The University of Jordan
School of Engineering
Department of Computer Engineering
Fall Semester – A.Y. 2021-2022

Course:	Modern Operating Systems – 0907443 (3 Cr. – Core Course)
Catalog Data:	The goal of this course is to provide an introduction to the internal operation of modern operating systems. In particular, 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. Case studies for modern operating systems such as Android and iOS.
Prerequisites by Course:	0907346 Data Structures and Algorithms
Prerequisites by Topic:	Students are assumed to have had sufficient knowledge pertaining to Algorithms and one programming language.
Textbook:	Silberschatz, Galvin, and Gagne. Operating System Concepts. John Wiley & sons , inc. (Tenth Edition)
References:	1. Modern Operating Systems by Andrew S. Tanenbaum (fourth edition) 2. Operating systems design and implementation, Andrew s. Tanenbaum, Prentice-Hall.
Course Website:	The course group on MS Teams.
Minimum Student Material:	Text book, class handouts, some instructor keynotes, calculator and access to a personal computer and internet.
Minimum College Facilities:	Classroom with whiteboard and projection display facilities, library, and computational facilities.
Course Objectives:	By the end of this course the student will be able to: 1. Recognize the importance of the operating systems. 2. Recognize the interaction between the applications and the operating system, where the OS is an intermediate program between the hardware and the applications. 3. Understand different resources management such as: processors, memory and I/O. 4. Understand different scheduling algorithms used by operating systems.
Course Outcomes and Relation to ABET Program Outcomes:	Upon successful completion of this course, a student should be able to: 1. Demonstrate knowledge and understanding of the different modules in a modern Operating System (OS) in general. 2. Exemplify and explain how the kernel of an OS is designed, including being able to explain what a process is, the interaction between the kernel and the hardware, user mode vs. kernel mode and process management.

3. Demonstrate knowledge and understanding of how concurrency in OS is handled including thread abstraction, synchronizing access to shared objects, resources and scheduling in the OS.
4. demonstrate knowledge and understanding of how memory is managed in an OS.
5. explain how persistent storage is handled by the OS

Course Topics:

1. Introduction / Operating-System Structures
2. Processes
3. Multithreaded Programming
4. Process Scheduling
5. Synchronization / Deadlocks
6. Memory Management
7. Virtual Memory
8. File Systems
9. I/O Systems
10. Security

Computer Usage: Practical aspects of the course are covered as assignments.

Attendance: Class attendance will be taken every class and the university's policies will be enforced in this regard.

Assessments: Assignments and Exams.

Grading policy:

Assignments	20%	TBA
Midterm Exam	30%	TBA
Final Exam	50%	TBA

Instructors: Eng. Asma Abdel Karim (a.abdelkarim@ju.edu.jo)

Class Time and Location: M/W 10:00 – 11:30 CPE101

Program Outcomes (PO)

[1]	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
[2]	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
[3]	an ability to communicate effectively with a range of audiences
[4]	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
[5]	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
[6]	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
[7]	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Last Updated: OCTOBER 10TH, 2021