Module Specification

Electrical Supply and Machines

Version: 2023-24, v2.0, 27 Mar 2023

Contents

Part 1: Information

Module title: Electrical Supply and Machines

Module code: UFMFUP-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: The Electrical Supply and Machines module covers electrical regulations, analysis and evaluation of electrical generation methods, electrical transmission and energy management. The module also covers mathematical and scientific principles of transformers, motors and generators, and introduces fault analysis and protection systems used on the transmission and distribution network.

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: The topics covered in this unit are:

Electrical Supply:
Electrical Supply Systems
Electrical Distribution
Energy System Management

Motors and Generators:
Induction Motors
Systems Stability and Response
Machine Response
Infinite Busbar Model
Control
Motors in Practice

Transformers and Protection:
Transformers
Faults
Protection Systems

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

Part 3: Teaching and learning methods

Teaching and learning methods: Learners will undertake analysis and evaluation of electrical machines and electrical distribution systems.

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

MO1 Conduct electrical machine analysis calculations

MO2 Analyse the principles of electrical machines and protection

MO3 Evaluate the efficiency of transmission and distribution systems

MO4 Evaluate cost drivers, risks and health and safety in electrical supply schemes

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 module is assessed as follows:

A written examination; 90 minute exam. The examination will assess the students' knowledge and skills of transformer, motors and generators through mathematical analysis. It will assess the students' knowledge and understanding of electrical machine analysis.

Group Presentation and Written Report – The learners will conduct a scoping and feasibility study on planned improvements to piece of workshop equipment within the electrical supply context. The presentation will discuss the scope of the project and the individual written component will support this discussion and include an explanation of electrical machine and protection principles.

The resit assessment will be the same as the first sit.

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

Assessment tasks:

Examination (First Sit)
Description: Written Exam (90 minutes)
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1

Report (First Sit)
Description: Written report (1500 words)
Weighting: 30 %
Final assessment: No
Group work: No
Learning outcomes tested: MO3, MO4

Presentation (First Sit)
Description: Group presentation
Weighting: 45 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO2

Examination (Resit)
Description: Written Exam (90 minutes)
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Report (Resit)
Description: Written report (1500 words)
Weighting: 30 %
Final assessment: No

Group work: No
Learning outcomes tested:

Presentation (Resit)
Description: Group presentation

Resit deliverable(s) will be scaled appropriately to group size and task complexity
Weighting: 45 %
Final assessment: No
Group work: Yes
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

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

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

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