Module Specification

Electronic Systems

Version: 2028-29, v2.0, Approved

Contents

Part 1: Information

Module title: Electronic Systems

Module code: UFMF7Q-30-3

Level: Level 6

For implementation from: 2028-29

UWE credit rating: 30

ECTS credit rating: 15

College: College of Arts, Technology and Environment

School: CATE School of Engineering

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: 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.

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: The topics covered in this module 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: Face-to-face learning combines interactive lectures and tutorials on design principles and mathematical analysis with hands-on workshops and labs for power-converter prototyping and logic device modelling; large-scale integration concepts are explored through simulation exercises. Independent study will be supported by guided readings and problem sets.

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

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/3A18611F-E725-85AE-D4BD-3863FFC0E0DA.html?lang=en-GB

Part 4: Assessment

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

Examination (2 hours): The assessment will encompass the analysis of power electronics systems and the creation of electronic sequences for given applications.

Presentation: The learners will design an electronic system model of suitable logic device and present their results, along with performance analysis and evaluation.

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: Electronics model design and presentation (20 mins)
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: MO1, MO2

Presentation (Resit)
Description: Electronics model design and presentation (20 mins)
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons) 2025-26

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons) 2026-27

Electrical, Electronic and Control Engineering with Nuclear [UCS] BEng (Hons) 2026-27

Electrical, Electronic and Control Engineering with Nuclear {Apprenticeship-UCS} [UCS] BEng (Hons) 2026-27