

Course Name	Operating System -2
Course Number	352 CSM -3
Credit Hours	3
Contact Hours	4
Course Coordinator	Dr.Yessine Haj Kacem

Text Books	1. Operating System Concepts with JAVA, 6th Edition, Silberschatz, Galvin, Gagne (Willey International Edition), ISBN: 0-471-26272
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Other Supplemental Materials	
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Specific Course Information

a. Course Description	The course introduces advanced topics in operating systems and covers the following topics: File System Interface, Virtual Memory, I/O Sub-systems, Mass Storage Devices, Protection, Security, Distributed Systems and a Contemporary Operating System as Case Study.
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b. Pre-requisite	251 CSM Operating System 1
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c. Required/ Elective/ Selected Elective	Required
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Specific Goals for the Course

a. Course Learning Outcomes	<ol style="list-style-type: none"> 1. Recognize the principles and the foundations of advanced operating system. Be able to understand well the OS service such as File Management, Virtual Memory Management, Mass storage devices 2. Be able to understand well the features of file storing strategies used by MS Windows and Linux. Be able to understand well the advanced topics such as distributed systems and protection as well as security are introduced. 3. Create and develop some applications that utilize advanced operating system features, including file systems, virtual memory, disk scheduling and mass storage device management 4. Develop the capability of thinking and designing application projects. 5. Analyze the concepts employed by real operating systems 6. Communicate and share the work with other 7. Expressing understanding concepts both orally and in written.
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Mapping of STUDENT LEARNING OUTCOMES(SLOS) with COURSE LEARNING OUTCOMES(CLOS)		a1	a2	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2
	1	√	√										
	2	√	√										
	3			√	√	√	√						
	4			√	√	√	√						
	5							√	√	√	√		
	6							√	√	√	√		
	7											√	√
Topics Covered	<p>File System Interface: File Concepts, Access Methods, Directory Structure- Directory Implementation, Allocation methods, Free Space Management.</p> <p>Virtual Memory: Demand Paging-Page fault, performance of demand paging, Page Replacement- basic page replacement, Thrashing- Memory Mapped Files</p> <p>I/O Systems: I/O Hardware- polling, Interrupts, Direct Memory Access, Application of I/O Interface- Block and character devices, Network devices, Course Learning Outcomes(CLOs)cks and timers, Kernel I/O.</p> <p>Mass Storage Structure: Disk Structure, Disk Scheduling- FCFS Scheduling, SSTF Scheduling, Disk Management-Disk Formatting, Boot Blocks, Bad blocks, Swap space management.</p> <p>Distributed System Structures: Background-Advantages of distributed systems, Types of Distributed Operating System, Topology, Communication- Naming and Name Resolution, Routing Strategies, Packet Strategies, Communication protocol</p> <p>Protection: Goals of Protection, Domain of Protection- Domain Structure, Revocation of Access Rights, Capability Based Systems</p> <p>Security: The Security Problems, User Authentication- Passwords, Passwords Vulnerabilities, Encrypted Passwords, One Time Passwords, biometrics, Program Threats-Trojan Horse, Trap Door, Stack and Buffer Overflow, System Threats- Worms, Viruses, Securing Systems and Facilities</p> <p>Case Study of Operating System: The Linux System, History, Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management</p>												