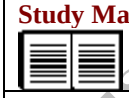
Unit: Overview of Operating Systems **Exam Paper No.:** 1	**Guided Learning Hours:** 200 **Number of Credits:** 20
Prerequisites: Knowledge in Windows operating system.	**Corequisites:** A pass or higher in Certificate in Networking or equivalence.
Aim: This unit explores the design and implementation of operating systems. Among the topics covered are process management (creation, synchronisation, and communication); processor scheduling; deadlock prevention, avoidance, and recovery; main-memory management; virtual memory management (swapping, paging, segmentation and page-replacement algorithms); control of disks and other input/output devices; file-system structure and implementation; and protection and security. The purpose of this unit is to ensure learners understand the importance of operating system and goes well beyond giving comprehension of UNIX / Windows / Mac operating system partisans. On completion of this unit, learners will understand: (i) Concurrency – concepts of concurrent code are not easy, especially using threads with shared memory and locks. (ii) Resource Management - the strategies used to give multiple users access to a dedicated physical resource are fundamental and are also used in many user-level programs. (iii) Performance Analysis and Contention Resolution - when resources are shared, contention typically follows. Contention can be resolved in many ways, for example using queuing, fair sharing, or prioritisation. (iv) Interfaces and hiding complexity. (v) When things go wrong from user mode, it's easy to view the OS as a magical force that is both good - (giving us smooth multitasking, efficient storage management, etc.); and nasty action events (giving blue screens, thrashing, security problems, and scheduling anomalies). (vi) Computer System Design - designing any engineered system, including a software system.	
Required Materials: Recommended Learning Resources.	**Supplementary Materials:** Lecture notes and tutor extra reading recommendations.
Special Requirements: The unit requires a combination of lectures, demonstrations, discussions, and hands-on labs.	

Intended Learning Outcomes:	**Assessment Criteria:**
1. The different types of operating systems and the fundamental Operating System concepts.	1.1 Identify components of a microcomputer 1.2 Outline the different types of microcomputers 1.3 Explain the functions of operating systems 1.4 Describe different types of operating systems 1.5 Explain Windows file systems 1.6 Explain Mac operating system 1.7 Explain Linux operating system
2. The importance of understanding network security threats and how to implement them effectively.	2.1 Identify threats to computers and users 2.2 Examine the processes to combat computers and users threats 2.3 Discuss how to troubleshoot basic security problems 2.4 Explain network security threats
3. How desktop virtualisation products help companies adapt to emerging technologies and business needs.	3.1 Define virtualisation 3.2 Outline desktop virtualisation tools 3.3 Explain the benefits of virtualisation 3.4 Describe the types of hardware virtualisation
4. MS-DOS (Microsoft Disk Operating System) as a single-user, single-tasking computer operating system that uses a command line interface.	4.1 Analyse the different versions of DOS 4.2 Demonstrate creating DOS commands 4.3 Describe the DOS boot-up process 4.4 Demonstrate how to troubleshoot DOS problems
5. The different versions of Windows Operating System; the difference between various	5.1 Identify the different versions of Windows operating system

versions and decision as to which windows operating system software is best.	5.2 Be able to install Windows Operating system 5.3 Describe how to create a partition on a Windows system 5.4 Demonstrate how to install/remove applications 5.5 Demonstrate installing a printer 5.6 Outline file management processes in Windows 5.7 Describe how to secure a Windows system 5.8 Describe how to apply security to files, folders and printers 5.9 Describe how to troubleshoot Windows problems
6. The standard file systems used with Windows versions, symbolic links and transitioning of file operations.	6.1 Identify how the registry works 6.2 Explain the Windows startup process 6.3 Outline how to manage and install device drivers 6.4 Demonstrate how to troubleshoot startup problems
7. Linux Operating System information; History of the Linux Operating System, features and operating system characteristics.	7.1 Outline Linux system kernel 7.2 Install Linux operating system 7.3 Analyse Linux commands 7.4 Identify Linux directory structure 7.5 Demonstrate how to troubleshoot Linux problems
8. The components that exist on the client, the files related to client side networking, and the tools available.	8.1 Outline TCP/IP utilities 8.2 Describe internet connection process 8.3 Identify different browser software 8.4 Understand file and hardware sharing 8.5 Demonstrate how to troubleshoot client network problems
Methods of Evaluation: A 2-hour written examination paper with Section A and Section B. Section A has 40 multiple choice questions. Section B has three essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in Overview of Operating Systems with a weighting of 100%.	

Recommended Learning Resources: Overview of Operating Systems

Text Books	• Operating Systems: Incorporating Unix and Windows by Colin Ritchie ISBN-10: 0826464165 • Computer Systems and Networks by Barry G. Blundell, Nawaz Khan, Aboubaker Lasebae and Muthana Jabbar ISBN-10: 1844806391 • Operating Systems by John O'Gorman ISBN-10: 0333802888
Study Manuals 	BCE produced study packs
CD ROM 	Power-point slides
Software 	Windows and Unix Operating Systems