LONDON CAPITAL COMPUTER COLLEGE

Certificate in Networking (107) – TCP/IP Network Architecture

Prerequisites: Basic knowledge in the use of Microsoft Windows Applications.	**Corequisites:** A pass or higher in Diploma in Information Technology or equivalence
Aim: This course provides the knowledge and skills required to set up and configure, use and support TCP/IP on any network. It provide instructions in networking media, physical and logical topologies, common networking standards and popular networking protocols. The course emphasises the TCP/IP protocol suite and related IP addressing schemes, including CIDR. Includes selected topics in network implementation, support and LAN/WAN connectivity. The course has been designed to supply information that will enable candidates to confidently address such issues as: the intricacies of TCP/IP addressing and configuration; how to troubleshoot and decode TCP/IP; how to use subnet masks in an internetworked environment for management and security and how specific protocols work – IP, ARP, FTP and TFTP.	
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.	

Intended Learning Outcomes:	Assessment Criteria:
1. Provide a broad overview of the Internet and TCP/IP, with an emphasis on history, terms, and concepts.	1.1 Define protocol 1.2 Analyse interconnecting problems 1.3 Explore TCP/IP history 1.4 Describe advantages and disadvantages of TCP/IP 1.5 Analyse Windows tools for supporting TCP/IP
2. Explore what the TCP/IP protocol architecture does and demonstrate how the Internet allows computers to communicate with each other.	2.1 Compare and contrast TCP/IP and OSI models 2.2 Analyse TCP/IP's many protocols 2.3 Identify IP packet structure 2.4 Describe Transmission Control Protocol (TCP) operation
3. Provide an overview of IP addressing concepts and issues. Analyse the key components of the IP Address and how to apply these principles.	3.1 Identify components of an IP address 3.2 Explore IP address classes 3.3 Distinguish public vs private address 3.4 Fully describeIP Address, IP Subnet Mask and Default Gateway
4. Present subnetting concepts and demonstrate the major steps in the subnetting process	4.1 Outline the reasons for subnetting 4.2 Explore default and custom subnet mask 4.3 Analyse functions of subnet mask 4.4 Be able to subnet 4.5 Define supernetting
5. Demonstrate how to assign IP address and describe how to determine the cause of TCP/IP networking problems.	5.1 Be able to install TCP/IP 5.2 Explore TCP/IP configuration 5.3 Be able to use TCP/IP verification and testing tools
6. Demonstrate how routers learn of routes and update the routing table.	6.1 Describe the functions of routers 6.2 Explore the routing table information 6.3 Distinguish static vs dynamic routing

	6.4	Explore address resolution tools
	6.5	Analyse routing verification and testing utilities
7. Demonstrate how to install and manage the DHCP service on a network.	7.1	Outline DHCP client addressing process
	7.2	Install and configure DHCP client and server properties
	7.3	Explore DHCP options and implementation issues
8. Describe the different methods of host name to IP address resolutions used by Microsoft Windows clients.	8.1	Describe NetBIOS name resolution
	8.2	Describe LMHOSTS configuration procedures
	8.3	Analyse WINS client and server configuration
	8.4	Describe WINS implementation
	8.5	Analyse DNS name resolution concepts
	8.6	Describe Primary and Secondary DNS servers
	8.7	Explore DNS zones
	8.8	Explore DNS diagnostic utilities
9. Demonstrate TCP/IP connectivity, diagnostic and server-based software utilities.	9.1	Outline the Remote Execution utilities
	9.2	Outline file and data transfer utilities
	9.3	Analyse the procedures for setting up printers
	9.4	Demonstrate connectivity utilities used to interact with and use resources on a variety of Microsoft and non-Microsoft hosts, such as UNIX systems.
	9.5	Demonstrate diagnostic utilities used to detect and resolve networking problems.
	9.6	Describe how TCP/IP server software provides printing and publishing services to TCP/IP-based clients.
10. Describe devices that support SNMP and implementation issues	10.1	Identify reasons for implementing SNMP
	10.2	Be able to install and configure SNMP
	10.3	Explore SNMP testing utilities
11. Demonstrate troubleshooting TCP/IP LAN or Internet Connection technical issues.	11.1.	Analyse the troubleshooting process and tools available
	11.2	Identify common network errors and solutions available
	11.3	Be able to use the network monitor troubleshooting and monitoring tool

Recommended Learning Resources: TCP/IP Network Architecture

Text Books	- TCP/IP Illustrated: Protocols v. 1 (APC) by W. Richard Stevens. ISBN-10: 0201633469 - TCP/IP Network Administration by Craig Hunt. ISBN-10: 0596002971 - Complete TCP/IP by Martin Bligh, Dennis Short and Thomas Lee. ISBN-10: 0672310554
Study Manuals	BCE produced study packs
CD ROM	Power-point slides
Software	Server Operating System