



Module Specification

Fundamentals of Electrical and Electronics Principles

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Part 1: Information

Module title: Fundamentals of Electrical and Electronics Principles

Module code: UFME3J-15-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: University Centre Weston

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will provide students with the fundamental principles of electrical and electronic engineering. The module will introduce the scope of the principles, and will develop the mathematical concepts, necessary to apply these principles in a simulation environment as well as to practical laboratory scenarios.

Features: Not applicable

Educational aims: Integrating theory and practice, the module will provide the knowledge and experience required, for analysing and designing simple electrical and electronic circuits.

Outline syllabus: DC Voltage and Current, Resistors, Capacitors and Inductors, Diodes and Transistors, Circuit laws and network theorems, AC fundamentals and Complex Numbers, Phasors and exponential representation, Principles of Magnetism and Electromagnetic Theory, Polyphase Circuits, Fundamentals of single-phase Transformers, Basic Concepts of Electrical Machines, Electrical Instruments and Measurements

Part 3: Teaching and learning methods

Teaching and learning methods: Learning material will be delivered through a set of lectures and structured laboratory exercises. Students will work through simulation and laboratory exercises, and progress to analysing and designing simple electrical and electronic circuits.

Accompanying lectures and tutorial sessions will present the formal aspects of the module. These will be supported by directed reading, practical and simulation laboratory-based works.

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

MO1 Explain the behaviours of a range of basic electrical/electronic components.

MO2 Analyse and simulate basic electrical and electronic systems

MO3 Apply established techniques within a lab environment to analyse and design electrical and electronic circuits

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 18 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/67B18469-08E3-4E08-6920-8EC9CEC70F09.html?lang=en&login=1) via the following link <https://rl.talis.com/3/uwe/lists/67B18469-08E3-4E08-6920-8EC9CEC70F09.html?lang=en&login=1>

Part 4: Assessment

Assessment strategy: The assessment is designed so that students build their understanding and confidence in applying electrical and electronic engineering principles, as they progress through the course.

The assessment takes the form of:

An online exam that assesses understanding, analysis and design skills, and

Online submission of simulation and lab-based activities, where students complete the experimental task followed by a written report.

The task will assess design and implementation skills

The resit assessment will follow the same format as the first sit assessment profile.

Assessment tasks:

Laboratory Report (First Sit)

Description: laboratory exercise and report.

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3

Examination (Online) (First Sit)

Description: Online Examination (4 hours)

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Laboratory Report (Resit)

Description: laboratory exercise and report.

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3

Examination (Online) (Resit)

Description: Online Examination (4 hours)

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Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2023-24