



## **Module Specification**

### **Communications, Signals and Filters**

Version: 2023-24, v2.0, 15 Mar 2023

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## Part 1: Information

**Module title:** Communications, Signals and Filters

**Module code:** UFMFR7-15-2

**Level:** Level 5

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**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:** Electrical and Electronic Principles A 2023-24

**Excluded combinations:** None

**Co-requisites:** Mathematics for Signals and Control 2023-24

**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 learning outcomes the module will explore, but not formally assess:

IT skills in context

Progression to independent learning

**Outline syllabus:** Frequency spectra.

Bandwidth.

Discrete and continuous signals.

Sampling Review of operation of operational amplifiers, gain and phase shift.

Bode plots.

Types and operation of active filters in communication systems.

Use of simulation software (e.g., MATLAB).

PCM, encoding and decoding techniques, commercially available subsystems.

Use of simulation software (e.g., MATLAB).

Concepts of AM, PM and FM Systems, ASK, FSK and PSK.

Transmission of Data: Parallel and Serial; concepts, limitations of parallel transmission, Asynchronous and Synchronous Transmission, Serial Data

Transmission Standards, Data Link Layer Protocols, Commonly used Interfaces such as SPI, I2C and RS232, Error control concepts.

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

**Teaching and learning methods:** The module delivers material on signals types/analysis and their transmission. It also covers the use of filters, methods of data communication and commonly used interfaces. Concepts and the scope of a topic will be introduced in lectures. These will be supported by directed reading and experimental and simulation laboratory based work. The labs sessions will enhance the understanding of students of real-world applications of the material delivered in the module. The students will learn through applying a variety of analysis methods, mathematical and simulation tools to simple communication systems. Relevant ethical issues will be highlighted and students will be encouraged to consider these further through directed reading.

Contact: 36 hours

Assimilation and skill development: 66 hours

Undertaking Coursework: 24 hours

Exam preparation: 24 hours

Total: 150 hours

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

**MO1** Understand principles associated with signal analysis techniques

**MO2** Demonstrate ability to design simple amplifiers and active filters circuits

**MO3** Perform calculations using the principles of operation and application of communications systems

**MO4** Demonstrate ability to design a basic communications system

**MO5** Demonstrate the use of simulation tools to model simple transmissions systems and circuits

**MO6** Demonstrate the design, build and test elements of data communication systems

**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](https://uwe.rl.talis.com/modules/ufmfr7-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ufmfr7-15-2.html>

## Part 4: Assessment

**Assessment strategy:** There will be a final exam set at the end of the term and a total of 50% marks will be contributed from this Task. The coursework assessment task is logbook-based work. Weekly tasks in the logbooks will be assessed and marked at the end of the term. This task will contribute 50% marks to the final marks

of the module. In the resit the coursework task will be resubmission of the improved logbook-based work and the remaining part of the module assessment will be same as set in the first run.

**Assessment tasks:****Examination (Online) (First Sit)**

Description: Exam (3 Hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO6

**Portfolio (First Sit)**

Description: Logbook submission

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

**Examination (Online) (Resit)**

Description: Exam (3 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO6

**Portfolio (Resit)**

Description: Resubmission of logbook-based work

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

## **Part 5: Contributes towards**

This module contributes towards the following programmes of study:

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