



## **Module Specification**

### **Control Engineering**

Version: 2021-22, v3.0, 07 Jun 2022

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## Part 1: Information

**Module title:** Control Engineering

**Module code:** UFMFYJ-15-3

**Level:** Level 6

**For implementation from:** 2021-22

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Engineering Design & Mathematics

**Partner institutions:** None

**Delivery locations:** Auston Institute of Management Singapore, Auston Institute of Management Sri Lanka, British Institute of Engineering and Technology Sri Lanka, Frenchay Campus, Global College of Engineering and Technology (GCET)

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**Pre-requisites:** Engineering Mathematics 2 2020-21, Mathematics for Signals and Control 2020-21

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Pre-requisites: students must take one out of UFMFK9-15-2 Engineering Mathematics 2 or UFMFL9-15-2 Mathematics for Signals and Control

**Features:** Not applicable

**Educational aims:** See Learning Outcomes

**Outline syllabus:** System modelling (Laplace operator, transfer functions etc)

Time response of first and second order systems

Block diagram representation

Frequency response of first and second order systems

System identification

The s-plane and root loci

Controllers (PID, IP-D etc)

State Space modelling techniques

Approaches to dealing with non-linearity

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** Large group lecture supported by small group tutorial sessions. Study time outside of contact hours will be spent on going through exercises and example problems. Lab sessions and demonstrations will provide experience of modelling and simulation. Scheduled learning includes lectures, tutorials\lab sessions. Independent learning includes hours engaged with essential reading, assignment preparation and completion etc.

Activity Approximate time, h

Contact (36)

Directed Learning (24)

Self-directed learning (45)

Exam preparation (45)

Total (150)

**Module Learning outcomes:** On successful completion of this module students will achieve the following learning outcomes.

**MO1** Demonstrate knowledge of scientific principles and methods necessary to underpin their education in mechanical and related engineering disciplines, to

enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

**MO2** Demonstrate knowledge of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.

**MO3** Apply and integrate knowledge of other engineering disciplines to support the study of mechanical and related engineering disciplines.

**MO4** Use engineering principles and apply them to analyse key engineering processes.

**MO5** Identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmfyj-15-3.html) via the following link <https://uwe.rl.talis.com/modules/ufmfyj-15-3.html>

## **Part 4: Assessment**

**Assessment strategy:** Component A

Assessed via end of semester Exam.

Formative assessments (not contributing to module mark) is provided via support in tutorial sessions. End of semester exam is three hours.

**Assessment components:**

**Examination (Online) - Component A (First Sit)**

Description: Online Examination: 5 hours

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

**Examination (Online) - Component A (Resit)**

Description: Online Examination: 5 hours

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Mechanical Engineering (Mechatronics) [Feb][FT][BIET][12months] BEng (Hons)  
2021-22

Mechanical Engineering (Manufacturing) [May][FT][BIET][12months] BEng (Hons)  
2021-22

Mechanical Engineering (Manufacturing) [Sep][FT][AustonSingapore][12months]  
BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Feb][FT][AustonSingapore][12months]  
BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [May][FT][AustonSingapore][12months]  
BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Feb][FT][AustonSriLanka][12months] - Not  
running BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Sep][FT][AustonSriLanka][12months] - Not Running BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Sep][FT][AustonSingapore][12months] BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [May][FT][AustonSriLanka][12months] - Not Running BEng (Hons) 2021-22

Mechanical Engineering (Manufacturing) [Feb][FT][BIET][12months] BEng (Hons) 2021-22

Mechanical Engineering (Manufacturing) [Feb][FT][AustonSingapore][12months] BEng (Hons) 2021-22

Mechanical Engineering (Manufacturing) [May][FT][AustonSingapore][12months] BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [May][FT][BIET][12months] BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Sep][FT][BIET][12months] BEng (Hons) 2021-22

Mechanical Engineering (Mechatronics) [Sep][PT][AustonSingapore][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [Feb][PT][AustonSingapore][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [May][PT][AustonSingapore][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [Feb][PT][AustonSriLanka][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [May][PT][AustonSriLanka][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [Sep][PT][AustonSriLanka][16months] BEng (Hons) 2020-21

Mechanical Engineering (Mechatronics) [Sep][PT][BIET][16months] BEng (Hons)  
2020-21

Mechanical Engineering (Mechatronics) [Feb][PT][BIET][16months] BEng (Hons)  
2020-21

Mechanical Engineering (Mechatronics) [May][PT][BIET][16months] BEng (Hons)  
2020-21

Mechanical Engineering and Vehicle Technology {Foundation}  
[Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Mechanical Engineering and Vehicle Technology {Foundation} [Oct][FT][GCET][4yrs]  
BEng (Hons) 2018-19

Mechanical Engineering {Apprenticeship-UCS} {Top-Up} [Sep][FT][Frenchay][2yrs]  
BEng (Hons) 2020-21

Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2019-20

Automotive Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Mechanical Engineering [Sep][PT][COBC][6yrs] BEng (Hons) 2018-19

Automotive Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19

Mechanical Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19

Mechanical Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

Mechanical Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Mechanical Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-  
19

Automotive Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

Automotive Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Automotive Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-  
19

Mechanical Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19

Mechanical Engineering [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19