Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Engineering Department

CPE473 Operating Systems - JNQF Level: 7
Second Semester 2023-2024

Course Catalog
3 Credit Hours. 3 Credit Hours.The course includes theories and implementation of modern operating systems including operating system interface (system calls), process and thread management, CPU and disk scheduling, synchronization, deadlock, memory management and virtual memory, file system, device management and I/O handling.
Teaching Method: Blended

Text Book	
Title	Modern Operating Systems
Author(s)	S. Tanenbaum
Edition	4th Edition
Short Name	Ref#1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#3	Operating System Concepts	A. Silberschatz, P. Galvin, and G. Gagne	9th Edition	
Ref#2	Operating Systems: A Systematic View	W. Davis and T. Rajkumar	5th Edition	

Instructor	
Name	**Dr. Mohammad Alshboul**
Office Location	M2 L-2
Office Hours	
Email	maalshboul3@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 09:30 - 10:30 Room: A3129 Section 2: Lecture Time: Sun, Tue : 10:30 - 11:30 Room: A3129 Section 3: Lecture Time: Sun, Tue : 12:30 - 13:30 Room: C5024

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
1713520	CPE352 Computer Architecture	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Understand what the operating system is, what it does, and learn basic terms associated with operating systems. In addition to knowing the main structure of the operating system.	
Week 2	What is the processe? Understand its states and diagrams. Learn process implementation using fork, etc.	
Week 3	Understand how to design several CPU scheduling and identify their performance.	
Weeks 4, 5, 6	Understand threading and identify its main advantages and disadvantages	
Weeks 7, 8, 9	Understand how to synchronize processes using semaphores and know how to solve deadlocks using different methods.	
Weeks 10, 11	Understand different schemes of memory management such as paging, TLB, address mapping schemes.	
Week 12	Understand how to design different Page-Replacement algorithms and identify their performance.	
Weeks 13, 14	Understand how to design different Disk scheduling algorithms and identify their performance.	
Weeks 15, 16	Understand the structure of file systems	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Apply basic Linux commands to understand the different tasks of the OS [1SO6] [1L7S3]	15%	

Understand the computer system structure [1SO1] [1L7K1]	10%	
Analyze the OS software requirements [1SO4] [1L7C2]	15%	
Understand the process and thread structures [1SO1] [1L7K1]	15%	
Understand OS scheduling and process synchronization [1SO6] [1L7S3]	15%	
Understand the need for virtual memory and the process of address translation [1SO1] [1L7K1]	10%	
Understand the need for the file system and its structure [1SO1] [1L7K1]	10%	
Understand how files are stored on storage [1SO6] [1L7S3]	10%	

Relationship to Program Student Outcomes (Out of 100%)																	
A	B	C	D	E	F	G	H	I	J	K	SO1	SO2	SO3	SO4	SO5	SO6	SO7
											45			15		40	

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S3	L7C2
45	40	15

Evaluation	
Assessment Tool	**Weight**
Programming Assignments	20%
Final Exam	40%
Quizzes	20%
First Exam	10%
Second Exam	10%

Policy	
Attendance	Excellent attendance is expected. In accordance with university regulations, students missing more than 20% of total classes are subject to failure. No excuses will be accepted. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed. Attendance will be recorded at the beginning or end of each class.
Participation	You are expected to participate in class. Participation includes asking and answering questions, raising issues, and suggesting solutions to the discussed problems.
Activity	Students are expected to work on an activity within a group of 3-4 students. The activity could be a small software project, or a case study of a healthcare provider.

Exams	All exams will be CLOSE-BOOK. The format for the exams is generally as follows: multiple-choice, and short essay questions.
Makeups	Makeup exam should not be given unless there is a valid excuse. Arrangements to take an exam at a time different than the one scheduled MUST be made prior to the scheduled exam time. In accordance with university regulations, students should bring a valid excuse authenticated through valid channels in JUST.
Workload	Quizzes and exams need to be done individually. Copying of another student's work, even if changes are subsequently made, is inappropriate, and such work will not be accepted. Cheating or copying from neighbor on exam is an illegal and unethical activity and standard JUST policy will be applied. All graded assignments must be your own work.

Date Printed: 2024-02-24