



## **Module Specification**

### **Electromechanical Systems and Design**

Version: 2023-24, v3.0, 11 May 2023

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## Part 1: Information

**Module title:** Electromechanical Systems and Design

**Module code:** UFMFVP-30-2

**Level:** Level 5

**For implementation from:** 2023-24

**UWE credit rating:** 30

**ECTS credit rating:** 15

**Faculty:** Faculty of Environment & Technology

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

**Partner institutions:** None

**Field:** Engineering, Design and Mathematics

**Module type:** Module

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

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

## Part 2: Description

**Overview:** This Electromechanical Systems and Design module introduces the principles of electronic systems design, and can be suited to mechanical and electrical pathways.

**Features:** Not applicable

**Educational aims:** Learners will develop the theoretical understanding and some professional behaviours needed to design electromechanical systems used in the

nuclear industry. Learners will be able to select appropriate materials and construction methods for the nuclear environment.

**Outline syllabus:** The topics covered in this unit are:

Material behaviour and use of materials in electromechanical systems:

Material Behaviours

Metals and Alloys

Polymers

Ceramics

Composites

Processes of electromechanical systems construction:

Process Analysis

Forming

Removal

PCB Construction

Design of electromechanical systems :

Design Process

Computer Aided Design

Modelling and Analysis

In this module the following mathematical topics will be introduced and developed:

Control Theory

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

**Teaching and learning methods:** See Outline Syllabus and Assessment.

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

**MO1** Conduct material behaviour analysis calculations

**MO2** Evaluate materials for given applications, and justify improvements

**MO3** Evaluate processes for given applications, and justify improvements

**MO4** Design electromechanical systems as part of a multi-disciplinary team

**Hours to be allocated:** 300

**Contact hours:**

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

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

## **Part 4: Assessment**

**Assessment strategy:** The module is assessed as follows:

Oral Examination – 30 minutes – In the oral examination, which follows a series of data acquisition workshops, the learners will be required to perform material data analysis.

Group Observation (presentation) and Written Report – The learners will produce designs of an electromechanical system from a given brief. The observation will focus on the group's ability to work as a multidisciplinary team on the design process and the individual written component will include evaluation of materials and process within the design.

The resit assessment tasks for this module will be the same as the first sit.

Resit deliverable(s) will be scaled appropriately to group size and task complexity

**Assessment tasks:**

**Practical Skills Assessment (First Sit)**

Description: Oral examination - 30 minutes

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1

**Presentation (First Sit)**

Description: Individual questions during Group observation (presentation)

Weighting: 30 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO4

**Report (First Sit)**

Description: Written report (2000 words)

Weighting: 45 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3

**Practical Skills Assessment (Resit)**

Description: Oral examination - 30 minutes

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Presentation (Resit)**

Description: Individual questions during Group observation (presentation)

Weighting: 30 %

Final assessment: No

Group work: Yes

Learning outcomes tested:

**Report (Resit)**

Description: Written report (2000 words)

Weighting: 45 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Mechanical Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons)  
2022-23

Electromechanical Engineering (Nuclear) [UCS] FdSc 2022-23

Mechanical Engineering with Nuclear [UCS] BEng (Hons) 2022-23

Electromechanical Engineering (Nuclear) {Apprenticeship-UCS} [UCS] FdSc 2022-  
23

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons)  
2022-23

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}  
[UCS] BEng (Hons) 2022-23

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}  
[Sep][FT][UCS][5yrs] BEng (Hons) 2021-22

Mechanical Engineering with Nuclear {Apprenticeship-UCS} [Sep][FT][UCS][5yrs]  
BEng (Hons) 2021-22