



Module Specification

Electromechanical Systems and Design

Version: 2027-28, v2.0, Approved

Contents

Module Specification	1
Part 1: Information	2
Part 2: Description	2
Part 3: Teaching and learning methods	3
Part 4: Assessment.....	4
Part 5: Contributes towards	6

Part 1: Information

Module title: Electromechanical Systems and Design

Module code: UFMFVP-30-2

Level: Level 5

For implementation from: 2027-28

UWE credit rating: 30

ECTS credit rating: 15

College: College of Arts, Technology and Environment

School: CATE School of Engineering

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 and processes of electromechanical systems design, covering material behaviours, construction methods (forming, removal, PCB fabrication) and CAD-based modelling within mechanical and electrical pathways.

Features: Not applicable

Educational aims: Learners will develop the theoretical understanding and professional behaviours required to design electromechanical systems for the nuclear industry, including material selection and justification of construction methods for service in demanding environments.

Outline syllabus: The topics covered in this module are likely to include, but not limited to:

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: Structured face-to-face and online sessions blend interactive lectures, small-group tutorials and hands-on labs with CAD

workshops, all supported by extensive independent study to apply theory to multidisciplinary design challenges .

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

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/F2C17E6A-1004-7BCB-6939-50441CC3506B.html?lang=en-GB) via the following link <https://rl.talis.com/3/uwe/lists/F2C17E6A-1004-7BCB-6939-50441CC3506B.html?lang=en-GB>

Part 4: Assessment

Assessment strategy: Assessment strategy: The assessment for this module is as follows:

Written Report: Learners are required to produce written report on laboratory-based experiments and practical materials testing tasks leading to data acquisition/collection, analysis and evaluation.

Group Presentation: The learners will produce designs of an electromechanical system from a given project brief. The task will focus on the group's ability to work as a multidisciplinary team on the design process, material selection and implementation evaluation.

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

Assessment tasks:

Presentation (First Sit)

Description: Group presentation and Individual questioning (20 mins)

Weighting: 60 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO3, MO4

Report (First Sit)

Description: Written report (3000 words)

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2

Presentation (Resit)

Description: Group presentation and individual questioning (20 mins)

Weighting: 60 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO3, MO4

Report (Resit)

Description: Written report (3000 words)

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechanical Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons)
2025-26

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}
[UCS] BEng (Hons) 2025-26

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons)
2026-27

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons)
2026-27

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}
[UCS] BEng (Hons) 2026-27

Electromechanical Engineering (Nuclear) [UCS] FdSc 2026-27

Electromechanical Engineering (Nuclear) {Apprenticeship-UCS} [UCS] FdSc 2026-
27

Mechanical Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Mechanical Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Mechanical Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons)
2026-27

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons)
2026-27

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}
[UCS] BEng (Hons) 2026-27

Electromechanical Engineering (Nuclear) [UCS] FdSc 2026-27

Electromechanical Engineering (Nuclear) {Apprenticeship-UCS} [UCS] FdSc 2026-
27

Mechanical Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Mechanical Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons)
2026-27