

# Bachelor of Engineering (Mechatronic) (Honours)



Moreton Bay, Semester 2 2022

## Program structure

Introductory courses (8) 96 units

ENG101 Foundations of Engineering  
ENG102 Engineering Statics  
ENG103 Introduction to the Internet of Things  
ENG104 Introduction to Engineering Design  
MTH103 Introduction to Applied Mathematics  
MTH104 Introductory Calculus  
SCI107 Physics  
SCI110 Science Research Methods

Developing courses (8) 96 units

ELC200 Digital Logic and Computer Programming  
ELC201 Analog Electronic Circuits  
ELC205 Control Systems  
MEC200 Thermofluids 1  
MEC205 Dynamics 1  
MEC221 Mechanics of Materials  
MEC225 Engineering Materials  
MCH200 Mechatronic Design 1

Graduate courses (12) 144 units

MTH201 Calculus II and Linear Algebra  
MTH203 Numerical Analysis  
ELC301 Communications Engineering (Hardware and protocols)  
ELC304 Embedded System Design  
ENG302 Engineering Project Management  
ENG304 Engineering Research Methodology  
MCH301 Mechatronic Design 2  
MEC336 Engineering System Design  
ELC400 Robotics and Autonomous Systems  
ENG401 Engineering Project 1  
ENG402 Engineering Project 2  
MCH400 Image Processing and Machine Vision

Minor courses (4) 48 units

Students must select one of the following minor study areas:

- Electrical and Electronic Engineering (for Mechatronic Engineers)
- Mechanical Engineering (for Mechatronic Engineers)
- Civil Engineering (for Mechanical and Mechatronic Engineers)
- Climate Change and Coastal Zone Studies
- Environmental Studies for Engineers<sup>^</sup>
- Management for Engineers<sup>^</sup>
- Wider Engineering Studies

<sup>^</sup>Not available at Moreton Bay campus.

[usc.edu.au/sc405](http://usc.edu.au/sc405)

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Study options and teaching period of offer can vary depending on the study location. For full details, visit [usc.edu.au](http://usc.edu.au).

## Honours

The Bachelor of Engineering (Mechatronic) (Honours) may be awarded with a class of Honours to a student:

- with the percentage results achieved in twelve courses as specified in the table below; and
- achieving at least 65% in ENG402 Engineering Research Project 2.

## COURSES

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MTH203 Numerical Analysis

MCH200 Mechatronic Design 1

ELC301 Communications Engineering (Hardware and protocols)

MEC336 Engineering System Design

ENG302 Engineering Project Management

MCH301 Mechatronic Design 2

ELC304 Embedded System Design

ENG304 Engineering Research Methodology

ENG401 Engineering Project 1

ENG402 Engineering Project 2

ELC400 Robotics and Autonomous Systems

MCH400 Image Processing and Machine Vision

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- The minimum levels of achievement normally required for each class of honours are shown in the following table:

HONOURS RESULTS CLASSIFICATION	OVERALL PERCENTAGE ATTAINED IN SPECIFIED COURSES*
Honours Class I	80% - 100%
Honours Class IIA	70% - 79%
Honours Class IIB	60% - 69%

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\*The percentage result shall be rounded up if  $\geq 0.5$  or rounded down if  $< 0.5$ .

Note: Program structures are subject to change. Not all USC courses are available on every USC campus.

## Total units: 384

## Study sequence

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## Year 1

### Semester 2

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
ENG103 Introduction to the Internet of Things	• Semester 2	12	
ENG104 Introduction to Engineering Design	• Semester 2	12	Anti: ENG202
MTH104 Introductory Calculus	• Semester 2	12	Anti: MTH202
SCI110 Science Research Methods	• Semester 1, Semester 2	12	Anti: SCI201 or CPH261

### Semester 1

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
ENG101 Foundations of Engineering	• Semester 1	12	
MTH103 Introduction to Applied Mathematics	• Semester 1	12	Anti: MTH102
SCI107 Physics	• Semester 1	12	Anti: SCI108 or SCI507
ELC200 Digital Logic and Computer Programming	• Semester 1	12	Pre: ENG103

