MODULE SPECIFICATION

Part 1: Information			
Module Title	Communications		
Module Code	UFMFS7-15-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	Mathematics for Signals and Control 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

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

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

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

Part 3: Assessment

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.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online Exam (3 hours)
Written Assignment - Component B		50 %	Coursework assignment
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online Exam (3 hours)
Written Assignment - Component B		50 %	Coursework assignment

Part 4: Teaching and Learning Methods

Learning Outcomes

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

Module Learning Outcomes	Reference
The limitations of telecommunication channels from an information theoretic perspective	MO1
Design principles of analogue and digital telecommunications modulation techniques and noise in both digital and analogue systems	MO2
Design confidently a simulation model of telecommunication system	MO3
Participate confidently in testing of telecommunication systems	MO4
Describe, analyse and evaluate the commonly used modulation techniques employed in telecommunication systems	MO5
Examine the signal to noise characteristics of different modulation techniques	MO6
Awareness of professional literature	MO7

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	114
Total Independent Study Hours:	114
Scheduled Learning and Teaching Hours:	
Face-to-face learning	36
Total Scheduled Learning and Teaching Hours:	36
Hours to be allocated	150
Allocated Hours	150

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/modules/ufmfs7-15-3.html

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Electronic and Computer Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Electronic Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Electronic Engineering [Sep][FT][Frenchay][3yrs] 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} [Sep][PT][GlosColl][5yrs] BEng (Hons) 2018-19