



**Level 5 Diploma in PC Engineering & Structured  
Cabling (108) 133 Credits**






<b>Unit:</b> Structured Cabling	<b>Guided Learning Hours:</b> 240
<b>Exam Paper No.:</b> 3	<b>Number of Credits:</b> 24
<b>Prerequisites:</b> Knowledge of Windows operating system.	<b>Corequisites:</b> A Pass or better in Certificate in Networking or equivalence.
<p><b>Aim:</b> This unit provide learners with broad-based skills and knowledge in structured cabling installation, wiring and troubleshooting. Learners will learn what structured cabling systems are and how to design, install and troubleshoot them. Learners get hands-on experience working with different media. This unit 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. Learners also learn about codes, and the latest information regarding emerging trends in LAN/WAN cabling system; the current industry CAT 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.</p>	
<b>Required Materials:</b> Recommended Learning Resources.	<b>Supplementary Materials:</b> Lecture notes and tutor extra reading recommendations.
<b>Special Requirements:</b> The unit requires a combination of lectures, demonstrations, discussions, and hands-on labs.	
<p><b>Major Learning Outcomes:</b></p> <p>1 The basics of data cabling, how data cabling and IT infrastructure services enable businesses to meet its challenges and thrive.</p> <p>2 How standardised cabling system is important not only for consumers but also for vendors; cabling installers.</p> <p>3 How applications requiring increasing amounts of bandwidth can be solved by hardware upgrades to overcome problems with poor application performance and availability.</p>	<p><b>Assessment Criteria:</b></p> <p>1.1 Describe the importance of designing and installing cables properly</p> <p>1.2 Describe the major types of communications media</p> <p>1.3 Be able to explain components of data cabling</p> <p>1.4 Describe data communication and network cabling limitations</p> <p>1.5 Describe CAT cable colours, straight through and cross over cables</p> <p>1.6 Explain attenuation</p> <p>2.1 Define standards and the different organisations that provide specifications</p> <p>2.2 Describe commercial building cabling standards</p> <p>2.3 Identify the process of gathering requirements</p> <p>2.4 Explain the planning process and submission of customer requirements</p> <p>2.5 Describe cabling for customer premises standards</p> <p>3.1 Describe networking architectures/topologies</p> <p>3.2 Describe advantages and disadvantages of using UTP and optical fiber</p> <p>3.3 Describe how different network architectures operate</p> <p>3.4 Describe the functions of repeaters, hubs, bridges, switches and routers</p> <p>3.5 Describe how the network upgrades for high-availability applications encompass</p>

		cabling, switches, servers and WAN connections.
4	Codes for safety protect life, health and property and how building codes affect the installation of communication cabling.	<p>4.1 Describe building, construction and communication code sources</p> <p>4.2 Describe definitions and descriptions of electrical equipment</p> <p>4.3 Describe information about conductors, installation requirements for bonding and grounding</p> <p>4.4 Describe wiring methods for wiring installation</p> <p>4.5 Design and install a telecommunication infrastructure</p>
5	Overview and descriptions of the inner workings of a structured cabling system.	<p>5.1 Describe the components involved in transmitting data from the work area to the wiring closet</p> <p>5.2 Describe the purpose of wall plates and connectors</p> <p>5.3 Describe the cabling system components outlined by the ANSI/TIA/EIA – 569</p> <p>5.4 Describe types of wiring closets and the equipment found within a typical closet</p>
6	The essential tools required for proper installation of data; video cabling and the process of installing a copper-based cabling infrastructure.	<p>6.1 Describe common cabling tools</p> <p>6.2 Describe cable testing tools</p> <p>6.3 Demonstrate using cabling tools and cable testing tools</p> <p>6.4 Define the types of copper cabling</p> <p>6.5 Describe the advantages of using copper cabling</p> <p>6.6 Be able to test copper cabling</p>
7	Wall-plate design, installation issues, uses and the purpose of panel-mount cables.	<p>7.1 Describe wall-plate installation issues and how each affects the cabling-system installation</p> <p>7.2 Describe the different types of jacks</p> <p>7.3 Analyse the characteristics of connector types used in structured cabling system</p> <p>7.4 Explain how the standards define how to design, build, and manage a cabling system that is structured</p> <p>7.5 Describe the different types of connectors</p> <p>7.6 Be able to terminate UTP connectors</p> <p>7.7 Be able to define a color-code wiring scheme</p> <p>7.8 Describe crossover cables</p>
8	Fiber-optic media characteristics; advantages and how fiber-optic transmission works.	<p>8.1 Describe the advantages and disadvantages of fiber-optic cabling</p> <p>8.2 Describe components of a fiber-optic cable</p> <p>8.3 Describe the different fiber cables used for LAN/WAN environments</p> <p>8.4 Describe fiber installations and fiber-optic performance factors</p>
9	LAN and WAN wireless technologies	9.1 Discuss how infrared transmission works

and how both need servers to operate the network.	9.2 Describe advantages and disadvantages of infrared
	9.3 Assess radio-frequency systems and analyse their applications to LAN and WAN users
	9.4 Analyse microwave communications and describe how they work
	9.5 Describe the differences between LAN and WAN wireless technologies
10 Cabling system design and installation and elements of a successful cabling installation.	10.1 Describe a network backbone
	10.2 Define network segmentation
	10.3 Define cabling management
	10.4 Analyse the process of designing and installing an entire cabling system
	10.5 Be able to document the cabling system
	10.6 Define cable termination
<p><b>Methods of Evaluation:</b> A 2½-hour written examination paper with five essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in Structured Cabling with a weighting of 100%.</p>	

### Recommended Learning Resources: Structured Cabling

<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Designing a Structured Cabling System to ISO 11801 (Hardcover) by Barry J. Elliott. ISBN-10: 1855736128</li> <li>• Guide to EMC and Structured Cabling: 0 by Mike Gilmore. ISBN-10: 0580267415</li> <li>• Structured Cabling for IT Systems by NHS Estates. ISBN-10: 0113222297</li> </ul>
<b>Study Manuals</b> 	BCE produced study packs
<b>CD ROM</b> 	Power-point slides
<b>Software</b> 	None