## Year 2

### Semester 2

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
ENG102 Engineering Statics	• Semester 2	12	Pre: (SCI107 and (MTH103 or MTH102) and enrolled in Program SC404, SC405, SC410, SC411 SC425) or AB101, UU301, UU302 or XU301  Anti: CIV1501(USQ equivalent course)
MEC200 Thermofluids 1	• Semester 2	12	Pre: (MTH102 or MTH103), MTH104 and SCI107. Must be enrolled in SC404, SC405, SC410, SC411 or SC425  Anti:

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MCH200 Mechatronic Design 1	• Semester 2	12	MEC2101(USQ course) or ENG204 Pre: ENG104
ELC205 Control Systems	• Semester 2	12	Pre: MTH201 and enrolled in Program SC404, SC405, SC410, SC411, SC425

### Semester 1

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
MTH201 Calculus II and Linear Algebra	• Semester 1	12	Pre: MTH104 or MTH202
ELC201 Analog Electronic Circuits	• Semester 1	12	Pre: ENG103 and must be enrolled in Program SC404, SC405, SC410, SC411, SC425 or SC305
MEC221 Mechanics of Materials	• Semester 1	12	Pre: (ENG102 or CIV1501(USQ equivalent course)) and enrolled in Program SC404, SC405, SC410, SC411 or SC425  Anti: ENG221 or MEC2402(USQ course)
MCH301 Mechatronic Design 2	• Semester 1	12	Pre: MCH200

## Year 3

### Semester 2

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
MTH203 Numerical Analysis	• Semester 2	12	Pre: MTH202 or (MTH103 and MTH104)  Anti: MTH532 or MTH312
ELC304 Embedded System Design	• Semester 2	12	Pre: ELC205 and Course Coordinator Consent Required
ENG304 Engineering Research Methodology	• Semester 2	12	Pre: 192 units and enrolled in Program SC404, SC405, SC410, SC411, SC425
MEC336 Engineering System Design	• Semester 2	12	Pre: ENG228 or MEC300 or

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MEC301 or MCH301 or  
MEC2301  
Anti:  
ENG336 or MEC3303

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#### Semester 1

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
MEC205 Dynamics 1	• Semester 1	12	Pre: (MTH104 or MTH202) and ENG102 and enrolled in SC404, SC405, SC410, SC411 or SC425  Anti: ENG205 or MEC2401
MEC225 Engineering Materials	• Semester 1	12	Pre: MTH102 or MTH103 and enrolled in program SC367, SC404, SC405, SC410, SC411, SC425, AB101, UU301, UU302 or XU301.  Anti: ENG225 or MEC1201
ENG302 Engineering Project Management	• Semester 1	12	
ENG401 Engineering Project 1	• Semester 1, Semester 2	12	Pre: MEC221 or ELC200, and 228 units completed and enrolled in Program SC404, SC405, SC410, SC411 or SC425  Co: ENG302 and (ENG403 or ENG304)

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#### Year 4

##### Semester 2

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
ENG402 Engineering Project 2	• Semester 1, Semester 2	12	Pre: ENG401
MCH400 Image Processing and Machine Vision	• Semester 2	12	Pre: ENG103 AND MTH103

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PLUS select 2 courses from your chosen minor study area.

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## Semester 1

COURSE	SEMESTER OF OFFER (MORETON BAY)	UNITS	REQUISITES
ELC301 Communications Engineering (Hardware and protocols)	• Semester 1	12	Pre: ELC200
ELC400 Robotics and Autonomous Systems	• Semester 1	12	Pre: ELC304

PLUS select 2 courses from your chosen minor study area.

## Program requirements and notes

In order to graduate you must:

- Successfully complete 384 units as outlined in the Program Structure
- Select a minor from one of the minors as listed below. Students must choose the minor to be studied before the completion of Semester 1, Year 3
- Complete a minimum of 60 days of suitable work experience. Students must meet all costs associated with the acquisition of practical experience to satisfy this requirement

### Program notes

- Completing this program within the specified (full-time) duration is based on studying 48 unit points per semester (normally 4 courses) and following the recommended study sequence
- The unit value of all courses is 12 units unless otherwise specified
- It is each student's responsibility to enrol correctly according to your course requisites, program rules and requirements and be aware of the academic calendar dates
- Courses within this program are assessed using a variety of assessment methods including essays, seminar presentations, reports, in-class tests and examinations. Not all courses will necessarily include all methods
- As part of your USC program, you may apply to Study Overseas to undertake courses with an overseas higher education provider
- Refer to the Managing your progression page for help in understanding your program structure, reviewing your progress and planning remaining courses.