University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of computing & Information Technology
Program: B. Sc. In Computer Science

Course title	**Operating Systems**
Course code	**CS322**

Form no. (11A): **Knowledge and skills matrix for a course**

Course content	Week	Knowledge	Intellectual skills	Professional skills	General skills
Computer System Overview	1	• Define the computer System. • Describe computer system components.	• Differentiate between Operating Systems environments. • Relate the computer system structure to the Linux environment.		
Operating System Overview	2	• Describe the memory hierarchy and how it is being accessed by the Operating System. • Describe operating systems evolution	• Calculate the average access time for different memory hierarchies. • Differentiate between multiprogramming and time-sharing operating systems	• Use Linux operating system.	• Verify Theory with practice.
Process Description and Control	3	• Understand the process, and how is it being controlled by the operating system.	• Discover the process interaction, and how it can communicate with each others.	• Experiment the process interaction under Linux environment.	
Process Description and Control, Cont'd	4	• Demonstrate the problems with processes interaction.	• Construct the different types of processes interaction.		• Verify the problems with the processes interaction under Linux • Sketch the process states diagrams and it's progress.

Threads	5	• Illustrate the difference between the Threads and processes, using diagrams and contents.	• Analyze a multithreaded system with its usage.	• Implement the analyzed multithreaded model to a running code under Linux.	• Verify theory with practice
Concurrency: Mutual Exclusion and Synchronization	6	• Define mutual exclusion, and trying synchronization.	• Apply mutual exclusion to a multithreaded system.	•	•
7th week Exam	7				
Concurrency: Deadlock and Starvation	8	• Explain the deadlock occurs because of mutual exclusion	• Apply selected solutions for deadlock prevention, avoidance, and detection	• Design codes for the deadlock avoidance and detection	• Verify theory with practice
Concurrency: Deadlock and Starvation, Cont'd	9	• Define theories of the deadlock solutions	• Solve the deadlock problems	• Implement the codes designed in the previous part.	Verify theory with practice
Memory Management.	10	• Define the concept of memory management	• Demonstrate different types of memory management	•	
Memory Management, Cont'd	11	•	•	• Explain dealing with paging and segmentation	
12th week Exam	12				
Virtual Memory	13	• Define dealing with the two levels memory.	• Relate accessing one level in the memory with the new topic of accessing the two levels.	Design diagrams of dealing with virtual memory through the main memory.	
Uni-processor Scheduling	14	• Define the concept of scheduling and its usage.	Show different scheduling techniques and compare between them.		
File Management	15	• Define dealing with files	•		

Course Instructor

Name:

Signature:

Head of Department

Name:

Signature: