



## **Module Specification**

### **Electronic Systems**

Version: 2023-24, v3.0, 04 May 2023

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## Part 1: Information

**Module title:** Electronic Systems

**Module code:** UFMF7Q-30-3

**Level:** Level 6

**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 syllabus is designed to enable the learner to understand and design MOSIS and power electronic systems, as well as have an understanding of how VLSI circuits are used in industry.

**Outline syllabus:** This module focusses on electronic design and power electronics, whilst also introducing the concepts of large scale integration. Key areas for study are electronic system design techniques and how to integrate these on a large scale within power electronics.

The topics covered in this unit are:

Electronic Design:

Sequential Design

Flip Flops

Mathematical Operators

Minimisation

Power Electronics:

Power Electronics Converters

Thyristor Controlled Series Compensator

Static VAR Compensator [SVC] / Static Synchronous Compensator (StatCom)

Unified Power Flow Controller [UPFC] / Dynamic Voltage Restoration [DVR]

Very Large-Scale Integration [VLSI]:

Component Construction

Metal Oxide Semiconductor Implementation Service (MOSIS)

Regular Array Structures

Analogue VLSI

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

**Teaching and learning methods:** See Assessment

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

**MO1** Conduct power electronics analysis calculations

**MO2** Create and evaluate electronic sequences for engineering applications.

**MO3** Analyse NMOS and CMOS arrays for logic applications.

**MO4** Design and evaluate MOSIS devices for logic applications.

**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](https://uwe.rl.talis.com/index.html) via the following link <https://uwe.rl.talis.com/index.html>

## **Part 4: Assessment**

**Assessment strategy:** Exam - 2 Hours - The assessment will encompass the analysis of power electronics systems and the creation of electronic sequences for given applications.

Individual Presentation – Students are given a sample electronic system and must produce and present an analysis of N and CMOS arrays with designs for a MOSIS logic device.

The resit strategy is the same as the first sit.

**Assessment tasks:**

**Examination** (First Sit)

Description: Examination (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

**Presentation (First Sit)**

Description: Individual presentation

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4

**Examination (Resit)**

Description: Examination (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Presentation (Resit)**

Description: Individual presentation

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}  
[Sep][FT][UCS][4yrs] BEng (Hons) 2021-22

Electrical, Electronic and Control Engineering with Nuclear [Sep][PT][UCS][4yrs]  
BEng (Hons) 2021-22

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS}  
[Sep][FT][UCS][5yrs] BEng (Hons) 2020-21