INSTRUCTIONAL OFFERING	OPERATING SYSTEMS IV
SUBJECT CODE (sapse code)	BSL42AB
EXAMINATION	3 HOUR WRITTEN PAPER
CREDITS	12
NQF LEVEL	7
TYPE OF LEARNING	VOCATIONAL TRAINING

UNIT	SPECIFIC OUTCOME		ASSESSMENT CRITERIA	CREDITS	NOTIONAL HOURS	WEEKS
1	Demonstrate an understanding of the general objectives and functions of an operating system		Define an Operating system State and describe the key functions of an OS; process management, memory management, I/O management, Storage management, Protection and security	1	10	1
2	Demonstrate an understanding of the general structure of modern operating systems.		Describe how an OS is structured Describe the services obtainable from an OS and how users access these services; Differentiate between Command Driven and Graphical User Interfaces Define a system call Describe how a system call is processed Explain the key principles of OS design; layered approach, microkernel architecture.	1	10	1
3	Demonstrate an understanding of processes and the key concepts		Define a process Differentiate a process from a program Describe the various process states; create, ready, blocked, running, waiting, stopped Explain process scheduling; need for schedulers Explain how processes communicate; shared memory, message passing	2	20	2
4	Demonstrate a fair understanding of threads and their relevance in modern software systems		Define threads Explain the motivation and benefits of threads Explain the idea behind multithreading Explain the key issues with threads; creating, executing, cancelling etc Write simple programs to demonstrate threads in a given HLL like Java, C++ etc	2	20	2
5	Demonstrate an Understanding of key algorithms applied in CPU Scheduling		Explain basic CPU scheduling concepts; Burst cycles, scheduler, pre-emptive scheduling Describe the main scheduling algorithms; FCFS, SJF, Round Robin, Priority Scheduling	2	20	2
6	Demonstrate an understanding of		Define deadlocks Describe the necessary conditions	1	10	1

	deadlocks within the context of an OS		for deadlocks to occur Handling deadlocks			
7	Demonstrate an Understanding of how memory is managed within a computer system		Describe memory allocation techniques Understand the key terminologies: swapping, paging, virtual memory	1	10	1
8	Demonstrate an Understanding of file systems in modern Operating systems		Explain the concept of a file Explain the concept of a directory Define the common file operations; creating, reading, writing, sharing, protection	1	10	1
9	Demonstrate an Understanding of protection and security mechanisms available in modern operating systems		Explain the goals and principles of data protection Explain the need and use of access matrices to enforce protection Describe various system and network threats	1	10	1