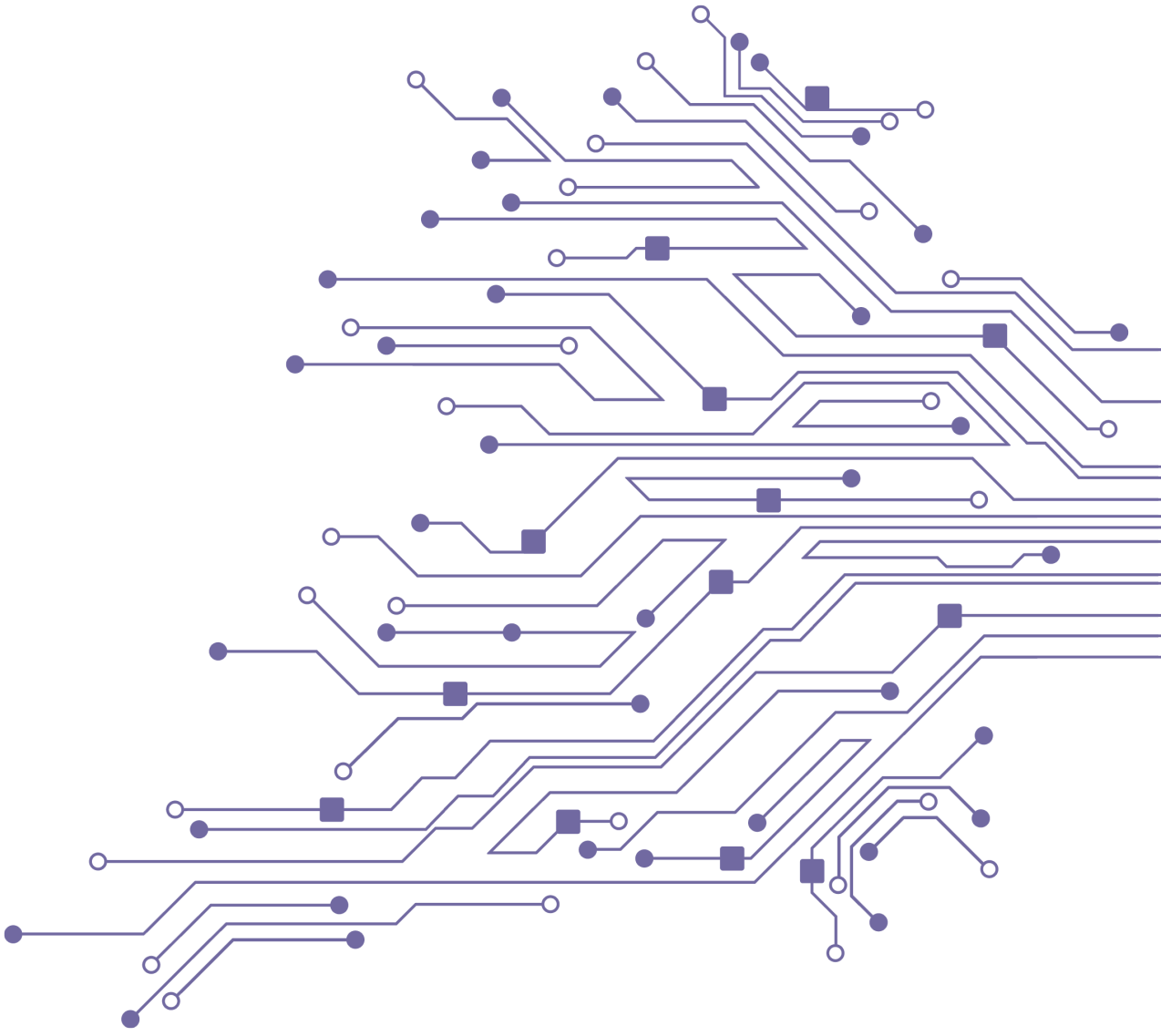
YQM.A.R.S

Mechatronics and Robotics Society

MARS Course Guide

2023



Contents

Introduction

The 2023 UQ MARS Subject Guide has been created to guide all MARS members through their degree. This is a comprehensive guide that will present suggested program structures, enrolment plans, course profiles, and offer the chance to inform students of the specific pathways available within Mechatronics Engineering. We will aim to give specialised advice from our Exec team and various UQ MARS Alumni regarding study advice, course selection and general career advice.

The **UQ Mechatronics and Robotics Society** is also commmited to not just Mechatronics Engineering students, but also various student engineers studying in adjacent fields; This includes Electrical, Mechanical, Computer, Software specialisations, as well as people in similar degrees such as Computer Science and I.T.

The guide will be divided into the following sections:

The **Recommended Enrolment Plan** is a template made by the MARS execs to provide a simple enrolment plan and leaves rooms for electives as desired.

Course Reviews and Advice contains specific details and advice for courses required in the BE(Hons) in Mechatronic Engineering and the BE/ME programs, alongside some courses in the Computer Engineering Major; as a lot of our members take these as electives.

About MARS

Membership

Recommended Enrolment Plan

We understand that it can be confusing and/or time consuming to plan out how to best structure the courses in your program. To make the process as simple as possible, we've provided a recommended enrolment plan for the Mechatronics course plans available at UQ. Please note that this is just a suggestion, and you may need to adjust the plan to account for the electives that you choose.

