Module Specification

Practical Electronics

Version: 2026-27, v4.0, Approved

Contents

Module Specification 1

Part 1: Information 2

Part 2: Description 2

Part 3: Teaching and learning methods 3

Part 4: Assessment 4

Part 5: Contributes towards 6

Part 1: Information

Module title: Practical Electronics

Module code: UFMEAH-30-1

Level: Level 4

For implementation from: 2026-27

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 introduces students to basic applications of digital and analogue electronics encountered in Robotics and Mechatronics. Basic circuit elements, electronic devices and operational amplifiers and their applications are introduced. Combinational and sequential digital systems as well as finite state machines are covered. Simulation tools are used to verify theoretical calculations and the associated laboratory along with the introduction of standard test and

measurement equipment reinforces the lecture material. The module culminates in a project encompassing topics taught in the module.

Features: Not applicable

Educational aims: The aim of this module is to provide the technical underpinning for the design of digital and analogue electronic circuits, components and devices. The students will gain understanding of fundamental analogue and digital electronic concepts that are commonly applied in the design of more complex electronic systems encountered in Robotics and Mechatronics.

Outline syllabus: Indicative syllabus content:

Current, voltage, power, energy, impedance, serial and parallel configuration of resistors, capacitors, and inductors
RLC resonant circuits and passive filters
Basic operation and applications of active devices, such as diodes, BJTs, FETs, and OpAmps
Basic applications of combinational and sequential digital logic circuits, finite state machines
Use of digital electronic CAD tools for design and simulation of combinational and sequential logic circuits
Basic PCB software design tools and methods.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered using lectures to support smaller group laboratory and simulation group sessions.

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

MO1 Design, implement, and analyse complex combinational and sequential logic circuits.

MO2 Demonstrate theoretical and practical knowledge of electronic components through the design of electronic circuits.

MO3 Describe and explain the basic active and passive components of electronic circuits.

MO4 Record and maintain effective experimental notes.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Staff-guided learning = 72 hours

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/index.html

Part 4: Assessment

Assessment strategy: Task 1 is delivered in Semester 1 and will take the form of multiple laboratory assignments completed at regular intervals during the semester. This is used to assess competency in the technical aspects of the module and provide feed forward preparation for the mid-year examination (Task 2). The coursework assessment regime has been devised to provide regular feedback and feed forward to assist students' progression in practical electronics.

Task 2 is an examination at the end of Semester 1 and assesses the student's understanding of the range of fundamental concepts applied to practical problems.

Task 3 consists of a portfolio of laboratory assignments and self-study-time assignments that are regularly scheduled throughout the semester, including a design project developed during Project Week 2.

Resit Strategy:
The resit strategy is the same as the first sit strategy.

Assessment tasks:

Laboratory Report (First Sit)

Description: Multiple laboratory reports distributed throughout the semester (5-6 pages per report)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Examination (First Sit)
Description: Exam (2 hours)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2

Portfolio (First Sit)
Description: Short reports based on lab work/theory on analogue electronics plus PCB design in PW2.
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO2, MO3, MO4

Laboratory Report (Resit)
Description: Multiple laboratory reports distributed throughout the semester (5-6 pages per report)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Examination (Resit)
Description: Exam (2 hours)
Weighting: 25 %
Final assessment: No

Group work: No
Learning outcomes tested: MO1, MO2

Portfolio (Resit)
Description: Short reports based on lab work/theory on analogue electronics plus PCB design in PW2.
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechatronics Engineering {Foundation} [Frenchay] MEng 2025-26

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2025-26

Robotics {Foundation} [Frenchay] BEng (Hons) 2025-26

Mechatronics Engineering [Frenchay] BEng (Hons) 2026-27

Mechatronics Engineering [Frenchay] MEng 2026-27

Robotics [Frenchay] BEng (Hons) 2026-27

Robotics {Foundation} [Frenchay] BEng (Hons) 2025-26

Robotics [Frenchay] BEng (Hons) 2026-27

Mechatronics Engineering {Foundation} [Frenchay] MEng 2025-26

Mechatronics Engineering [Frenchay] BEng (Hons) 2026-27

Mechatronics Engineering [Frenchay] MEng 2026-27

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2025-26

Robotics [Frenchay] BEng (Hons) 2026-27

Robotics {Foundation} [Frenchay] BEng (Hons) 2025-26