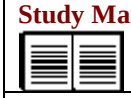
Level 4 Certificate in Computer Fundamentals (105) 115 Credits

Unit: Computer Fundamentals **Exam Paper No.:** 3	**Total Qualification Time:** 200 **Number of Credits:** 20
Prerequisites: Basic computing knowledge	**Corequisites:** A pass or higher in Certificate in Information Systems or equivalence.
Aim: The unit identifies and describes the most widely used general software applications, the difference between application software and programming languages and the role of operating system software. Learners are introduced to the latest advances in important hardware, software, Internet and mobile technologies. Telecommunications, databases, e-commerce, and information support systems are covered along with search engines and social networks. Ethical and societal issues related to these technologies are examined. The unit looks on the relationship between computing hardware and software. In addition to the hardware details of input-output, communications and storage devices; the operation of Central Processing Unit is covered in detail. This unit covers an in-depth study and use of computers and information technology. Learners will thoroughly analyse computer hardware, software, data networks and procedures, as well as examine the impact and application of computers in business.	
Required Materials: Recommended Learning Resources.	**Supplementary Materials:** Lecture notes and tutor extra reading recommendations.
Special Requirements: The unit requires a combination of lectures, demonstrations and class discussions.	
Intended Learning Outcomes:	**Assessment Criteria:**
1. Information System (IS) organisation and the role of information systems in organisations.	1.1 Define computer technology 1.2 Describe IS management roles 1.3 Analyse competition in an *eWorld.* 1.4 Investigate the differences in Information Systems today and ten years ago. 1.5 Explain an Information System organisational structure 1.6 Compare and contrast information technology vs information system
2. The computer generations from mainframe, minicomputer to microcomputer and how characters are stored in computer memory.	2.1 Describe vacuum tubes, transistors, integrated circuits 2.2 Describe basic components of computer systems 2.3 Define bit, byte, kilobyte, megabyte, gigabyte, terabyte and parity bits; ALU and control unit 2.4 Describe computer file layout.
3. Computer software, the different types of software and the different computer filing methods.	3.1 Define application software 3.2 Define operating system 3.3 Describe support software 3.4 Describe indexed file sequential access 3.5 Describe direct file access 3.6 Define virtual storage access.
4. The key elements of telecommunications; networking topology, including the types of transmission lines, media and speed of transmission.	4.1 Explain and justify the importance of Telecommunications 4.2 Define networking, analogue and digital signals 4.3 Define bandwidth, baud rate, simplex, half-duplex and full-duplex transmission 4.4 Define bus, ring, star and mesh topology 4.5 Define intranet
5. Understand the transaction process system in a client/server system.	5.1 Describe batch vs online processing 5.2 Define client, server and middleware 5.3 Define data warehousing and groupware. 5.4 Explain the advantages and disadvantages of real-time and batch system.

6. The different managerial support systems in use and how they help organisational managers make decisions.	6.1 Describe decision support systems 6.2 Describe data mining 6.3 Define group support systems 6.4 Define expert systems 6.5 Define neutral networks.
7. The different eCommerce applications available on the market; the internet legal and regulatory environment.	7.1 Define internet applications 7.2 Define electronic transmission 7.3 Describe buyer/seller transactions 7.4 Define electronic commerce framework 7.5 Describe business-to-computer (B2C) 7.6 Describe business-to-business (B2B).
8. Basic computer components; and how a set of ordered instructions enable a computer to carry out a specific task instruction.	8.1 Define how the major parts of a computer are coordinated 8.2 Identify memory/address space 8.3 Define a "*word*" in computing 8.4 Define registers 8.5 Describe data bus 8.6 Explain how CPU carries out it operations
9. Computer memory organisation structure; Read Only Memory (ROM) and Random-Access Memory (RAM).	9.1 Identify computer instruction set 9.2 Discuss data movements between memory and registers 9.3 Discuss the different addressing modes 9.4 Compare and contrast RAM vs ROM 9.5 Explain the functions of Read Only Memory (ROM) and Random-Access Memory (RAM)
10. Device registers and the connection of the data bus to the desired device's hardware register.	10.1 Describe input/output interface device registers 10.2 Discuss the process of addressing device registers 10.3 Explain sychnronisation 10.4 Discuss input/output interrupt signals 10.5 Define Direct Memory Access (DMA) 10.6 Evaluate functions of the data bus
Methods of Evaluation: 2-hour written essay examination paper with Section A and Section B. Section A has 40 multiple choice questions. Section B has three questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in Computer Fundamentals with a weighting of 100%.	

Recommended Learning Resources: Computer Fundamentals

Text Books	• Discovering Computers: Fundamentals, Fourth Edition by Gary B. Shelly, Thomas J. Cashman and Misty E. Vermaat. ISBN-10: 1423912101 • Fundamentals of Computer Organisation and Architecture by Mostafa Abd-El-Barr and Hesham El-Rewini. ISBN-10: 0471467413 • Computers: Information Technology in Perspective, 11th Edition by Larry Long and Nancy Long. ISBN-10: 0131405721 • The Architecture of Computer Hardware and Systems Software: An Information Technology Approach by Irv Englander. ISBN-10: 0471073253 • Computers: Understanding Technology, Introductory [STUDENT EDITION] by Floyd Fuller. ISBN-10: 0763829285
Study Manuals 	BCE produced study packs
CD ROM 	Power-point slides
Software 	None