COURSE DESCRIPTIONS

Faculty	Science and Information Technology				
Department	**Computer Science**			**NQF level**	7
Course Title	**Operating Systems**	**Code**	**501471**	**Prerequisite**	**501305**
Credit Hours	3	**Theory**	3	**Practical**	0
Course Leader	**Dr. Marwan Atoom**	**email**	M.atoom@jadara.edu.jo		
Lecturers	**Dr. Firas Zawaideh**	**emails**	F.Zawaideh@jadara.edu.jo		
Lecture time	[13:00_14:30] Sat. & Thu. [11:30_13:00] Tue. & Wed.	**Classroom**	Online D310	**Attendance**	Fulltime
Semester	**Summer 2023 - 2024**	**Production**	2010	**Updated**	2023
Type of Teaching	☐ Face to Face √ Blended ☐ Online				

Short Description
This course deals with concepts of modern operating systems. Topics include operating system structures, processes and threads, process communication and synchronization, deadlock and its solutions, processor scheduling, memory management, file systems, I/O device management, security, and protection.

Course Objectives
To let students acquire knowledge and understand about processes and processor management, synchronization, memory management schemes, file system and secondary storage management, security, and protection.

Course Intended Learning Outcomes (CILOs)
A. Knowledge - Theoretical Understanding
a1. **Illustrate** concepts and role of the operating system as communication bridge between the user and computer hardware. (K1)
B. Knowledge - Practical Application
a2. **Apply** CPU scheduling and system deadlock detection algorithms. (K4)
C. Skills - Generic Problem Solving and Analytical Skills
b1. **Analyze** the functionality of Operating Systems. (S1)
D. Skills - Communication, ICT, and Numeracy
E. Competence: Autonomy, Responsibility, and Context

Teaching and Learning Methods
√ Face to Face Lectures ☐ Brain Storming ☐ Synchronous remote ☐ Asynchronous remote √ Using Video √ Discussions ☐ Research Project ☐ Case Study ☐ Field visit √ Problem solving
Assessment Methods
☐ Formative Assessment √ Quiz ☐ Lab Exam √ Homework ☐ Project Assessment ☐ Oral Presentation √ Midterm √ Final Exam

Course Contents					
Week	Hour s	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1, 2, 3	9	a1	Syllabus, Course Schedule; **Overview of Operating Systems** Computer architecture, OS structure and operations, resource managements, features of an operating system.	**Blended Learning (4:30 hours-asynchronous) (4:30 hours synchronous)**	**Discussion and presentation**
4-5	6	a1	**Processes & Threads** describe the process concept, Processes state transitions, process communication. Multithreading, models, threading issues.	**Blended Learning (3 hours-asynchronous) (3 hours synchronous)**	**Discussion, presentation Assignment and Quiz**
6-7	6	a1, a2	**Processor Scheduling** Methods for process, scheduling, Scheduling criteria, scheduling algorithms (FCFS, SJF, RR and Priority). Performance analysis.	**Blended Learning (3 hours-asynchronous) (3 hours synchronous)**	**Discussion, presentation Assignment and Quiz**
8, 9, 10	9	a1, a2, b1	**Deadlock and Its Solutions** Deadlock, Detecting, Banker's Algorithm, deadlock handling, and detection and recovery.	**Blended Learning (4:30 hours-asynchronous) (4:30 hours synchronous)**	**Assignment**
11-12	6	a1, b1	**File Systems** File system structure, access methods, directories, allocation methods	**Blended Learning (3 hours-asynchronous) (3 hours synchronous)**	**Assignment Quiz**
13, 14, 15	9	a1, b1	**Security and Protection** Principles of protection, threats, computer security.	**Blended Learning (4:30 hours-asynchronous) (4:30 hours synchronous)**	**Assignment**
16	3	a1, b1	**Revision**	**Blended Learning (1:30 hours-asynchronous) (1:30 hours synchronous)**	**Discussion and presentation**

Infrastructure	
Textbook	**Operating system concepts. A. Silberschatz, Galvin. Wiley 2018. 10th ed.**
References	1. **Guide to Operating Systems, Greg Tomsho, Cengage, 2020** 2. **Operating Systems: Internals and Design Principles, William S. 2017**
Required reading	
Electronic materials	
Other	

Course Assessment Plan					
Assessment Method	**Grade**	**CILOs**			
		a1	**a2**	**b1**	
First (Midterm)	30	15	15		
Second (if applicable)					
Final Exam	40	10	20	10	
Coursework	30	10	10	10	
Coursework assessment methods · Assignments	10			10	
Case study					
Discussion and interaction					
Group work activities					
Lab tests and assignments					
Presentations					
Quizzes	20	10	10		
Total	100	35	45	20	

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).   Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.