

## CHECKLIST Bachelor of Engineering (Honours) – Civil Engineering Specialisation : Transition to new program (commencing 2025)

\* This checklist is for the BE(Hons) component ONLY for dual programs with Bachelor of Mathematics and Bachelor of Science

### Important Notes:

- The information contained in this document is intended as general advice only. Students must follow the program rules & requirements listed on the [Programs and Courses Website](#) relevant to the year they commence. This planner must be used in conjunction with your program duration course list and program rules.
- Students need to check future course offerings, prerequisites, incompatibilities and restrictions for all courses as these are subject to change.
- Students cannot take courses that are incompatible with courses already counted towards their program, and cannot count the same course twice.
- Please contact the relevant Faculty for information regarding the other component of your dual program.

For the BE(Hons) component, with a specialisation in Civil Engineering:

(a) 60 units from the BE(Hons) component, comprising—

- I. 8 units for all [BE\(Hons\) Core Courses](#); and
- II. 36 units for one [Specialisation in Civil Engineering](#); and
- III. One of the following:
  - a. 16 units for one Major from Civil Engineering Major Options\*, or  
\*Majors available in: [Environmental Engineering](#); [Geotechnical Engineering](#); [Mining Engineering](#); [Structural Engineering](#); [Transport Engineering](#); [Water and Marine Engineering](#)
  - b. 16 units for Civil Engineering Minor Options\*\*, or  
\*\*Minors available in: [Computing](#), [Data Science](#), [Design](#)
  - c. 16 units for Civil Engineering Specialisation [No Major option](#)

✓/x compl.	BE(Hons) Core Courses (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
8 units for all Core Courses						
	<b>ENGG1100</b> Professional Engineering	1,2	2		Course must be completed [ENGG1211 (4 units) will count as 2 units towards Part A in lieu of ENGG1100, and 2 units towards program electives]	
	<b>ENGG1001</b> Programming for Engineers or <b>CSSE1001</b> Introduction to Software Engineering	1,2 1,2	2 2		Course must be completed	
	<b>MATH1051</b> Calculus and Linear Algebra I or <b>MATH1071</b> Advanced Calculus & Linear Algebra I	1,2 1	2 2		Course must be completed	
	<b>MATH1052</b> Multivariate Calculus & Ordinary Differential Equations or <b>MATH1072</b> Advanced Multivariate Calculus & Ordinary Differential Equations	1,2 2	2 2		Course must be completed	

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## Specialisation in Civil Engineering

Complete 36 units comprising:

- 28 units for all [Civil Engineering Compulsory Courses](#), and
- 2 to 4 units from [Civil Engineering Research Courses](#), and
- 2 to 4 units from [Civil Engineering Advanced Elective Courses](#), and
- 2 units from [BE\(Hons\) Program Elective Courses](#)

✓/X compl.	Specialisation Civil Engineering (36 units)	Sem offering	#	First offered	Approved substitution	Last offered
28 units for all Compulsory Courses						
	ENGG1700 Statics and Materials	1,2	2		ENGG1400 Engineering Mechanics: Statics and Dynamics (discontinued)	2/20
	CIVL2131 Environmental Fluid Mechanics	1	2		Course must be completed	
	CIVL2135 Introduction to Environmental Engineering	1	2		CIVL2135 Environmental Issues and Sustainability in Engineering	
	CIVL2210 Soil Mechanics	2	2		Course must be completed	
	CIVL2330 Structural Mechanics	1	2		Course must be completed	
	CIVL2420 Fundamentals of Transport Engineering	2	2		CIVL2410 Sustainable Transport Engineering - Traffic Analysis (discontinued)	1/21
	CIVL2530 Statistics and Data Analysis	1	2		CIVL2530 Probability and Statistics in Engineering	
	CIVL3155 Hydrology and Free Surface Flows	2	2		CIVL3141 Hydrology and Hydrological Risk (discontinued) and CIVL3140 Hydraulics of Engineered and Natural Waterways (discontinued)  [Both courses are required to have been completed to exempt students from CIVL3155; therefore 2 units will count as a Compulsory Course and 2 units will count towards Civil Engineering Advanced Electives]	2/21 1/21
	CIVL3210 Geotechnical Engineering	1	2		Course must be completed	
	CIVL3360 Reinforced Concrete Design	2	2		CIVL2360 Design of Concrete Structures (discontinued)	2/21
	CIVL3520 Project Management and Professional Practice	2	2		CIVL3510 Project Management with Building Information Modelling (discontinued) OR ENGG4900 Professional Practice and the Business Environment (discontinued)	2/22 2/23
	CIVL3530 Data Analytics in Civil Engineering	1	2		Course must be completed	
	CIVL4170 Risk Analysis in Civil Engineering	1	2		Course must be completed	
	CIVL4518 Integrated Design for the Built Environment OR CIVL4516 Integrated Design for the Natural Environment	2 1	2 2	2/24	CIVL4514 Integrated Design (discontinued) OR CIVL4516 Integrated Design for Environmental Management If both courses are completed, 2 units will count as a Compulsory Course and 2 units will count towards Civil Engineering Advanced Electives	1/23

