LONDON CAPITAL COMPUTER COLLEGE

Diploma in PC Engineering & Structured Cabling (108) – Wireless Networking

Prerequisites: Knowledge of Windows operating system.	**Corequisites:** A Pass or better in Certificate in Networking or equivalence.
Aim: Discover the advantages and disadvantages of wireless networks and which technology and equipment are best. Candidates will practice setting up wireless networks by configuring wireless network adapters and access points and how to find wireless hot spots, determine communications distance, and share printers and hard drives on a Windows computer. This hands-on course will teach candidates how to protect communications and data through proper configuration of devices, added security measures, and special network design. Candidates will be able to configure wireless routers with security in mind, set up a firewall to prevent access from the Internet, and use a wireless sniffer to learn about wireless networks in nearby areas. Candidates also learn how to add password protection, disable the SSID broadcast, set up MAC address filters, and enable encryption using WEP and WPA. The course also focuses on layers 2 and 3 of the OSI reference model, design, performance analysis and protocols. The topics covered include: digital cellular, next generation PCS, wireless LANs, wireless ATM, mobile IP, System/Network Design, cellular concepts, resource management, radio management, radio channel propagation fundamentals, modulation, fading countermeasure, diversity, coding, spread spectrum, multiple access techniques.	
Required Materials: Recommended Learning Resources.	**Supplementary Materials:** Lecture notes and tutor extra reading recommendations.
Special Requirements: The course requires a combination of lectures, demonstrations, discussions, and hands-on labs.	
Major Learning Outcomes:	**Assessment Criteria:**
1 Describe the basics of wireless networking	1.1 Illustrate how wireless networks manage to transmit radio waves through solid objects and also how it manages to carry data onto those waves. 1.2 Describe wireless networking standards 1.3 Describe the different hardware needed to create a wireless network 1.4 Examine other relevant wireless networking standards emerging; including Bluetooth and cellular data protocols
2 Describe wireless technology and how it works. Describe the wireless software interface. Analyse wireless transmission power.	2.1 Describe the maximum distance between radio cards 2.2 Describe the difference between wired and wireless networks 2.3 Describe the requirements in setting up a wireless network 2.4 Describe when wireless network is appropriate 2.5 Describe wireless cards
3 Outline a basic wireless environment	3.1 Describe physical layer specifications 3.2 Describe the different types of configurations 3.3 Describe the compatibility between different wireless cards
4 Describe the necessary hardware and	4.1 Define wireless network hardware

software required in setting up a wireless network. Describe the wireless network setup process	requirements 4.2 Define wireless network software requirements 4.3 Identify how to use tools which identify hardware connections 4.4 Be able to analyse data-link level settings 4.5 Be able to configure the internet protocol setting 4.6 Be able to configure a mixed network (wired and wireless)
5 Describe how to connect a wireless network.	5.1 Illustrate simple, intermediate and advanced connections using the Windows environment 5.2 Be able to install wireless network adapters and configure the network settings 5.3 Demonstrate how to set up Bluetooth connections on Windows 5.4 Be able to setup printer and file sharing 5.5 Be able to trouble-shoot connection related problems
6 Describe the process of building/creating up a wireless network	6.1 Define how to draw a network diagram 6.2 Examine features of wireless routers/gateways 6.3 Be able to configure a wireless router/gateway 6.4 Explain how to configure a PC as a wireless gateway 6.5 Describe how to extend the range of the network using a wireless bridge 6.6 Describe how an antenna can extend the range of a wireless network 6.7 Be able to set up a secure wireless network 6.8 Be able to troubleshoot setting and maintenance problems
7 Describe wireless security	7.1 Define security fears and the security aspects to be concerned about. 7.2 Describe methods used to keep unwanted users from connecting to your network and sharing internet connection 7.3 Describe how to protect valuable data from other legitimate users 7.4 Describe how to protect network computers, severs, gateway etc from online intruders

Recommended Learning Resources: Wireless Networking

Text Books	• Wireless Networking Technology: From Principles to Successful Implementation by Steve Rackley. ISBN-10: 0750667885 • Fundamentals of Wireless LANs Companion Guide (Cisco Networking Academy) by Inc. Cisco Systems. ISBN-10: 1587131196 • Wireless Communications & Networking, (The Morgan Kaufmann Series in Networking) (Hardcover) by Vijay Garg. ISBN-10: 0123735807 • Wireless Communications by Andrea Goldsmith. ISBN-10: 0521837162
Study Manuals 	BCE produced study packs
CD ROM 	Power-point slides
Software 	Windows Operating System