

MODULE DESCRIPTOR

MODULE TITLE	WIRELESS, MOBILE AND FIBRE-OPTIC COMMUNICATIONS		
MODULE CODE	EL3801 (L6)	CREDIT VALUE	20 CREDITS / 10 ECTS
CAMPUS	UCLAN CYPRUS		
SCHOOL	SCHOOL OF SCIENCE		

MODULE AIMS

1. To examine the physical principles behind fibre-optics and the consequent developments made in communication systems.
2. To discuss the theoretical basis of the physical principles behind the implementation of wireless and mobile systems.
3. To extend students' knowledge on the increasing complexity of modern communication systems both in terms of technical implementation and the business needs they meet.
4. To explore and discuss the differences between wireless/mobile media and fibre-optic media for the implementation of communication systems.

MODULE CONTENT

This module introduces students to the fundamentals of both wireless/mobile media and fibre-optic media with particular emphasis on the physical layer, i.e. physical principles of the media and their role in communications. It provides students with a thorough understanding of how a basic communications system functions and builds on this knowledge to include the characteristics of using different media at the physical layer (focusing on wireless/mobile and on fibre-optics). Students will have the opportunity to design, test and compare communication systems based on different media.

1. Introduction to physical principles of optics and optical communication systems:
 - a. Optical fibre and photonic components
 - b. Optical Transmitters/Receivers and fibre cables
 - c. Bandwidth-distance product, dispersion and attenuation
2. Wireless/Mobile System Design fundamentals:
 - a. Cellular Concept, Cellular Networks, Handover, Channel assignments, capacity planning, Diversity
 - b. Path Loss, Coverage small and large scale fading, multipath, reflection, diffraction, scattering, channel modelling, antennas, outdoor/indoor propagation.
3. Overview of key wireless/mobile and fibre-optic Technologies for voice/multimedia and data applications.

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:	
1.	Critically discuss the trends and emerging technologies in wireless, mobile, and fibre-optic media and their role in communications.
2.	Assess the performance and limitations of different media (wireless/mobile and fibre-optics) at the physical layer.
3.	Compare and contrast different communication systems based on different media.
4.	Design, build and test communication systems based on different media.

TEACHING METHODS

The class contact will consist of lectures and tutorials/practical sessions. Lectures will introduce new material and provide examples. During the tutorials/practical, students will apply lecture theory to solve related problems, familiarise themselves with laboratory equipment and develop their practical skills.

The module will be assessed by a Portfolio which will include implementation (practical assignment) and report writing. To assess how well students understand all the topics covered in the module, given the benefit of the feedback from the portfolio, a final exam will be used.

ASSESSMENT METHODS

This module is assessed through a Portfolio (this will include implementation and report writing) and a Written Examination.