in the Handbook. Please note that the map is subject to updates. Update version: 15 September 2023

E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Chemical engineering

Bioprocessing and food engineering stream

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	
YEAR 2 Semester 1	CHE5110 Advanced thermodynamics	CHE5881 Advanced reaction engineering	CHE3165 Separations processes	Chemical engineering enhancement unit	
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	

Part A. Engineering foundation knowledge and application
Part B. Engineering specialist knowledge and application
Enhancement learning
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Part E. Professional practice

Chemical engineering enhancement units

ENG5002 Engineering entrepreneurship *No offering in 2023*
CHE5321 Advanced bioprocess technology
CHE5322 Advanced biochemical engineering
CHE5883 Nanostructured membranes for separation and energy production
CHE5886 Advanced biopolymers
ENG5008 Work integrated learning
MEC5888 Renewable energy systems
MTE5882 Advanced polymeric materials
MTE5887 Additive manufacturing of polymeric and functional materials

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E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Chemical engineering

Engineering design stream

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	
YEAR 2 Semester 1	CHE5110 Advanced thermodynamics	CHE5881 Advanced reaction engineering	CHE3165 Separations processes	Chemical engineering enhancement unit	
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	

Part A. Engineering foundation knowledge and application
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Chemical engineering enhancement units

ENG5002 Engineering entrepreneurship *No offering in 2023*
CHE5883 Nanostructured membranes for separation and energy production
CHE5886 Advanced biopolymers
ENG5008 Work integrated learning
MEC5888 Renewable energy systems
MTE5882 Advanced polymeric materials
MTE5887 Additive manufacturing of polymeric and functional materials

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E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Civil Engineering

Structure stream

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	
YEAR 2 Semester 1	CIV5170 Bridge design and assessment	CIV5178 Advanced water treatment	ENG5100 Professional engineer in organisation and society	CIV5899 Infrastructure information management	
YEAR 2 Semester 2	CIV5147 Advanced geomechanics	CIV5121 Building structures and technology	CIV5177 Advanced road engineering	CIV5136 Structural analysis	
YEAR 3 Semester 1	ENG5008 Work integrated learning *or* ENG5200 Engineering project risk 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	

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E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Civil Engineering

Transport stream

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	
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 Advanced road engineering	CIV5304 Intelligent transport systems Replace with CIV5305 from 2024	
YEAR 3 Semester 1	ENG5008 Work integrated learning *or* ENG5200 Engineering project risk management	ENG5001 Advanced engineering data analysis	ENG5005 Research methods	CIV5899 Infrastructure information management	
YEAR 3 Semester 2	ENG5105 Integrated design	CIV5888 Advanced computational methods	ENG5006 Research practice	CIV5314 Planning urban transport systems	

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E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Civil Engineering

Water stream

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	
YEAR 2 Semester 1	CIV5170 Bridge design and assessment	CIV5178 Advanced water treatment	ENG5100 Professional engineer in organisation and society	CIV5899 Infrastructure information management	
YEAR 2 Semester 2	CIV5147 Advanced geomechanics	CIV5121 Building structures and technology	CIV5177 Advanced road engineering	CIV5882 Flood hydraulics and hydrology	
YEAR 3 Semester 1	ENG5008 Work integrated learning *or* ENG5200 Engineering project risk 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 – 3 years program [Entry level 1]

Specialisation – Electrical engineering

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 Replace with ECE3122 in 2024	ECE2111 Signals and systems	ECE4132 Control system design	
YEAR 2 Semester 1	ECE5883 Advanced signal processing	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	
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 – 3 years program [Entry level 1]

Specialisation – Materials engineering

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 *or* MTE2201 Polymers	MTE3202 Functional materials 2	MTE3203 Introduction to ceramics: Properties, processing and applications	MTE4596 Biomaterials 2	
YEAR 2 Semester 1	MTE5882 Advanced polymeric materials	MTE3102 Plasticity of metals and alloys	MTE4102 Advanced materials processing and manufacturing	Materials engineering enhancement units (Complete 24 points): CHE5883 Nanostructured membranes for separation and energy production; CHE5886 Advanced biopolymers; CHE5888 Sustainability and innovation; ENG5008 Work integrated learning; MEC5884 Sustainable engineering systems; MEC5885 Energy efficiency and sustainability engineering; MEC5891 Design for additive manufacturing; MEC5897 Lean manufacturing; MTE5190 Advanced materials modelling; MTE5193 Materials and sustainability; MTE5194 Engineering alloy design, processing and selection; MTE5197 Engineering with nanomaterials	
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	MTE5887 Additive manufacturing of polymeric and functional materials	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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E6011 Master of Professional Engineering – 3 years program [Entry level 1]

Specialisation – Mechanical engineering

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	
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 *No offering in 2023* ENG5008 Work integrated learning MEC5891 Design for additive manufacturing MEC5897 Lean manufacturing MTE5193 Materials and sustainability MTE5882 Advanced polymeric materials MTE5883 Environmental durability and protection of metals and engineering materials MTE5884 Advanced photovoltaics and energy storage 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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