Module Specification

Analogue Electronic Design

Version: 2021-22, v5.0, 26 Apr 2022

Contents

Part 1: Information

Module title: Analogue Electronic Design

Module code: UFMFE7-15-3

Level: Level 6

For implementation from: 2021-22

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

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 to the learning outcomes, the educational experience may explore,

develop, and practise but not formally discretely assess the following:

The ability to work safely in a workshop or laboratory environment while using a range of tools and techniques related to the assembly of electronic circuits and PCBs.

Awareness of nature of intellectual property and contractual issues.

Ability to work with technical uncertainty.

Outline syllabus: The syllabus includes:

Grounding and wiring
PCB board types, design rules.
Passive components, active components
Analogue ICs
digital and microcontroller interfacing
Power supplies
EMC
Product design and testing

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching will include the formal presentation of material through lectures, presentations and seminars from industrial partners and laboratory work. The laboratory work will provide the practical application of the theory discussed in the lectures. The student will apply this understanding to the design and implementation of an electronic circuit and PCB. This will form part of the module assessment.

There may be circumstances where individual part-time students can undertake the practical work in their work-place.

Scheduled learning includes lectures, seminars, practical classes and workshops; external visits; work based learning.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Contact Hours:

Activity:
Contact: 36 hours
Assimilation and skill development: 44 hours
Coursework: 60 hours
Exam preparation: 10 hours
Total: 150 hours

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

MO1 Use quantitative methods and appropriate computer software tools to solve engineering problems involving the analysis of electronic circuits

MO2 Ensure fitness for purpose for all aspects of circuit board design including production, operation, maintenance and disposal

MO3 Identify and manage cost drivers in the design and development of electronic systems

MO4 Show knowledge and understanding of commercial and economic context of engineering processes

MO5 Demonstrate knowledge and understanding of the equipment, materials and processes employed in the design, production and testing of electronic circuits and systems, including PCB production

MO6 Apply analytical methods (i.e. circuit theory) and modelling techniques (i.e. electronic device models) to the identification, classification and description of electronic circuits and their performance in response to a range of externally applied stimuli

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 via the following link https://uwe.rl.talis.com/modules/ufmfe7-15-3.html

Part 4: Assessment

Assessment strategy: All assessments are based on practical work as the design of electronic circuits and PCBs is something that comes through practical experience as much as an understanding and implementation of 'design rules'.

Summative assessment will be achieved through a laboratory exercise conducted under controlled conditions, this will assess the students ability to correctly conduct the testing of a circuit for correct behaviour. The open summative assessment will require the student to develop an electronic device from initial requirements to pre-production prototype including consideration of environmental factors and cost drivers.

Assessments will be conducted in line with the SEEC guidelines for the level in conjunction with the discipline specific outcomes listed above and referenced from the IET Handbook of Learning Outcomes for Accredited Programmes.

The online assessed laboratory exercise (A1) will be of 5 hours duration.

The accompanying report for the design and implementation will be expected to be of 2000 -3000 words, to include schematics, layouts etc.

The assessment for referral will be one 3 hour exam testing learning outcomes 5 and 6, as it is not the length of assessment but the outcomes tested that are of importance for demonstrating that knowledge has been gained.

Formative assessment will be provided as feedback during the design and development of the open summative assessment.

Assessment components:

Examination (Online) - Component A (First Sit)
Description: Online Laboratory Design Exam (5 hours)
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO5, MO6

Project - Component B (First Sit)
Description: Design and implementation project
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Examination (Online) - Component A (Resit)
Description: Online Laboratory Design Exam (5 hours)
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Project - Component B (Resit)
Description: Design and implementation project
Weighting: 50 %
Final assessment: No

Group work: No
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Engineering {Top-Up}[Sep][PT][Frenchay][2yrs] BSc (Hons) 2021-22

Electronic Engineering (Nuclear) {Apprenticeship-UCW} {Top-Up} [Sep][FT][MOD][2yrs] BEng (Hons) 2021-22

Electronic Engineering {Apprenticeship-UCW} {Top-Up} [Sep][FT][Frenchay][2yrs] BEng (Hons) 2021-22

Engineering {Top-Up}[Sep][FT][Frenchay][1yr] BSc (Hons) 2021-22

Electronic Engineering (Nuclear) {Top-Up} [Sep][PT][MOD][2yrs] - Not Running BEng (Hons) 2021-22

Electronic and Computer Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Electronic Engineering [Sep][FT][Frenchay][4yrs] MEng 2019-20

Electronic Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Electronic Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19

Instrumentation and Control Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Electronic and Computer Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Electronic and Computer Engineering [Sep][PT][GlosColl][5yrs] BEng (Hons) 2018-19

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL} [Sep][FT][GlosColl][5yrs] BEng (Hons) 2018-19

Instrumentation and Control Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19

Electronic Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Electronic Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19