



## **Module Specification**

### **Communications**

Version: 2021-22, v2.0, 17 Feb 2022

#### **Contents**

<b>Module Specification .....</b>	<b>1</b>
<b>Part 1: Information .....</b>	<b>2</b>
<b>Part 2: Description .....</b>	<b>2</b>
<b>Part 3: Teaching and learning methods .....</b>	<b>3</b>
<b>Part 4: Assessment.....</b>	<b>5</b>
<b>Part 5: Contributes towards .....</b>	<b>6</b>

## Part 1: Information

**Module title:** Communications

**Module code:** UFMFS7-15-3

**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, Global College of Engineering and Technology (GCET), Northshore College of Business and Technology

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**Pre-requisites:** Mathematics for Signals and Control 2021-22

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Pre-requisites: Students must take UFMFL9-15-2 Maths for Signals and Control OR Equivalent

**Features:** Not applicable

**Educational aims:** See Learning Outcomes.

In addition to Learning Outcomes, the educational experience may explore, develop, and practise but not formally discretely assess the following:

Problem formulation and decision making

Self-management skills

Working with others

**Outline syllabus:** The syllabus includes:

Information content of signals, Transmission of information, and Hartley and Shannon's Law and its applications.

Analogue CW modulation techniques: DSB, AM, SSB, VSB, Angle Modulation, generation, demodulation and applications, Comparison including SNR performance, Super-heterodyne principle for reception

PCM: A/D conversion, sampling (anti-aliasing filter) and encoding, quantisation noise, linear and non-linear noise, D/A conversion.

Baseband data signals: bit rate/bandwidth relationship, ISI and I diagram, error probability estimation, source, error and line coding, regeneration.

Digital CW modulation: forms, spectra and bandwidth in terms of bit rate, modems, applications

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

**Teaching and learning methods:** The module delivers material on analogue and digital communication systems. Concepts and the scope of a topic will be introduced

in lectures. These will be supported by directed reading and simulation laboratory based work. The lab 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 design communication systems. Relevant ethical issues will be highlighted and students will be encouraged to consider these further through directed reading.

Contact Hours:

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** The limitations of telecommunication channels from an information theoretic perspective

**MO2** Design principles of analogue and digital telecommunications modulation techniques and noise in both digital and analogue systems

**MO3** Design confidently a simulation model of telecommunication system

**MO4** Participate confidently in testing of telecommunication systems

**MO5** Describe, analyse and evaluate the commonly used modulation techniques employed in telecommunication systems

**MO6** Examine the signal to noise characteristics of different modulation techniques

**MO7** Awareness of professional literature

**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/ufmfs7-15-3.html) via the following link <https://uwe.rl.talis.com/modules/ufmfs7-15-3.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 element (A). The coursework (element B) is numerical-type/mini-research-based work. Element B will contribute 50% marks to the final marks of the module. In the resit run element B will be an individual work assignment and the remaining part of the module assessment will be same as set in the first run.

The GCET delivery of this exam is a 3 hour face-to-face/invigilated exam. It was agreed that GCET can deliver the exam in a different way to UWE for in-country reasons for 2021/22 and 2022/23 providing there is no change to the UWE assessment during this time.

**Assessment components:**

### **Examination (Online) - Component A (First Sit)**

Description: Online examination

Weighting: 50 %

Final assessment: Yes

Group work: No

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

**Written Assignment - Component B (First Sit)**

Description: Coursework assignment

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO5, MO6, MO7

**Examination (Online) - Component A (Resit)**

Description: Online examination

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Written Assignment - Component B (Resit)**

Description: Coursework assignment

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

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

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

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

Electronic Engineering {Apprenticeship-UCW} {Top-Up} [Sep][FT][Frenchay][2yrs]  
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

Electrical and Electronic Engineering [Sep][SW][Northshore][5yrs] MEng 2018-19

Instrumentation and Control Engineering {Foundation} [Feb][FT][GCET][4yrs] 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

Electronic and Computer Engineering [Sep][PT][GlosColl][5yrs] BEng (Hons) 2019-  
20

Electronic and Computer Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-  
20