



MODULE SPECIFICATION

Part 1: Information			
Module Title	Communications		
Module Code	UFMFS7-15-3	Level	Level 6
For implementation from	2019-20		
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 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: Pre-requisites: Students must take UFMFL9-15-2 Maths for Signals and Control OR Equivalent</p> <p>Educational Aims: See Learning Outcomes.</p> <p>In addition to Learning Outcomes, the educational experience may explore, develop, and practise but not formally discretely assess the following:</p> <p>Problem formulation and decision making</p> <p>Self-management skills</p> <p>Working with others</p> <p>Outline Syllabus: The syllabus includes:</p> <p>Information content of signals, Transmission of information, and Hartley and Shannon's Law and its applications.</p> <p>Analogue CW modulation techniques: DSB, AM, SSB, VSB, Angle Modulation, generation,</p>

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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
Written Assignment - Component B		50 %	Coursework assignment
Examination - Component A	✓	50 %	Exam
Resit Components	Final Assessment	Element weighting	Description
Written Assignment - Component B		50 %	Coursework assignment
Examination - Component A	✓	50 %	Exam

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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	<i>The reading list for this module can be accessed via the following link:</i>	
	https://uwe.rl.talis.com/modules/ufmfs7-15-3.html	

Part 5: Contributes Towards

This module contributes towards the following programmes of study: