

## CHECKLIST Bachelor of Engineering (Hons) – Mechatronic Engineering Specialisation (2455): Transition to new program (Commencing 2024)

### 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.

### Complete 64 units comprising -

- I. 8 units for all [BE\(Hons\) Core Courses](#); and
- II. 36 units for one [Specialisation in Mechatronic Engineering](#); and
- III. One of the following:
  - a. 16 units for one Major from Mechatronic Engineering Major Options\*, or  
\*Majors available in: [Computer Engineering](#); [Mining Engineering](#)
  - b. 16 units for Mechatronic Engineering Minor Options\*\*, or  
\*\*Minors available in: [Computing](#); [Data Science](#); [Design](#)
  - c. 16 units for [Mechatronic Engineering Specialisation No Major option](#), and
- IV. 0 to 4 units from Preparatory Science and Mathematics Courses; and
- V. 0 to 4 units from First Year Engineering Elective Courses; and
- VI. 0 to 4 units from BE(Hons) Program Elective Courses; and
- VII. 0 to 4 units from General Elective Courses.

NB: Of the 64 units required for the program, students must complete at least 24 units of courses at level 3 or higher and no more than 24 units at level 1.

✓/x compl.	BE(Hons) Core Courses (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
<b>8 units for all Core Courses</b>						
	<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	2		Course must be completed	
	<b>MATH1051</b> Calculus & Linear Algebra I or <b>MATH1071</b> Advanced Calculus & Linear Algebra I	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		Course must be completed	

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## Specialisation in Mechatronic Engineering

Students must complete 36 units comprising:

- i. 36 units for all [Mechatronic Engineering Compulsory Courses](#)

✓/X compl.	Specialisation in Mechatronic Engineering (36 units)	Sem offering	#	First offered	Approved substitution	Last offered
36 units for all Compulsory Courses						
	<b>ENGG1300</b> Introduction to Electrical Systems	1,2	2		Course must be completed	
	<b>ENGG1700</b> Statics & Materials	1,2	2		<b>ENGG1400</b> Engineering Mechanics: Statics & Dynamics (discontinued)	2/20
	<b>CSSE2010</b> Introduction to Computer Systems	1,2	2		Course must be completed	
	<b>ELEC2004</b> Circuits, Signals and Systems	2	2		Course must be completed	
	<b>ELEC2300</b> Fundamentals of Electromagnetism and Electromechanics	1	2		<b>ELEC2003</b> Electromechanics & Electronics (discontinued).	1/21
	<b>MATH2001</b> Calculus & Linear Algebra II	1,2,S	2		<b>MATH2001</b> Advanced Calculus & Linear Algebra II	
	<b>MATH2010</b> Analysis of Ordinary Differential Equations	1,2	1		Course must be completed	
	<b>STAT2201</b> Analysis of Engineering & Scientific Data	1,2	1		<b>STAT2202</b> Probability Models for Engineering & Science (discontinued)	2/20
	<b>MECH2100</b> Machine Element Design	2	2		Course must be completed	
	<b>MECH2210</b> Intermediate Mechanical and Space Dynamics	2	2		Course must be completed	
	<b>MECH2300</b> Structures and Materials	1	2		Course must be completed	
	<b>METR2800</b> Mechatronic System Design Project I	2	2		Course must be completed	
	<b>METR3100</b> Control Systems Implementation	2	2		Course must be completed	
	<b>METR4201</b> Control Engineering I	1	2		Course must be completed	
	<b>METR4202</b> Robotics & Automation	2	2		Course must be completed	
	<b>METR4810</b> Mechatronic System Design Project II	2	2		Course must be completed	
	<b>METR4911</b> Thesis/Design Project or <b>METR4912</b> Thesis/Design Project	1, 2	4		<b>METR4900</b> Thesis/Design Project (discontinued) or <b>METR4901</b> Thesis/Design Project (discontinued)	1/20
	<b>ENGG4901</b> Professional Practice and the Business Environment A or <b>ENGG4902</b> Professional Practice and the Business Environment B	1,2	2		<b>ENGG4900</b> Professional Practice and the Business Environment (Discontinued)	2/23