Bachelor of Engineering (Honours)

Program Structure

First Year					
Semester 1	MATH1051 or MATH1071	ENGG1100	CSSE1001	ELECTIVE	
Semester 2	MATH1052 or MATH1072	ENGG1300	ENGG1700	CSSE1001	

Second Year					
Semester 1	MATH2001	MECH2300	ELEC2300	MATH2010	STAT2201
Semester 2	MECH2100	MECH2210	ELEC2004	METR2800	

Third Year				
Semester 1	METR3100	MAJOR	MAJOR	MAJOR
Semester 2	METR4810	MAJOR	MAJOR	MAJOR

Fourth Year				
Semester 1	METR4201	METR4202	MAJOR	MAJOR
Semester 2	ENGG4900	METR4911 or METR4212		ELECTIVE

Major Options

Within the Bachelor of Engineering (Honours) Mechatronics specialisation, there are 2 majors to choose from:

- Computer Engineering
- Mining Engineering

Computer Engineering

To complete the computer engineering major under mechatronics, you must take the following 8 courses:

- COMP3506
- CSSE2002
- CSSE2310
- CSSE3010
- ELEC3004
- MECH3200
- CSSE4010
- CSSE4011

Mining Engineering

To complete the mining engineering major under mechatronics, you must take the following 8 courses:

- ELEC3004
- MECH2300
- MINE3110
- MINE3122
- MINE3123
- MINE3129
- MINE4124
- MINE4129

Minor Options

Within the Bachelor of Engineering (Honours) Mechatronics specialisation, there are 3 minors to choose from. Each minor pathway consists of a 4 course minor, plus the following 4 courses:

- ELEC2400
- ELEC3004
- MECH3200
- METR6203

Data Science Minor

The data science minor consists of both:

- DATA2001
- INFS1200

plus two of:

- COMP4702
- INFS2200
- INFS3208
- INFS4203
- STAT2003
- STAT2004

Computing Minor

The computing minor consists of both:

- CSSE2002
- COMP3506

plus two of:

- COMP4702
- COSC2500
- COSC3000
- COSC3500
- INFS1200
- INFS3208
- MATH3202

Design Minor

The design minor consists of:

- DSGN1500

plus three of:

- DSGN1100
- DSGN1200
- DSGN2100
- DSGN2200
- DSGN3100

Open Major

The open major pathway consists of the following 4 courses:

- ELEC2400
- ELEC3004
- MECH3200
- METR6203

plus four courses consisting of at least two of the following:

- AERO4300
- AERO4450
- AERO4470
- AERO4800
- COMP3702
- COMP3710
- COMP4702
- CSSE3010
- CSSE4010
- CSSE4011
- ELEC3100
- ELEC3310
- ELEC4310
- ELEC4410
- ELEC4620
- ELEC4630
- ENGG4103
- ENGY4000
- MECH3301
- MECH3250
- MECH4304
- MECH4950
- TIMS3309

Bachelor of Engineering (Honours) and Master of Engineering

Program Structure

First Year				
Semester 1	MATH1051 or MATH1071	ENGG1100	CSSE1001	ELECTIVE
Semester 2	MATH1052 or MATH1072	ENGG1300	ENGG1700	CSSE2010

Second Year					
Semester 1	MATH2001	MECH2300	ELEC2300	MATH2010	STAT2201
Semester 2	MECH2100	MECH2210	ELEC2004	METR2800	

Third Year				
Semester 1	METR3100	ELEC2400	ELEC3004	METR4201
Semester 2	METR4810	MECH3200	ADVANCED	ADVANCED

Fourth Year				
Semester 1	METR4202	ADVANCED	ADVANCED	ELECTIVE
Semester 2	ENGG4900	METR6203	ADVANCED	ELECTIVE

Fifth Year			
Semester 1	ENGG7291		
Semester 2	ENGG7701	ADVANCED or MASTERS	MASTERS

Advanced Electives

As part of the BEME program, you must take between five and seven of the following courses:

- AERO4300
- AERO4450
- AERO4470
- AERO4800
- COMP3702
- COMP3710
- COMP4702
- CSSE3010
- CSSE4010
- CSSE4011
- ELEC3100
- ELEC3310
- ELEC4310
- ELEC4410
- ELEC4620
- ELEC4630
- ENGG4103
- ENGY4000
- FIRE3700
- MATE4302
- MECH3301
- MECH3250
- MECH4304
- MECH4950
- TIMS3309

Masters Electives

As part of the BEME program, you must take between two and three of the following courses:

- CSSE7610
- ENGG7302
- ENGG7811
- MATE7013
- MATE7014
- MATE7015
- MATE7016
- MECH7101

Electives

If you are undertaking another degree but are still interested in the field of mechatronics, there are some options available to you.

Electrical Engineering

If you are more interested in the electrical systems of mechatronics and robotics, there are a plethora of electives you can take as an Electrical Engineering student.

- METR3100
- COMP3702
- COMP3710
- ELEC4630
- COMP4702
- METR4202
- METR6203

Mechanical Engineering

If you are more interested in the mechanical systems and physical properties of mechatronics and robotics, there are a wide selection of potential electives.

- MECH2700
- METR3100
- MECH3780
- METR4202
- AERO4800
- MECH4950

Software Engineering

The most appropriate electives you could take as a Software Engineering student interested in Mechatronics is the following

- idk, put stuff here

Computer Science

The most appropriate electives you could take as a Computer Science student interested in Mechatronics is the following

- ENGG1300
- CSSE2310
- COMP3702
- COMP3710
- COMP4702

Course Profiles

AERO4300 - Aerospace Composites

AERO4450 - Aerospace Propulsion

AERO4470 - Hypersonics

AERO4800 - Space Engineering

COMP3506 - Algorithms & Data Structures

COMP3702 - Artificial Intelligence

COMP3710 - Pattern Recognition and Analysis

COMP4702 - Machine Learning

COSC2500 - Numerical Methods in Computational Science

COSC3000 - Visualization, Computer Graphics & Data Analysis

COSC3500 - High-Performance Computing

CSSE1001 - Introduction to Software Engi-

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Acknowledgments