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2 to 4 units from Civil Engineering Research Courses						
	<b>CIVL4600</b> Research Project	1,2	2		<b>CIVL4560</b> Project (discontinued)	<b>2/22</b>
	<b>CIVL4604</b> Research Thesis	1	4		<b>CIVL4580</b> Research Thesis (discontinued)	<b>2/20</b>
	<b>OR</b>				<b>OR</b>	
	<b>CIVL4606</b> Research Thesis	2	4		<b>CIVL4583</b> Research Thesis (discontinued)	<b>2/22</b>
					<b>OR</b>	<b>1/21</b>
					<b>CIVL4582</b> Research Thesis (discontinued)	
					<b>OR</b>	<b>1/23</b>
					<b>CIVL4584</b> Research Thesis (discontinued)	

[2 to 4 units from Civil Engineering Advanced Elective Courses](#)

2 units from BE(Hons) Program Elective Courses

## Civil Engineering No Major Option

Complete 16 units comprising -

- i. 8 to 16 units from [Civil Engineering Advanced Elective Courses](#); and
- ii. 0 to 8 units from any [Civil Engineering Breadth Elective Courses](#); and
- iii. 0 to 4 units from [BE\(Hons\) Program Elective Courses](#); and
- iv. 0 to 4 units from [General Elective Courses](#).

✓/x compl.	Civil Engineering No Major (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	<a href="#">8 to 16 units from Civil Engineering Advanced Elective Courses</a>					

0 to 8 units from Civil Engineering Breadth Elective Courses						
	<b>MATH2001</b> Calculus and Linear Algebra II	1,2	2		<b>MATH2000</b> Calculus and Linear Algebra II (discontinued)	2/20
	<b>Civil Engineering Breadth Electives</b> can also be chosen from course lists for the following majors: <ul style="list-style-type: none"> <li><a href="#">Environmental Engineering</a></li> <li><a href="#">Geotechnical Engineering</a></li> <li><a href="#">Mining Engineering</a></li> <li><a href="#">Structural Engineering</a></li> <li><a href="#">Transport Engineering</a></li> <li><a href="#">Water and Marine Engineering</a></li> </ul> <i>Courses on this list may require pre-requisites. Please seek academic advice if required.</i>					

0 to 4 units from BE(Hons) Program Elective Courses
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0 to 4 units from General Elective Courses.
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## Environmental Engineering Major Option

Complete 16 units comprising:

- i. 8 units for all [Environmental Engineering Compulsory Courses](#), and
- ii. 4 to 8 units from [Environmental Engineering Elective Courses](#), and
- iii. 0 to 4 units from [Environmental Engineering Research Elective Courses](#), and
- iv. 0 to 4 units from [Environmental Engineering Breadth Elective Courses](#), and
- v. 0 to 4 units from [Chemical Engineering Advanced Elective Courses](#), and
- vi. 0 to 4 units from [Civil Engineering Advanced Elective Courses](#)

