



## **Module Specification**

### **Electrical and Electronic Principles A**

Version: 2022-23, v4.0, 16 Feb 2022

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## Part 1: Information

**Module title:** Electrical and Electronic Principles A

**Module code:** UFMFP8-15-1

**Level:** Level 4

**For implementation from:** 2022-23

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

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

**Partner institutions:** None

**Delivery locations:** Frenchay Campus, Global College of Engineering and Technology (GCET), Gloucestershire College, Northshore College of Business and Technology, University Centre Somerset, University Centre Weston

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**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:** See Learning Outcomes.

In addition, the educational experience may explore, develop, and practise but not formally discretely assess the following:

Handling simulation software such as multiSIM and MATLAB

Awareness of professional learning

**Outline syllabus:** Basic Components of Electronic Circuits

Resistors, capacitors, capacitive, inductors, all semiconducting devices

Resistive circuits: Kirchhoff's laws. Thevenins and Norton's theories, mesh analysis, Millman theorem, principle of superposition.

Signal parameters and their types

Class-A and class-B amplifier,

Operational Amplifiers

Active Filters: Op amps use in active filter, as an integrator and differentiator, as a comparator and as an oscillator.

Passive filters: RC, RL and RLC circuit response, analysis and use of RLC circuits, oscillators

The Cartesian and polar representation of voltage, current and impedance

Power supplies and measurement instruments

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

**Teaching and learning methods:** The module delivers material on basic principles of electrical and electronic engineering. Concepts and the scope of a topic will be introduced in lectures. These will be supported by directed reading and simulation laboratory based work. Tutorial exercises will provide students confidence in applying the concepts and analysing and designing the simple electrical and electronic circuits. The labs sessions will enhance the understanding of students of real-world applications of the material delivered in the module. The students will learn through applying a variety of analysis methods, mathematical and simulation tools to simple circuits and electromagnetic systems. Relevant ethical issues will be highlighted and students will be encouraged to consider these further through directed reading.

Activity (Hours)

Contact (36)

Assimilation and skill development (66)

Undertaking Coursework (24)

Exam preparation (24)

Total (150)

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

**MO1** A range of basic electrical/electronic components such as R, L, C, diodes, transistors, general amplifiers and op-amps

**MO2** Basic principles of electrical and electromagnetic signals

**MO3** Electrical and electronic circuits design

**MO4** The techniques for analysing circuits and their behaviours

**MO5** Ethics related issues

**MO6** Writing and presentation skills

**MO7** Team working skills whilst tackling an integrated problem

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmfp8-15-1.html) via the following link <https://uwe.rl.talis.com/modules/ufmfp8-15-1.html>

## Part 4: Assessment

**Assessment strategy:** Your achievements in the module will be assessed in two components. The first component consists of an exam and the second component comprises of logbooks submission and reflection.

Component A consists of only one assessment, worth 25% overall. There will be an exam.

Component B consists of an individual reflective portfolio of key concepts covered during laboratory sessions, worth 75% overall.

The GCET delivery of this exam is a 2 hour face-to-face/invigilated exam. It was agreed that GCET can deliver the exam in a different way to UWE for in-country reasons for 2021/22 and 2022/23 providing there is no change to the UWE assessment during this time.

### Assessment components:

#### Examination (Online) - Component A (First Sit)

Description: 24 hour window, take home exam

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Laboratory Report - Component B (First Sit)**

Description: Logbooks submission.

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4, MO5, MO6, MO7

**Laboratory Report - Component B (Resit)**

Description: Individual assignment (based on lab work) submissions

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Examination (Online) - Component A (Resit)**

Description: 24 hour, take home exam

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Electronic Engineering [Sep][SW][Frenchay][5yrs] MEng 2022-23

Electronic Engineering [Sep][FT][Frenchay][4yrs] MEng 2022-23

Mechatronics [Sep][PT][UCS][3yrs] FdSc 2022-23

Mechatronics [Sep][PT][GlosColl][3yrs] FdSc 2022-23

Mechatronics {Apprenticeship-UCW} [Sep][FT][UCW][3yrs] FdSc 2022-23

Electrical and Electronic Engineering [Sep][SW][Northshore][5yrs] MEng 2022-23

Electronics and Telecommunication Engineering {Foundation} [Feb][FT][GCET][4yrs]  
BEng (Hons) 2021-22

Electronics and Telecommunication Engineering {Foundation} [Oct][FT][GCET][4yrs]  
BEng (Hons) 2021-22

Instrumentation and Control Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng  
(Hons) 2021-22

Instrumentation and Control Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng  
(Hons) 2021-22

Instrumentation and Control Engineering {Foundation} [Feb][PT][GCET][8yrs] BEng  
(Hons) 2020-21

Instrumentation and Control Engineering {Foundation} [Oct][PT][GCET][8yrs] BEng  
(Hons) 2020-21