

MODULE DESCRIPTOR

MODULE TITLE	Wireless Networks and Communications		
MODULE CODE	CO4756 (L7)	CREDIT VALUE	20 credits / 10 ECTS
SCHOOL	SCHOOL OF SCIENCE		

MODULE AIMS

1. To examine the technologies involved in mobile and wireless networks and the services and protocols required for their effective implementation.
2. To provide students with the theoretical knowledge of implementing and using wireless network systems.
3. To enable students to describe the increasing complexity of modern networks and the business needs that they meet.
4. To encourage students to expand their knowledge about new networking technologies and to conduct independent research and investigation in network related area.

MODULE CONTENT

This module introduces students to the fundamentals of data communications and computer networks. It provides students with a thorough understanding of how a basic network functions, then builds on this knowledge to include Mobile and Wireless Networks. Students will have the opportunity to design, build and test both wired and wireless networks.

1. Introduction to Networking concepts
 - a. Frames, packets, cells
 - b. IEEE 802.3
2. Introduction to Wireless Communication Concepts
 - a. 802.11
 - b. Attenuation, interference
3. Transport protocols
 - a. IPv4, IPv6
 - b. TCP/UDP
 - c. Interactions in the wireless domain
4. Motilities impact on the network
 - a. Handover (vertical/horizontal)
 - b. Mobile IP (IPv4, IPv6)
5. Mobile Communications, GSM, GPRS, 3G
6. Quality of Service
7. Security

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1. Build and deploy secure, effective wired and wireless networks
2. Assess the performance and limitations of networking systems
3. Critically evaluate the trends and emerging technologies in the computer network industry
4. Present an analytical argument in this subject area

TEACHING METHODS

This module will provide students with fundamental theoretical knowledge through lecture sessions, which will also introduce topics for further investigation by the students. Practical sessions will be used to complement the lectures. Students are expected to be actively engaged in research activities into relevant networking topics by making full use of external learning resources, such as the Web, magazines, and other professionally published material.

The coursework for this module consists of a substantial piece of work based on a case study (a networking scenario). Students are required to carry out external research, implement the solution in the lab (where possible), and produce a professional report with critical evaluation of findings obtained. The assignment will cover learning outcomes 1,2. The examination will cover learning outcomes 2,3,4

ASSESSMENT METHODS

This module is assessed through a coursework (50%) and an examination (50%).