✓/X compl.	Major in Environmental Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	8 units for all Environmental Engineering Compulsory Courses					
	ENVE2501 Environmental Systems	2	2		CHEE2501 Environmental Systems Engineering I: Processes (discontinued)	2/20
	ENVE3150 Environmental System Dynamics and Modelling	2	2		CIVL3150 Modelling of Environmental Systems (discontinued)	2/20
	ENVE3160 Environmental Phenomena	1	2		Course must be completed	
	ENVE4610 Engineering the Circular Economy	1	2	1/24	Course must be completed	

	4 to 8 units from Environmental Engineering Elective Courses					
	CIVL3430 Sustainable Transport Engineering	1	2	1/24	CIVL3420 Sustainable Transport Engineering – Planning and Design (discontinued)	1/23
	CIVL4145 Groundwater Modelling and Management	2	2		CIVL4140 Contaminant Transport Modelling (discontinued)	1/21
	CIVL4525 Sustainable Infrastructure Design	2	2		CIVL4180 Sustainable Built Environment (discontinued)	1/20
	CIVL6111 Ocean, Coastal and Estuarine Engineering	2	2		CIVL4110 Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	2/21
	CIVL6112 Hydro and Marine Power Renewable Energy Systems	2	2		CIVL4110 Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	2/21
	CIVL6121 Environmental Hydraulics and Flood Management	1	2		CIVL4120 Advanced Hydraulic Engineering and Structures (discontinued)	2/20
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVM3103 Regulatory Frameworks for Environmental Management and Planning	1	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)	2/22
	WATR6105 Integrated Urban Water Management	1	2		WATR7105 Integrated Urban Water Management (discontinued)	1/20

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	<b>WATR6106</b> Emerging Issues in the Urban Water Cycle and Public Water	2	2		<b>WATR7106</b> Emerging Issues in the Urban Water Cycle and Public Water (discontinued)	<b>1/20</b>
	<b>WATR6108</b> Advanced Unit Operations in Water Management	1	2		<b>WATR7108</b> Advanced Unit Operations in Water Management (discontinued)	<b>1/20</b>
	<b>WATR6109</b> Drinking Water Supply: Source, Treatment and Distribution	1	2		<b>WATR7109</b> Drinking Water Supply: Source, Treatment and Distribution (discontinued)	<b>1/20</b>

0 to 4 units from Environmental Engineering Research Elective Courses						
	<b>CHEE4006</b> Research Project	1	2		<b>CHEE4006</b> Individual Inquiry	
	<b>CHEE4007</b> Research Project	2	2		<b>CHEE4007</b> Individual Inquiry	
	<b>CHEE4026</b> Research Thesis OR <b>CHEE4027</b> Research Thesis	1,2 1,2	4 4		<b>CHEE4026</b> Thesis Project OR <b>CHEE4027</b> Thesis Project	

0 to 4 units from Environmental Engineering Breadth Elective Courses						
	<b>CIVL2135</b> Introduction to Environmental Engineering	1	2		<b>CIVL2135</b> Environmental Issues and Sustainability in Engineering	
	<b>ENVM2100</b> Sustainable Development	2	2		<b>ENVM2100</b> Sustainable Development	
	<b>ENVM3201</b> Catchment Processes and Management	1	2		No substitution	
	<b>ERTH1501</b> Earth Processes and Geological Materials for Engineers	1	2		No substitution	
	<b>ERTH2004</b> Structural Geology	2	2		No substitution	
	<b>ERTH3250</b> Groundwater Processes and Resources	2	2		<b>ERTH3250</b> Hydrogeology	
	<b>GEOM1000</b> Fundamentals of Geographic Information and Technologies	2	2		No substitution	
	<b>GEOM2001</b> Geographical Information Systems	1	2		No substitution	
	<b>GEOS1100</b> Environment and Society	1,2	2		No substitution	
	<b>GEOS2100</b> Environmental Systems	1	2		No substitution	
	<b>GEOS3102</b> Global Change: Problems and Prospects	2	2		No substitution	

