

Bachelor of Engineering (Mechatronic) (Honours)



Moreton Bay, Semester 1 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[^]
- Management for Engineers[^]
- Wider Engineering Studies

[^]Not available at Moreton Bay campus.

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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

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

- 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% |

*The percentage result shall be rounded up if ≥ 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 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 |
| SCI110 Science Research Methods | • Semester 1, Semester 2 | 12 | Anti: SCI201 or CPH261 |

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) |
| 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 |

Year 2

Semester 1

| COURSE | SEMESTER OF OFFER (MORETON BAY) | UNITS | REQUISITES |
|---|------------------------------------|-------|--|
| ELC200 Digital Logic and Computer Programming | • Semester 1 | 12 | Pre: ENG103 |
| 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: |

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| | | | |
|---------------------------------------|--------------|----|---|
| MEC225 Engineering Materials | • Semester 1 | 12 | ENG221 or MEC2402(USQ course) Pre: MTH102 or MTH103 and enrolled in program SC367, SC404, SC405, SC410, SC411, SC425, AB101, UU301, UU302 or XU301. Anti: ENG225 or MEC1201 |
| MTH201 Calculus II and Linear Algebra | • Semester 1 | 12 | Pre: MTH104 or MTH202 |

Semester 2

| COURSE | SEMESTER OF OFFER (MORETON BAY) | UNITS | REQUISITES |
|-----------------------------|---------------------------------|-------|--|
| ELC205 Control Systems | • Semester 2 | 12 | Pre: MTH201 and enrolled in Program SC404, SC405, SC410, SC411, SC425 |
| MEC200 Thermofluids 1 | • Semester 2 | 12 | Pre: (MTH102 or MTH103), MTH104 and SCI107. Must be enrolled in SC404, SC405, SC410, SC411 or SC425 Anti: MEC2101(USQ course) or ENG204 |
| MCH200 Mechatronic Design 1 | • Semester 2 | 12 | Pre: ENG104 |
| MTH203 Numerical Analysis | • Semester 2 | 12 | Pre: MTH202 or (MTH103 and MTH104) Anti: MTH532 or MTH312 |

Year 3

Semester 1

| COURSE | SEMESTER OF OFFER (MORETON BAY) | UNITS | REQUISITES |
|-----------------------------------|---------------------------------|-------|---|
| ELC201 Analog Electronic Circuits | • Semester 1 | 12 | Pre: ENG103 and must be enrolled in Program SC404, SC405, SC410, SC411, SC425 or SC305 |
| MEC205 Dynamics 1 | • Semester 1 | 12 | Pre: (MTH104 or MTH202) and ENG102 and enrolled in SC404, |

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SC405, SC410, SC411 or
SC425
Anti:
ENG205 or MEC2401

| | | |
|---------------------------------------|--------------|----|
| ENG302 Engineering Project Management | • Semester 1 | 12 |
| MCH301 Mechatronic Design 2 | • Semester 1 | 12 |

Pre:
MCH200

Semester 2

| COURSE | SEMESTER OF OFFER (MORETON BAY) | UNITS | REQUISITES |
|---|------------------------------------|-------|---|
| 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 MEC301 or MCH301 or MEC2301 Anti: ENG336 or MEC3303 |

PLUS select 1 course from your chosen minor study area

Year 4

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 |
| 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) |

PLUS select 1 course from your chosen minor study area

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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 |

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.