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### Mechatronic Engineering No Major Option

Complete 16 units comprising -

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

✓/X compl.	Mechatronic Engineering No Major (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
<b>8 units for all Mechatronic Engineering Extension Courses</b>						
	<b>ELEC2400</b> Electronic Devices & Circuits	1	2		<b>ELEC3400</b> Electronic Circuits (discontinued)	<b>1/21</b>
	<b>ELEC3004</b> Signals, Systems & Control	1	2		Course must be completed	
	<b>MECH3200</b> Advanced Dynamics & Vibrations	2	2		Course must be completed	
	<b>METR6203</b> Control Engineering 2	1	2		<b>METR7203</b> Control Engineering 2 (discontinued)	<b>1/20</b>

<b>4 to 8 units from Mechatronic Engineering Advanced Electives</b>						
	<b>AERO4300</b> Aerospace Composites	2	2		No substitution	
	<b>AERO4450</b> Aerospace Propulsion	1	2		No substitution	
	<b>AERO4470</b> Hypersonics	1	2		No substitution	
	<b>AERO4800</b> Space Engineering	2	2		No substitution	
	<b>COMP3702</b> Artificial Intelligence	2	2		No substitution	
	<b>COMP3710</b> Pattern Recognition and Analysis	2	2		No substitution	
	<b>COMP4702</b> Machine Learning	1	2		No substitution	
	<b>CSSE3010</b> Embedded Systems Design & Interfacing	1	2		No substitution	
	<b>CSSE4010</b> Digital System Design	1	2		No substitution	
	<b>CSSE4011</b> Advanced Embedded Systems	1	2		No substitution	
	<b>ELEC3100</b> Fundamentals of Electromagnetic Fields & Waves	2	2		No substitution	

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	<b>ELEC3310</b> Electrical Energy Conversion & Utilisation	2	2		<b>ELEC3300</b> Electrical Energy Conversion & Utilisation (discontinued)	<b>2/20</b>
	<b>ELEC4310</b> Power Systems Analysis	1	2		<b>ELEC4300</b> Power Systems Analysis (discontinued)	<b>1/20</b>
	<b>ELEC4410</b> Advanced Electronic and Power Electronics Design	2	2		No substitution	
	<b>ELEC4620</b> Digital Signal Processing	2	2		No substitution	
	<b>ELEC4630</b> Computer Vision and Deep Learning	1	2		No substitution	
	<b>ENGG4103</b> Engineering Asset Management	1	2		No substitution	
	<b>ENGY4000</b> Energy Systems	1	2		No substitution	
	<b>FIRE3700</b> Introduction to Fire Safety Engineering	1	2		No substitution	
	<b>MATE4302</b> Electrochemistry and Corrosion	2	2		<b>CHEE4302</b> Electrochemistry & Corrosion (discontinued)	<b>2/20</b>
	<b>MECH3250</b> Engineering Acoustics	2	2		No substitution	
	<b>MECH3301</b> Materials Selection	2	2		No substitution	
	<b>MECH4304</b> Net Shape Manufacturing	1	2		No substitution	
	<b>MECH4950</b> Advanced Manufacturing in Practice	2	2		No substitution	
	<b>TIMS3309</b> Technology and Innovation Management	2	2		No substitution	

0 to 4 units from Mechatronic Engineering Breadth Electives

<p>Mechatronic Engineering Breadth Electives can be chosen from course lists for the following majors:</p> <p><a href="#">Computer Engineering</a></p> <p><a href="#">Mining Engineering</a></p> <p><i>Courses on this list may require pre-requisites. Please seek academic advice if required.</i></p>						
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0 to 4 units from BE(Hons) Program Elective Courses

0 to 4 units from General Elective Courses

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## Computing Engineering Major Option