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0 to 4 units from Chemical Engineering Advanced Elective Courses						
	<b>BIOE3001</b> Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	<b>BIOE4020</b> Bioprocess Engineering	1	2		<b>CHEE4020</b> Bioprocess Engineering (discontinued)	<b>1/21</b>
	<b>BIOE4305</b> Biomaterials: Materials in Medicine	2	2		<b>CHEE4305</b> Biomaterials: Materials in Medicine (discontinued)	<b>2/20</b>
	<b>BIOE6028</b> Metabolic Engineering	2	2		<b>CHEE4028</b> Metabolic Engineering (discontinued)	<b>2/20</b>
	<b>BIOE6034</b> Cell and Tissue Engineering	1	2		<b>CHEE4034</b> Cell & Tissue Engineering (discontinued)	<b>1/20</b>
	<b>CHEE3008</b> Special Topics C	1,2	2		No substitution	
	<b>CHEE3301</b> Polymer Engineering	1	2		No substitution	
	<b>CHEE4003</b> Special Topics A	2	2		No substitution	
	<b>CHEE4009</b> Transport Phenomena	1	2		No substitution	
	<b>ENGY4000</b> Energy Systems	1	2		No substitution	
	<b>ENVE3150</b> Environmental Systems Dynamics and Modelling	2	2		<b>CIVL3150</b> Modelling of Environmental Systems (discontinued)	<b>2/20</b>
	<b>ENVE3160</b> Environmental Phenomena	1	2		No substitution	
	<b>ENVE4610</b> Engineering the Circular Economy	1	2	<b>1/24</b>	No substitution	
	<b>MATE4302</b> Electrochemistry and Corrosion	2	2		<b>CHEE4302</b> Electrochemistry & Corrosion (discontinued)	<b>2/20</b>
	<b>MATE6301</b> Nanomaterials	2	2		<b>CHEE4301</b> Nanomaterials (discontinued)	<b>2/20</b>
	<b>MECH4304</b> Net Shape Manufacturing	1	2		No substitution	
	<b>METL3219</b> Process Mineralogy and Comminution	1	2		<b>MINE3219</b> Process Mineralogy and Comminution (discontinued)	<b>1/21</b>
	<b>METL4220</b> Physical Separations and Interfacial Engineering	2	2	<b>2/25</b>	<b>METL3220</b> Physical Separations and Interfacial Engineering (discontinued)	<b>2/24</b>
	<b>METL6204</b> Hydrometallurgy and Electrometallurgy	1	2		<b>MINE4204</b> Aqueous Solution Processing & Electrometallurgy (discontinued)	<b>1/21</b>
	<b>METL6212</b> Pyrometallurgy	1	2		<b>MINE3212</b> Pyrometallurgy (discontinued)	<b>2/21</b>
	<b>WATR6103</b> Advanced Wastewater and Biosolids Treatment	2	2		<b>CHEE4012</b> Industrial Wastewater & Solid Waste Management (discontinued)	<b>2/22</b>

[0 to 4 units from Civil Engineering Advanced Elective Courses](#)

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## Geotechnical Engineering Major Option

Complete 16 units comprising:

- i. 8 units for all [Geotechnical Engineering Compulsory Courses](#), and
- ii. 2 to 8 units from [Geotechnical Engineering Elective Courses](#), and
- iii. 0 to 4 units from [Geotechnical Engineering Breadth Elective Courses](#), and
- iv. 0 to 4 units from [Civil Engineering Advanced Elective Courses](#)

✓/X compl.	Major in Geotechnical Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
8 units for all Geotechnical Engineering Compulsory Courses						
	<b>CIVL3220</b> Rock Mechanics	2	2		<b>MINE3121</b> Mining Geomechanics (discontinued)	1/22
	<b>CIVL4230</b> Advanced Soil Mechanics	2	2		Course must be completed	
	<b>CIVL4270</b> Geotechnical Investigations	1	2		Course must be completed	
	<b>CIVL6215</b> Ground Improvement	1	2		Course must be completed	

