Module Specification

Practical Electronics

Version: 2022-23, v4.0, 08 Jun 2022

Contents

Part 1: Information

Module title: Practical Electronics

Module code: UFMFCA-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

Field: Engineering, Design and Mathematics

Module type: Project

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

Working as a team member
Printed circuit board design
Circuit simulation

Outline syllabus: Use of basic laboratory instrumentation (PSU, oscilloscope, DMM, function generator).

Ohm's law - Resistors and resistance (parallel and series), value marking, tolerance.

Diode – basic operation and V-I characteristics.

Rectification and smoothing.

Transistor operation, as an amplifier and as a switch.

Operational Amplifiers.

Digital Logic ICs.

AC waveforms, RMS.

Project work will encompass more advanced topics, e.g. battery charging, timing circuits, dc-dc converters etc.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will mainly involve laboratory sessions of a directed nature; the broad aim of this approach is to underpin/reinforce theoretical knowledge gained either prior to or after joining the course, in order to ensure a minimum standard of practical ability is achieved across a cohort with

potentially diverse backgrounds.

The primary focus will be to introduce students to a number of common electronic components in a practical setting, and to provide the stimulus to investigate the characteristics and performance of circuits built from these components.

Students will be encouraged to use private study time to investigate the theoretical principles on which the laboratory exercises are based, and to gain familiarity with the components encountered by studying the associated data sheets which are available on-line.

Students will also gain experience in the use of standard test equipment, and gain confidence through the use of such equipment ‘in context’.

The keeping of formal laboratory notebooks will be required to ensure adequate recording of the work undertaken, and to satisfy the requirements of accrediting bodies such as the IET that such practice is observed. The laboratory notebook will also serve as the primary grading mechanism for summative assessment, and as a vehicle for providing feedback on work undertaken across a variety of topics.

To integrate the practical concepts, students will also be required to work in groups for a design and build project: Each group will need to submit a project report that will include an individual reflective statement from each team member . Students are required to manage their own time during the entire module so as to work on individual practical exercises and the Group Project which run concurrently. The teaching/learning format for the Group Project is at least partly EBL (enquiry-based learning), where the students are directed to request / demand key information in order to be able to meet the brief.

Contact hours: 36
Self-study: 50
Assignment Preparation: 64
Examination Preparation: 0
Total: 150

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

MO1 Demonstrate knowledge of and competence in the use of basic laboratory instrumentation

MO2 Demonstrate knowledge and understanding of a number of common electronic components

MO3 Show cognitive skills with respect to the analysis of a design specification, and make appropriate component selection through research and analysis of available component data

MO4 Demonstrate knowledge of and competence in the use of standard electronic hardware prototyping techniques

MO5 Show cognitive skills with respect to the analysis of a requirement specification or problem definition, and synthesize a design solution based on appropriate research and the application of acquired skills and experience

MO6 Demonstrate knowledge and understanding of the need to keep adequate experimental notes

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/ufmfca-15-1.html

Part 4: Assessment

Assessment strategy: Assessment for the module consists of a group project (groups of 4-6 students). It will involve the design, (building) and test of a system for

which they have to submit a Group Report (5000 words) (100%).

The resit assessment is an individual project. It will involve the design, (building) and test of a system for which they have to submit an individual Report (1500 words) (100%).

Assessment components:

Project - Component A (First Sit)
Description: Group project (5000 word report)
Weighting: 100 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Project - Component A (Resit)
Description: Individual project (1500 word report)
Weighting: 100 %
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

Electronic and Computer Engineering [Sep][FT][Frenchay][3yrs] - Not Running BEng (Hons) 2022-23

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

Electrical and Electronic Engineering [Northshore] MEng 2022-23

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

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

Mechanical Engineering and Technology (Mechatronics) {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Mechatronics) {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

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

Electronic and Computer Engineering [Sep][PT][GlosColl][5yrs] - Not Running 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