Module Specification

Electromechanical Systems Engineering

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

Contents

Part 1: Information

Module title: Electromechanical Systems Engineering

Module code: UFMFQP-30-1

Level: Level 4

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: Not applicable

Features: Not applicable

Educational aims: This module will enable learners to understand and implement strategies for maintaining and integrating electromechanical sub-systems. This module will develop learners' theoretical knowledge of electromechanical systems and will give them an appreciation of the practical applications of components.

Electromechanical Systems will cover the mathematical analytical skill to solve electromechanical problems. A comprehensive review of fundamental principles of electrics and electronics and measurement & instrumentation. Learners will experience different methods of system managements.

Outline syllabus: This module will cover:

Electrics and Electronics
-Circuit Components
-Kirchhoff's Laws
-Thevenin's and Norton's Theories
-Inductive Circuits

Electromechanical Systems
-Systems Engineering
-Systems Management
-Systems Modelling

Measurement & Instrumentation
-Measurement
-Temperature Instruments
-Pressure & Flow Instruments
-Electromechanical
-Dynamic Response

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

Complex Numbers
Matrix and Vector Algebra
Differential Calculus
Laplace Transform
Using Matlab
Programming Structures

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 basic mathematical electromechanical engineering calculations.
>
> **MO2** Analyse the behaviour of common electrical components.
>
> **MO3** Explain the operation of common industrial instrumentation.
>
> **MO4** Describe systems management policies.

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 via the following link https://uwe.rl.talis.com/index.html

Part 4: Assessment

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

Multiple Choice Examination – 90 minutes – This will assess the learners' ability to solve electromechanical problems involving fundamental principles of electrical and mechanical components.

Written Review – Learners are required to produce a literature review of electrical components and control instrumentation and system management policies. Learners will also comment on the practical experience and whether it supports evidence

found in their literature review.

The resit assessment tasks for this module willbe the same as the first sit

Assessment tasks:

Examination (First Sit)

Description: Multiple Choice Exam (90 Minutes)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1

Written Assignment (First Sit)

Description: Written review (2500 words)

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO4

Examination (Resit)

Description: Multiple Choice Exam (90 Minutes)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Written Assignment (Resit)

Description: Written review (2500 words)

Weighting: 75 %

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) 2023-24

Mechanical Engineering with Nuclear [UCS] BEng (Hons) 2023-24

Electromechanical Engineering (Nuclear) {Apprenticeship-UCS} [UCS] FdSc 2023-24

Electromechanical Engineering (Nuclear) [UCS] FdSc 2023-24

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons) 2023-24

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons) 2023-24

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

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