2 to 8 units from Geotechnical Engineering Elective Courses						
	<b>CIVL4280</b> Applied Rock Mechanics	2	2		No substitution	
	<b>CIVL6210</b> Dam Engineering	2	2		No substitution	
	<b>CIVL6220</b> Mine Waste Management	1	2		<b>MINE4000</b> Mine Waste Management & Landform Design (discontinued)	1/22
	<b>CIVL6250</b> Underground Structures	2	2	2/24	No substitution	

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0 to 4 units from Geotechnical Engineering Breadth Elective Courses						
	<b>CIVL4460</b> Highway Geometric Design	2	2		No substitution	
	<b>ERTH3250</b> Groundwater Processes and Resources	1	2		No substitution	
	<b>MINE6112</b> Applied Mining Geomechanics	1	2		<b>MINE3129</b> Applied Mining Geomechanics (discontinued)	<b>1/24</b>
	<b>CIVL4340</b> Wind Engineering	1	2		No substitution	
	<b>CIVL4525</b> Sustainable Infrastructure Design	2	2		<b>CIVL4180</b> Sustainable Built Environment (discontinued)	<b>1/20</b>
	<b>CIVL6111</b> Ocean, Coastal and Estuarine Engineering	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * <b>CIVL4110</b> may only be used as approved substitution for <b>CIVL6111</b> OR <b>CIVL6112</b> – not both	<b>2/21</b>
	<b>CIVL6112</b> Hydro and Marine Power Renewable Energy Systems	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * <b>CIVL4110</b> may only be used as approved substitution for <b>CIVL6111</b> OR <b>CIVL6112</b> – not both	<b>2/21</b>
	<b>CIVL6121</b> Environmental Hydraulics and Flood Management	1	2		<b>CIVL4120</b> Advanced Hydraulic Engineering and Structures (discontinued)	<b>2/20</b>
	<b>FIRE3700</b> Introduction to Fire Safety Engineering	1	2		No substitution	

<a href="#">0 to 4 units from Civil Engineering Advanced Electives</a>
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## Mining Engineering Major Option

Complete 16 units comprising:

- i. 12 units for all [Mining Engineering Compulsory Courses](#), and
- ii. 4 units from [Mining Engineering Courses for Civil Engineers](#)

✓/X compl.	Major in Mining Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
12 units for Mining Engineering Compulsory Courses						
	<b>MINE3110</b> Integrated Orebody Knowledge	2	2		<b>MINE3120</b> Resource Estimation (discontinued)	1/22
	<b>MINE4126</b> Mining Systems and Automation	2	2	2/25	<b>MINE3122</b> Mining Systems and Automation (discontinued)	2/24
	<b>MINE4127</b> Mine Planning and Sustainability	1	2	1/25	<b>MINE3123</b> Mine Planning and Sustainability (discontinued)	2/25
	<b>MINE6112</b> Applied Mining Geomechanics	1	2	1/25	<b>MINE3121</b> Mining Geomechanics (discontinued) OR <b>MINE4120</b> Mine Geotechnical Engineering (discontinued) OR <b>MINE3129</b> Applied Mining Geomechanics (discontinued)	1/22 1/23 1/24
	<b>MINE4124</b> Mine Design and Feasibility	2	2		<b>MINE4124</b> Hard Rock Mine Design & Feasibility	
	<b>MINE4129</b> Mine Process Optimisation	2	2		<b>MINE3125</b> Explosives and Blasting Engineering (discontinued)	2/22

[4 units for Mining Engineering Courses for Civil Engineers only](#)

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## Structural Engineering Major Option

Complete 16 units comprising:

- i. 10 units for all [Structural Engineering Compulsory Courses](#), and
- ii. 4 to 6 units from [Structural Engineering Elective Courses](#), and
- iii. 0 to 2 units from [Civil Engineering Advanced Elective Courses](#)

