

2024 / 25

School of Science and Computing

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TU**

Ollscoil
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an Oirdheiscirt

South East
Technological
University

Module Descriptor

Wireless Communications (Computing and Mathematics)

Wireless Communications (A13390)

Short Title: Wireless Communications
Department: Computing and Mathematics
Credits: 5

Level: Intermediate

Description of Module / Aims

The aim of this module is to examine the fundamental concepts underlying current developments in mobile communication systems and wireless computer networks. The module will cover current wireless systems and standards examining the technologies facilitating such networks. It provides students with the appreciation of the application, design and implementation of such networks.

Programmes

stage/semester/status		
COMM-0064	BSc (Hons) in Applied Computing (International) (WD_KACCM_BI)	3 / 6 / M
COMM-0064	BSc (Hons) in Applied Computing (WD_KACCM_B)	3 / 5 / E
COMM-0064	BSc (Hons) in Applied Computing (WD_KCOMP_B)	3 / 5 / E
COMM-0064	BSc (Hons) in Computer Science (WD_KCMSC_B)	3 / 5 / E

Indicative Content

- Wireless Technologies and Equipment
- IEEE 802.11 Standards
- Wireless Channel Models, Noise and Interference
- Wireless Topologies
- Site Survey and Installation
- Wireless Security
- Mobile and Cellular Communications
- Emerging Wireless Technologies

Learning Outcomes

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

1. Compare and contrast common wireless technologies and associated standards.
2. Configure and install wireless access points, bridges, and WLAN controllers.
3. Analyse WLAN RF principles, wireless communication channels and associated system models.
4. Classify wireless security threats and vulnerabilities and demonstrate the ability to implement appropriate security measures.
5. Troubleshoot wireless installations and configurations.
6. Demonstrate their ability to enhance their knowledge of emerging wireless, mobile and cellular communications technology.

Learning and Teaching Methods

- This module will be delivered using a combination of lectures and practicals.
- Lectures will be used to introduce module theory to the student.
- Practical laboratories will focus on the students implementation skills based on the theory presented in lectures.
- The practical hours will be timetabled together as a double class.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	
Practical	24	
Independent Learning	87	

Assessment Methods

	Weighting	Outcomes Assessed
Final Written Examination	50%	1,3,6
Continuous Assessment	50%	
Project	30%	4,6
Practical	20%	2,4,5

Assessment Criteria

<40%: Inability to describe and compare the basic wireless technologies. Inability to describe wireless network components, issues involved in WLAN implementation and WLAN RF principles. Inability to configure basic WLAN settings and security.

40%–49%: Able to describe and compare the main wireless technologies. Can provide description of main wireless network components and functions. Demonstrates the ability to implement basic security solutions in wireless networks.

50%–59%: All of the above. Able to recommend basic WLAN solution based on organisations requirements and site survey. Demonstrate the ability to implement and configure a basic WLAN with suitable security features.

60%–69%: All of the above. Demonstrate the ability to troubleshoot WLANs and design complex WLAN solutions.

70%–100%: All above to an excellent level.

Supplementary Material(s)

- Ciampa, M. *CWNA Guide to Wireless LANs*. 3rd ed. US: Cengage Learning, 2013.
- Kurose, J. and K. Ross. *Computer Networking: A Top-Down Approach*. 6th ed. Boston, US: Addison-Wesley/Pearson, 2013.
- Olenewa, J. *Guide to Wireless Communications*. 3rd ed. Boston, US: Cengage Learning, 2014.
- Stallings, W. *Wireless Communications & Networks*. 2nd ed. England: Pearson, 2014.

Requested Resources

- Computer Lab: Networks Lab