Complete 16 units comprising:

- i. 12 units for all [Computer Engineering Courses for Mechatronic Engineers](#), and
- ii. 4 units for all [Computer Engineering Compulsory Courses](#), and
- iii. 0 to 8 units from [Computer Engineering Elective Courses](#)

✓/X compl.	Major in Computer Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
<b>12 units for Computer Engineering Courses for Mechatronic Engineers only</b>						
	<b>COMP3506</b> Algorithms & Data Structures	2	2		Course must be completed	
	<b>CSSE2002</b> Programming in the Large	1,2	2		Course must be completed	
	<b>CSSE2310</b> Computer Systems Principles and Programming	1,2	2		Course must be completed	
	<b>CSSE3010</b> Embedded Systems Design & Interfacing	1	2		Course must be completed	
	<b>ELEC3004</b> Signs, Systems & Control	1	2		Course must be completed	
	<b>MECH3200</b> Advanced Dynamics & Vibrations	1	2		Course must be completed	

<b>4 units for Computer Engineering Compulsory Courses</b>						
	<b>CSSE4010</b> Digital System Design	2	2		Course must be completed	
	<b>CSSE4011</b> Advanced Embedded Systems	1	2		Course must be completed	

<b>0 to 8 units from Computer Engineering Electives</b>						
	<b>COMP2140</b> Web/Mobile Programming	2	2		No substitution	
	<b>COMP3301</b> Operating Systems Architecture	2	2		No substitution	
	<b>COMP3702</b> Artificial Intelligence	2	2		No substitution	
	<b>COMP3710</b> Pattern Recognition and Analysis	2	2		No substitution	
	<b>COMP4403</b> Compilers and Interpreters	1	2		No substitution	
	<b>COMP4500</b> Advanced Algorithms & Data Structures	2	2		No substitution	
	<b>COMP4702</b> Machine Learning	1	2		No substitution	
	<b>CYBR3000</b> Information Security	2	2		<b>COMS3000</b> Information Security (discontinued)	<b>2/20</b>

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	<b>COMS3200</b> Computer Networks I	1	2		No substitution	
	<b>COMS4113</b> Photonics Engineering	1	2		<b>COMS4103</b> Photonics (discontinued)	<b>1/20</b>
	<b>COMS4104</b> Microwave Engineering	1	2		No substitution	
	<b>COMS4105</b> Communication Systems	2	2		No substitution	
	<b>COMS4507</b> Advanced Topics in Security	1	2		No substitution	
	<b>COMS6200</b> Computer Networks II	1	2		<b>COMS4200</b> Computer Networks II (discontinued)	<b>1/21</b>
	<b>CSSE3012</b> The Software Process	1	2		<b>CSSE3002</b> The Software Process (discontinued)	<b>1/20</b>
	<b>CSSE3100</b> Reasoning About Programs	1	2		No substitution	
	<b>CSSE3200</b> Software Engineering Studio: Design, Implement and Test	2	2		<b>DECO2800</b> Design Computing Studio 2 - Testing & Evaluation	
	<b>CSSE6400</b> Software Architecture	1	2		<b>CSSE4004</b> Distributed Computing (discontinued)	<b>1/21</b>
	<b>CSSE4630</b> Principles of Program Analysis	2	2		No substitution	
	<b>COSC3500</b> High Performance Computing	2	2		No substitution	
	<b>DECO1400</b> Introduction to Web Design	1	2		No substitution	
	<b>DECO2500</b> Human-Computer Interaction	1	2		No substitution	
	<b>ELEC3310</b> Electrical Energy Conversion & Utilisation	2	2		<b>ELEC3300</b> Electrical Energy Conversion & Utilisation (discontinued)	<b>2/20</b>
	<b>ELEC4310</b> Power Systems Analysis	1	2		<b>ELEC4300</b> Power Systems Analysis (discontinued)	<b>1/20</b>
	<b>ELEC4620</b> Digital Signal Processing	2	2		No substitution	
	<b>ELEC4630</b> Image Processing and Computer Vision	1	2		No substitution	
	<b>ENGG2800</b> Team Project I	1,2	2		No substitution	
	<b>ENGG3800</b> Team Project II	2	2		No substitution	
	<b>ENGG4800</b> Project Management	1	2		No substitution	
	<b>INFS1200</b> Introduction to Information Systems	1,2	2		No substitution	
	<b>INFS2200</b> Relational Database Systems	2	2		No substitution	
	<b>METR3100</b> Control System Implementation	1	2		No substitution	
	<b>METR4202</b> Robotics & Automation	2	2		No substitution	