✓/X compl.	Major in Structural Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
10 units for all Structural Engineering Compulsory Courses						
	<b>CIVL3340</b> Structural Analysis	1	2		Course must be completed	
	<b>CIVL3380</b> Structural and Steel Design	1	2		<b>CIVL2340</b> Design of Steel Structures (discontinued)	2/22
	<b>CIVL3390</b> Integrated Structural Design	2	2		<b>CIVL3350</b> Integrated Structural Design (discontinued)	2/22
	<b>CIVL4333</b> Advanced Concrete Design	1	2		Course must be completed	
	<b>CIVL4334</b> Design of Timber Structures	2	2		Course must be completed	

4 to 6 units from Structural Engineering Elective Courses						
	<b>CIVL4230</b> Advanced Soil Mechanics	2	2		No substitution	
	<b>CIVL4340</b> Wind Engineering	1	2		No substitution	
	<b>CIVL4522</b> Analytical methods for the Design of Construction Operations	2	2		No substitution	
	<b>CIVL4525</b> Sustainable Infrastructure Design	2	2		<b>CIVL4180</b> Sustainable Built Environment (discontinued)	1/20
	<b>CIVL6360</b> Advanced Structural Analysis	2	2		<b>CIVL4332</b> Advanced Structural Analysis (discontinued)	2/22
	<b>FIRE4610</b> Fire Engineering Design: Solutions for Implicit Safety	1	2		No substitution	

0 to 2 units from Civil Engineering Advanced Elective Courses						
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## Transport Engineering Major Option

Complete 16 units comprising:

- i. 10 units for all [Transport Engineering Compulsory Courses](#), and
- ii. 6 units from [Civil Engineering Advanced Elective Courses](#)

✓/X compl.	Major in Transport Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	10 units for all Transport Engineering Compulsory Courses					
	<b>CIVL3430</b> Sustainable Transport Engineering	1	2	<b>1/24</b>	<b>CIVL3420</b> Sustainable Transport Engineering – Planning and Design (discontinued)	<b>1/23</b>
	<b>CIVL4450</b> Traffic Flow Theory and Emerging Technologies	2	2		Course must be completed	
	<b>CIVL4460</b> Highway Geometric Design	2	2		Course must be completed	
	<b>CIVL6410</b> Transport Network Modelling	1	2		Course must be completed	
	<b>CIVL6415</b> Traffic Analysis and Simulation	2	2		Course must be completed	

6 units from <a href="#">Civil Engineering Advanced Elective Courses</a>						
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## Water and Marine Engineering Major Option

Complete 16 units comprising:

- i. 8 units for all [Water and Marine Engineering Compulsory Courses](#), and
- ii. 4 to 8 units from [Water and Marine Engineering Elective Courses](#), and
- iii. 0 to 4 units from [Civil Engineering Advanced Elective Courses](#)

✓/X compl.	Major in Water and Marine Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
<b>8 units for all Water and Marine Engineering Compulsory Courses</b>						
	<b>CIVL4340</b> Wind Engineering	1	2		<b>CIVL4120</b> Advanced Hydraulic Engineering and Structures (discontinued)	<b>2/20</b>
	<b>CIVL6111</b> Ocean, Coastal and Estuarine Engineering	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	<b>2/21</b>
	<b>CIVL6112</b> Hydro and Marine Power Renewable Energy Systems	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	<b>2/21</b>
	<b>CIVL6121</b> Environmental Hydraulics and Flood Management	1	2		<b>CIVL4120</b> Advanced Hydraulic Engineering and Structures (discontinued)	<b>2/20</b>

