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

Prerequisites: Knowledge of Windows operating system.	**Corequisites:** A Pass or better in Certificate in Networking or equivalence.
Aim: This course provide candidates with broad-based skills and knowledge in structured cabling. Candidates will learn what structured cabling systems are and how to design, install and troubleshoot them. Candidates get hands-on experience working with different media. This course provides the study of industry standards and practices involved in wiring a computer network, including media and protocol specifications, connection topologies, installation, testing and troubleshooting. Candidates also learn about codes, and the latest information regarding emerging trends in LAN/WAN cabling system; the current industry CAT5 and CAT6 EIA / TIA standards and the required hands-on skills and tools for proper termination of twisted pair wire terminations, basic telephony terminations, coaxial cable connections, cabling, topologies, wiring closets, and basic electrical and electronic issues in networks.	
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 Discuss the basics of data cabling	1.1 Describe the importance of designing and installing cables properly 1.2 Describe the major types of communications media 1.3 Be able to understand components of data cabling 1.4 Describe data communication and network cabling limitations
2 Describe cabling specifications and standards	2.1 Define standards and the different organisations that provide specifications 2.2 Describe commercial building cabling standards 2.3 Describe cabling for customer premises standards
3 Describe network applications and hardware	3.1 Describe networking architectures/topologies 3.2 Describe advantages and disadvantages of using UTP and optical fiber 3.3 Describe how different network architectures operate 3.4 Describe the functions of repeaters, hubs, bridges, switches and routers
4 Understand codes for safety to protect life, health and property. Discuss how building codes affect the installation of communication cabling	4.1 Describe building, construction and communication codes sources 4.2 Describe definitions and descriptions of electrical equipment 4.3 Describe information about conductors, installation requirements for bonding and grounding 4.4 Describe wiring methods for wiring

			installation
		4.5	Design and install a telecommunication infrastructure
5 Provide an overview and descriptions of the inner workings of a structured cabling system		5.1	Describe the components involved in transmitting data from the work area to the wiring closet
		5.2	Describe the purpose of wall plates and connectors
		5.3	Understand the cabling system components outlined by the ANSI/TIA/EIA – 569
		5.4	Describe types of wiring closets and the equipment found within a typical closet
6 Discuss the essential tools required for proper installation of data and video cabling.		6.1	Describe common cabling tools
		6.2	Describe cable testing tools
7 Describe how to install a copper-based cabling infrastructure		7.1	Define the types of copper cabling
		7.2	Describe the advantages of using copper cabling
		7.3	Be able to test copper cabling
8 Describe wall-plate design and installation issues		8.1	Describe wall-plate installation issues and how each affects the cabling-system installation
		8.2	Describe the different types of jacks
9 Analyse connector types used in structured cabling system.		9.1	Describe the different types of connectors
		9.2	Be able to terminate UTP connectors
		9.3	Be able to define a color-code wiring scheme
		9.4	Describe crossover cables
10 Describe fiber-optic media. Analyse how fiber-optic transmission works.		10.1	Describe the advantages and disadvantages of fiber-optic cabling
		10.2	Describe components of a fiber-optic cable
		10.3	Describe the different fiber cables used for LAN/WAN environments
		10.4	Describe fiber installations and fiber-optic performance factors
11 Describe LAN and WAN wireless technologies		11.1	Discuss how infrared transmission works
		11.2	Describe advantages and disadvantages of infrared
		11.3	Explore radio-frequency systems and analyse their applications to LAN and WAN users
		11.4	Analyse microwave communications and describe how they work
12 Work out the elements of a successful cabling installation.		12.1	Describe a network backbone
		12.2	Define network segmentation
		12.3	Define cabling management
		12.4	Analyse the process of installing an entire cabling system
		12.5	Be able to document the cabling system
		12.6	Define cable termination

Recommended Learning Resources:
Structured Cabling

Text Books	• Designing a Structured Cabling System to ISO 11801 (Hardcover) by Barry J. Elliott. ISBN-10: 1855736128 • Guide to EMC and Structured Cabling: 0 by Mike Gilmore. ISBN-10: 0580267415 • Structured Cabling for It Systems by NHS Estates. ISBN-10: 0113222297
Study Manuals	BCE produced study packs
CD ROM	Power-point slides
Software	None