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**Mining Engineering Major Option**

Complete 16 units comprising:

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

✓/x compl.	Major in Mining Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
<b>4 units for Mining Engineering Courses for Mechatronic Engineers only</b>						
	<b>ELEC3004</b> Signals, Systems & Control	1	2		Course must be completed	
	<b>MECH3200</b> Advanced Dynamics & Vibrations	2	2		Course must be completed	

<b>12 units for Mining Engineering Compulsory Courses</b>						
	<b>MINE3110</b> Integrated Orebody Knowledge	2	2		<b>MINE3120</b> Resource Estimation (discontinued)	<b>1/22</b>
	<b>MINE3122</b> Mining Systems & Automation	1	2		<b>MINE3122</b> Mining Systems (renamed)	<b>1/22</b>
	<b>MINE3123</b> Mine Planning & Sustainability	2	2		<b>MINE3123</b> Mine Planning	<b>2/22</b>
	<b>MINE3129</b> Applied Mining Geomechanics	1	2		<b>MINE3121</b> Mining Geomechanics (discontinued)	<b>1/22</b>
	<b>MINE4124</b> Mine Design and Feasibility	1	2	<b>2/24</b>	<b>MINE4124</b> Hard Rock Mine Design & Feasibility	<b>1/23</b>
	<b>MINE4129</b> Mine Process Optimisation	2	2		<b>MINE3125</b> Explosives and Blasting Engineering (discontinued)	<b>2/22</b>

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### Computing Minor Option

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 [Mechatronic Engineering Advanced Electives](#)

✓/X compl.	Minor in Computing (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
4 units for all Computing Minor Compulsory Courses						
	<b>CSE2002</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 Electives						
	<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 & 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 & Mathematical Planning	1	2		No substitution	

8 units from <a href="#">Mechatronic Engineering Advanced Electives</a>						
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### Data Science Minor Option

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 [Mechatronic Engineering Advanced Electives](#)

✓/X compl.	Minor in Data Science (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
4 units for all Data Science Minor Compulsory Courses						
	<b>DATA2001</b> Fundamentals of Data Science	2	2		Course must be completed	
	<b>INFS1200</b> Introduction to Information Systems	1,2	2		Course must be completed	

4 units from Data Science Electives						
	<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 & Analysis	2	2		No substitution	

8 units from <a href="#">Mechatronic Engineering Advanced Electives</a>						
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**Design Minor Option**

Complete 16 units comprising:

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

✓/X compl.	Minor in Design (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
8 units from Design Electives						
	<b>DSGN1100</b> Design: Interaction	1	2		No substitution	
	<b>DSGN1200</b> Design: Experience	2	2		No substitution	
	<b>DSGN2100</b> Design: Organisation	1	2		No substitution	
	<b>DSGN2200</b> Design: Environment	2	2		No substitution	

8 units from <a href="#">Mechatronic Engineering Advanced Electives</a>
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8 units from Mechatronic Engineering Advanced Electives						
	<b>ELEC2400</b> Electronic Devices and Circuits	1	2		No substitution	
	<b>ELEC3004</b> Signals, Systems and Control	1	2		No substitution	
	<b>MECH3200</b> Advanced Dynamics and Vibrations	2	2		No substitution	
	<b>METR6203</b> Control Engineering 2	2	2		No substitution	