<b>4 to 8 units from Water and Marine Engineering Elective Courses</b>						
	<b>CIVL3430</b> Sustainable Transport Engineering	1	2	<b>1/24</b>	<b>CIVL3420</b> Sustainable Transport Engineering – Planning and Design (discontinued)	<b>1/23</b>
	<b>CIVL4145</b> Groundwater Modelling and Management	2	2		<b>CIVL4140</b> Contaminant Transport Modelling (discontinued)	<b>1/21</b>
	<b>CIVL4525</b> Sustainable Infrastructure Design	2	2		<b>CIVL4180</b> Sustainable Built Environment (discontinued)	<b>1/20</b>
	<b>CIVL6210</b> Dam Engineering	2	2		No substitution	
	<b>ENVE3150</b> Environmental Systems Dynamics and Modelling	2	2		<b>CIVL3150</b> Modelling of Environmental System (discontinued)	<b>2/20</b>
	<b>ENVE3160</b> Environmental Phenomena	1	2		No substitution	
	<b>ENVM3103</b> Regulatory Frameworks for Environmental Management and Planning	1	2		No substitution	
	<b>ENVM3115</b> Climate Change and Environmental Management	1	2		No substitution	
	<b>ENVM3201</b> Catchment Processes and Management	1	2		No substitution	
	<b>ERTH3250</b> Groundwater Processes and Resources	1	2		No substitution	
	<b>WATR6105</b> Integrated Urban Water Management	1	2		<b>WATR7105</b> Integrated Urban Water Management (discontinued)	<b>1/20</b>
<b>0 to 4 units from <a href="#">Civil Engineering Advanced Electives Courses</a></b>						

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## Computer Minor

Complete 16 units comprising:

- i. 4 units for all [Computing Compulsory Courses](#), and
- ii. 4 units from [Computing Elective Courses](#), and
- iii. 8 units from [Civil Engineering Advanced Electives](#)

✓/X compl.	Minor in Computing (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
4 units for all Computing Compulsory Courses						
	<b>CSSE2002</b> Programming in the Large	1,2	2		Course must be completed	
	<b>COMP3506</b> Algorithms and Data Structures	2	2		Course must be completed	

4 units from Computing Elective Courses						
	<b>COMP4702</b> Machine Learning	1	2		No substitution	
	<b>COSC2500</b> Numerical Methods in Computational Science	2	2		No substitution	
	<b>COSC3000</b> Visualization, Computer Graphics and Data Analysis	1	2		No substitution	
	<b>COSC3500</b> High Performance Computing	2	2		No substitution	
	<b>INFS1200</b> Introduction to Information Systems	1,2	2		No substitution	
	<b>INFS3208</b> Cloud Computing	2	2		No substitution	
	<b>MATH3202</b> Operations Research and Mathematical Planning	1	2		No substitution	

<a href="#">8 units from Civil Engineering Advanced Elective Courses</a>						
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## Data Science Minor

Complete 16 units comprising:

- i. 4 units for all [Data Science Compulsory Courses](#), and
- ii. 4 units from [Data Science Elective Courses](#), and
- iii. 8 units from [Civil Engineering Advanced Electives](#)

✓/X compl.	Minor in Data Science (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all Data Science Minor Compulsory Courses					
	<b>COMP2011</b> Fundamentals of Data Science	2	2		<b>DATA7001</b> Fundamentals of Data Science	
	<b>INFS1200</b> Introduction to Information Systems	1,2	2		Course must be completed	

	4 units from Data Science Elective Courses					
	<b>COMP4702</b> Machine Learning	1	2		No substitution	
	<b>INFS2200</b> Relational Database Systems	2	2		No substitution	
	<b>INFS3208</b> Cloud Computing	2	2		No substitution	
	<b>INFS4203</b> Data Mining	2	2		No substitution	
	<b>STAT2003</b> Mathematical Probability	1	2		No substitution	
	<b>STAT2004</b> Statistical Modelling and Analysis	2	2		No substitution	

*Where courses are compulsory in both the specialisation and minor, the compulsory course in the minor must be substituted by courses from Data Science Minor Electives.*

<a href="#">8 units from Civil Engineering Advanced Elective Courses</a>						
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## Design Minor

Complete 16 units comprising:

- i. 8 units for all [Design Minor Compulsory Courses](#), and
- ii. 8 units from [Civil Engineering Advanced Electives](#)

✓/X compl.	Minor in Design (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
8 units for all Design Minor Compulsory Courses						
	<b>DSGN1100</b> Design: Interaction	1	2		Course must be completed	
	<b>DSGN1200</b> Design: Experience	2	2		Course must be completed	
	<b>DSGN2100</b> Design: Organisation	1	2		Course must be completed	
	<b>DSGN2200</b> Design: Environment	2	2		Course must be completed	

[8 units from Civil Engineering Advanced Elective Courses](#)



Civil Engineering Advanced Elective Courses						
	<b>CIVL3220</b> Rock Mechanics	2	2		<b>MINE3121</b> Mining Geomechanics (discontinued)	<b>1/22</b>
	<b>CIVL3340</b> Structural Analysis	1	2		No substitution	
	<b>CIVL3380</b> Structural Steel Design	1	2		<b>CIVL2340</b> Design of Steel Structures (discontinued)	<b>2/22</b>
	<b>CIVL3390</b> Integrated Structural Design	2	2		<b>CIVL3350</b> Integrated Structural Design (discontinued)	<b>2/22</b>
	<b>CIVL3430</b> Sustainable Transport Engineering	1	2	<b>1/24</b>	<b>CIVL3420</b> Sustainable Transport Engineering – Planning and Design (discontinued)	<b>1/23</b>
	<b>CIVL4145</b> Groundwater Modelling and Management	2	2		<b>CIVL4140</b> Contaminant Transport Modelling (discontinued)	<b>1/21</b>
	<b>CIVL4230</b> Advanced Soil Mechanics	2	2		No substitution	
	<b>CIVL4270</b> Geotechnical Investigation	1	2		<b>CIVL4270</b> Geotechnical Investigation & Testing	
	<b>CIVL4280</b> Applied Rock Mechanics	2	2		No substitution	
	<b>CIVL4333</b> Advanced Concrete Design	1	2		No substitution	
	<b>CIVL4334</b> Design of Timber Structures	2	2		No substitution	
	<b>CIVL4340</b> Wind Engineering	1	2		No substitution	
	<b>CIVL4450</b> Traffic Flow Theory and Emerging Technologies	2	2		No substitution	
	<b>CIVL4460</b> Highway Geometric Design	2	2		No substitution	
	<b>CIVL4522</b> Analytical Methods for the Design of Construction Operations	2	2		No substitution	
	<b>CIVL4525</b> Sustainable Infrastructure Design	1	2		<b>CIVL4180</b> Sustainable Built Environment (discontinued)	<b>1/20</b>
	<b>CIVL6111</b> Ocean, Coastal and Estuarine Engineering	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	<b>2/21</b>
	<b>CIVL6112</b> Hydro and Marine Power Renewable Energy Systems	2	2		<b>CIVL4110</b> Coastal & Estuarine Engineering (discontinued) * CIVL4110 may only be used as approved substitution for CIVL6111 OR CIVL6112 – not both	<b>2/21</b>
	<b>CIVL6121</b> Environmental Hydraulics and Flood Management	1	2		<b>CIVL4120</b> Advanced Hydraulic Engineering and Structures (discontinued)	<b>2/20</b>
	<b>CIVL6210</b> Dam Engineering	2	2		No substitution	
	<b>CIVL6215</b> Ground Improvement	1	2		No substitution	
	<b>CIVL6220</b> Mine Waste Management	1	2		<b>MINE4000</b> Mine Waste Management & Landform Design (discontinued)	<b>1/22</b>
	<b>CIVL6250</b> Underground Structures	2	2	<b>2/24</b>	No substitution	

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	<b>CIVL6360</b> Advanced Structural Analysis	2	2		<b>CIVL4332</b> Advanced Structural Analysis (discontinued)	<b>2/22</b>
	<b>CIVL6410</b> Transport Network Modelling	1	2		No substitution	
	<b>CIVL6415</b> Traffic Analysis and Simulation	2	2		No substitution	
	<b>ENVE3150</b> Environmental System Dynamics and Modelling	2	2		<b>CIVL3150</b> Modelling of Environmental Systems (discontinued)	<b>2/20</b>
	<b>ENVE3160</b> Environmental Phenomena	1	2		No substitution	
	<b>ENVE4610</b> Engineering the Circular Economy	1	2	<b>1/24</b>	No substitution	
	<b>FIRE3700</b> Introduction to Fire Safety Engineering	1	2		No substitution	
	<b>FIRE4610</b> Fire Engineering Design: Solutions for Implicit Safety	1	2		No substitution	