

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
8 units for all Core Courses						
	ENGG1100 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]	
	ENGG1001 Programming for Engineers or CSSE1001 Introduction to Software Engineering	1,2	2		Course must be completed	
	MATH1051 Calculus & Linear Algebra I or MATH1071 Advanced Calculus & Linear Algebra I	1,2	2		Course must be completed	
	MATH1052 Multivariate Calculus & Ordinary Differential Equations or MATH1072 Advanced Multivariate Calculus & Ordinary Differential Equations	1,2	2		Course must be completed	

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Specialisation in Civil 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						
	ENGG1300 Introduction to Electrical Systems	1,2	2		Course must be completed	
	ENGG1700 Statics & Materials	1,2	2		ENGG1400 Engineering Mechanics: Statics & Dynamics (discontinued)	2/20
	CSSE2010 Introduction to Computer Systems	1,2	2		Course must be completed	
	ELEC2004 Circuits, Signals and Systems	2	2		Course must be completed	
	ELEC2300 Fundamentals of Electromagnetism and Electromechanics	1	2		ELEC2003 Electromechanics & Electronics (discontinued).	1/21
	MATH2001 Calculus & Linear Algebra II	1,2,S	2		MATH2001 Advanced Calculus & Linear Algebra II	
	MATH2010 Analysis of Ordinary Differential Equations	1,2	1		Course must be completed	
	STAT2201 Analysis of Engineering & Scientific Data	1,2	1		STAT2202 Probability Models for Engineering & Science (discontinued)	2/20
	MECH2100 Machine Element Design	2	2		Course must be completed	
	MECH2210 Intermediate Mechanical and Space Dynamics	2	2		Course must be completed	
	MECH2300 Structures and Materials	1	2		Course must be completed	
	METR2800 Mechatronic System Design Project I	2	2		Course must be completed	
	METR3100 Control Systems Implementation	2	2		Course must be completed	
	METR4201 Control Engineering I	1	2		Course must be completed	
	METR4202 Robotics & Automation	2	2		Course must be completed	
	METR4810 Mechatronic System Design Project II	2	2		Course must be completed	
	METR4911 Thesis/Design Project or METR4912 Thesis/Design Project	1, 2	4		METR4900 Thesis/Design Project (discontinued) or METR4901 Thesis/Design Project (discontinued)	1/20
	ENGG4901 Professional Practice and the Business Environment A or ENGG4902 Professional Practice and the Business Environment B	1,2	2		ENGG4900 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
8 units for all Mechatronic Engineering Extension Courses						
	ELEC2400 Electronic Devices & Circuits	1	2		ELEC3400 Electronic Circuits (discontinued)	1/21
	ELEC3004 Signals, Systems & Control	1	2		Course must be completed	
	MECH3200 Advanced Dynamics & Vibrations	2	2		Course must be completed	
	METR6203 Control Engineering 2	1	2		METR7203 Control Engineering 2 (discontinued)	1/20

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

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

0 to 4 units from Mechatronic Engineering Breadth Electives

Mechatronic Engineering Breadth Electives can be chosen from course lists for the following majors:						
Computer Engineering Mining Engineering						
<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

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
12 units for Computer Engineering Courses for Mechatronic Engineers <u>only</u>						
	COMP3506 Algorithms & Data Structures	2	2		Course must be completed	
	CSSE2002 Programming in the Large	1,2	2		Course must be completed	
	CSSE2310 Computer Systems Principles and Programming	1,2	2		Course must be completed	
	CSSE3010 Embedded Systems Design & Interfacing	1	2		Course must be completed	
	ELEC3004 Signs, Systems & Control	1	2		Course must be completed	
	MECH3200 Advanced Dynamics & Vibrations	1	2		Course must be completed	

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

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

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	COMS3200 Computer Networks I	1	2		No substitution	
	COMS4113 Photonics Engineering	1	2		COMS4103 Photonics (discontinued)	1/20
	COMS4104 Microwave Engineering	1	2		No substitution	
	COMS4105 Communication Systems	2	2		No substitution	
	COMS4507 Advanced Topics in Security	1	2		No substitution	
	COMS6200 Computer Networks II	1	2		COMS4200 Computer Networks II (discontinued)	1/21
	CSSE3012 The Software Process	1	2		CSSE3002 The Software Process (discontinued)	1/20
	CSSE3100 Reasoning About Programs	1	2		No substitution	
	CSSE3200 Software Engineering Studio: Design, Implement and Test	2	2		DECO2800 Design Computing Studio 2 - Testing & Evaluation	
	CSSE6400 Software Architecture	1	2		CSSE4004 Distributed Computing (discontinued)	1/21
	CSSE4630 Principles of Program Analysis	2	2		No substitution	
	COSC3500 High Performance Computing	2	2		No substitution	
	DECO1400 Introduction to Web Design	1	2		No substitution	
	DECO2500 Human-Computer Interaction	1	2		No substitution	
	ELEC3310 Electrical Energy Conversion & Utilisation	2	2		ELEC3300 Electrical Energy Conversion & Utilisation (discontinued)	2/20
	ELEC4310 Power Systems Analysis	1	2		ELEC4300 Power Systems Analysis (discontinued)	1/20
	ELEC4620 Digital Signal Processing	2	2		No substitution	
	ELEC4630 Image Processing and Computer Vision	1	2		No substitution	
	ENGG2800 Team Project I	1,2	2		No substitution	
	ENGG3800 Team Project II	2	2		No substitution	
	ENGG4800 Project Management	1	2		No substitution	
	INFS1200 Introduction to Information Systems	1,2	2		No substitution	
	INFS2200 Relational Database Systems	2	2		No substitution	
	METR3100 Control System Implementation	1	2		No substitution	
	METR4202 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
4 units for Mining Engineering Courses for Mechatronic Engineers <u>only</u>						
	ELEC3004 Signals, Systems & Control	1	2		Course must be completed	
	MECH3200 Advanced Dynamics & Vibrations	2	2		Course must be completed	

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

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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						
	CSE2002 Programming in the Large	1,2	2		Course must be completed	
	COMP3506 Algorithms and Data Structures	2	2		Course must be completed	

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

8 units from Mechatronic Engineering Advanced Electives						
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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						
	DATA2001 Fundamentals of Data Science	2	2		Course must be completed	
	INFS1200 Introduction to Information Systems	1,2	2		Course must be completed	

4 units from Data Science Electives						
	COMP4702 Machine Learning	1	2		No substitution	
	INFS2200 Relational Database Systems	2	2		No substitution	
	INFS3208 Cloud Computing	2	2		No substitution	
	INFS4203 Data Mining	2	2		No substitution	
	STAT2003 Mathematical Probability	1	2		No substitution	
	STAT2004 Statistical Modelling & Analysis	2	2		No substitution	

8 units from Mechatronic Engineering Advanced Electives						
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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						
	DSGN1100 Design: Interaction	1	2		No substitution	
	DSGN1200 Design: Experience	2	2		No substitution	
	DSGN2100 Design: Organisation	1	2		No substitution	
	DSGN2200 Design: Environment	2	2		No substitution	

8 units from Mechatronic Engineering Advanced Electives

8 units from Mechatronic Engineering Advanced Electives						
	ELEC2400 Electronic Devices and Circuits	1	2		No substitution	
	ELEC3004 Signals, Systems and Control	1	2		No substitution	
	MECH3200 Advanced Dynamics and Vibrations	2	2		No substitution	
	METR6203 Control Engineering 2	2	2		No substitution	