MODULE SPECIFICATION

Part 1: Information			
Module Title	Wireless and Mobile Communications		
Module Code	UFMF9D-15-M	Level	Level 7
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

Educational Aims: See Learning Outcomes

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

Problem formulation and decision making.
Self-management and project management skills.

Outline Syllabus: The syllabus includes:

INFORMATION THEORY:
Transmission of information, Shannon's Law and its applications.

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 system, Operation of the GSM system, Security in GSM, Others Cordless Communications systems. Universal Mobile Telecommunications System (UMTS), Comparison with GSM and others second generation systems, CDMA principle, WCDMA air interface-physical layer, Modulation techniques and spread spectrum, UMTS networks and network management. Transition from 3G to 4G networks, Features of 4G system, Data rates targets of 4G

Teaching and Learning Methods: Scheduled Learning in the form of lectures, tutorials, demonstrations and independent learning laboratory work.

Independent Learning will include directed reading, tutorial exercises, general reading of trade journals, academic papers and other texts.

Part 3: Assessment

The module will be assessed by two components as follows:

Component A: There will be a written examination to test understanding of underlying concepts and theory.

Component B: Will involve a mini-research-based/modelling simulation project to develop deeper understanding of the field and applications.

Formative feedback will be provided in laboratory sessions and tutorials.

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

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
Design principles, operations, management, network hierarchies and planning of 2.5G, 3G and 4G cellular mobile communications systems	MO1
Designing a cell in cellular system under technical constraints	MO2
Evaluating a mobile/wireless communication system performance	MO3
Applying the design principles for developing 2.5G, 3G and 4G mobile systems	MO4
Appropriate system components and cell coverage areas in particular circumstances	MO5
Research and presentation skills	MO6
Awareness of professional literature	MO7
Communication skills	MO8

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	126
Total Independent Study Hours:	126
Scheduled Learning and Teaching Hours:	
Face-to-face learning	24
Total Scheduled Learning and Teaching Hours:	24
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/ufmf9d-15-m.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study: