



MODULE SPECIFICATION

Part 1: Information			
Module Title	Mobile and Wireless Communication		
Module Code	UFMFKN-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	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: This module is designed to provide broad knowledge on Mobile and Wireless Communication Systems.</p> <p>Educational Aims: After having a detailed historical plus functional architectural preview of the many existing wireless and mobile cellular communication systems, it teaches the design concepts, operations and managements of these systems. Some of the systems covered in the module are GSM 2.5G, UMTS 3G, 4G and Wi Fi Wireless and many other shortrange wireless systems. Full details of these systems such as standards (GMSK, FDMA, TDMA, and WCDMA), network structures, protocol architectures, operational problems (interferences, channel fading and maintaining QoS) and design constraints are taught. Simulation packages are used to implement the design concepts and evaluate the performance aspects of the above systems. The main aim of this module is to provide: a broad understanding of the principles of mobile and wireless communications.</p> <p>In addition, the educational experience may explore, develop, and practise but not formally assess the following:</p> <p>Problem formulation and decision making.</p> <p>Self-management and project management skills.</p>

STUDENT AND ACADEMIC SERVICES

Outline Syllabus: The syllabus outline includes:

CELLULAR PRINCIPLES:

The cellular concept, Typical cell operation, System capacity, Frequency re-use distance, Determination of cell radius, Sectoring, Properties of the radio channel, Space wave propagation, Short-term fading (fast fading).

MOBILE COMMUNICATION SYSTEMS:

Global System Mobile Communication (GSM), GSM radio interface, Mapping of logical channels in GSM, GSM modulation, coding and error protection, Handoff in GSM, GSM handoff measurements, Features of the GSM 2.5G system, Operation of the GSM system, Security in GSM, Others Cordless Communications systems.

Universal Mobile Telecommunications System (UMTS), Comparison with GSM and others.

Fourth Generation Mobile Communications: Long Term Evolution (LTE).

Wireless communications; WiMAX (IEEE 802.16) and Wi Fi (IEEE 802.11).

Teaching and Learning Methods: Concepts and the scope of the syllabus topics will be introduced in lectures, supported by directed reading and lab experiments/simulation based work. The tutorial exercises and labs sessions will enhance the understanding of students of real-world applications of the material delivered in the module.

Scheduled learning includes lecture and tutorials/practical classes.

Independent learning includes hours engaged with essential reading, assignment preparation and completion, etc. These sessions constitute an average time per level.

In addition to 36 hours of scheduled contact, students will be expected to spend (typically) 92 hours in independent study, preparation for classes, and assimilation of knowledge and skills development. The assessment strategy involving submitting a research based group assignment and end of module examination will require (typically) 22 hours.

Part 3: Assessment

The assessment consists of an end of module examination and a group assignment.

The strategy has been chosen to ensure that the mobile and wireless communication principles are assessed under controlled conditions, while a more open-ended research based group assignment is used to encourage wider engagement and reflection on this topic. In component B, the students will model and implement a mobile/wireless communication link using a given simulation package.

The group work activity will result in the submission of a 3000 word group report and a 500 word individual reflection.

The resit assignment will be based on the 1st sit assignment and result in a 1500 word individual report.

First Sit Components	Final Assessment	Element weighting	Description
Written Assignment - Component B		10 %	Individual reflection (500 words)
Report - Component B		40 %	Group report (3000 words)
Examination - Component A	✓	50 %	Examination (2 hours)

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Resit Components	Final Assessment	Element weighting	Description
Report - Component B		50 %	Individual reflection (1500 words)
Examination - Component A	✓	50 %	Examination (2 hours)

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	
	Apply concepts of designing, managing and planning of 2.5G, 3G and 4G cellular mobile communications systems	MO1	
	Design a cell in cellular system under technical constraints	MO2	
	Evaluate a mobile/wireless communication system performance	MO3	
	Apply knowledge to analyse performance of system components and cell coverage areas in particular circumstances	MO4	
	Apply quality standards to the design of cellular and wireless systems	MO5	
	Understand the commercial, economic, ethical, security and risk issues	MO6	
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/ufmfkn-15-3.html	

Part 5: Contributes Towards

This module contributes towards the following programmes of study: