



Ministry of Higher Education and
Scientific Research - Iraq
University of Baghdad
College of Engineering
Department of Computer Engineering

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	OPERATING SYSTEMS		Module Delivery	
Module Type	CORE LEARNING ACTIVITY		Class Lecture+Lab.	
Module Code	COE304			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UGIII	Semester of Delivery		
Administering Department	Computer Eng.	College	Engineering	
Module Leader		e-mail		
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D	
Module Tutor	None	e-mail	None	
Peer Reviewer Name	None	e-mail	None	
Review Committee Approval	23/6/2023	Version Number	1.0	
Relation With Other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	Computer Programming	Semester	2	
	Data Structure and Algorithms		4	
Co-requisites module				

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of the operating systems module is : 1. To explain main components of OS and their working 2. To familiarize the operations performed by OS as a resource Manager 3. To impart various scheduling policies of OS 4. To teach the different memory management techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course students will be able to: 1. Outline various concepts and features of Operating systems. 2. Compare various operating systems with respect to characteristics and features 3. Implement algorithm of CPU Scheduling, Memory Scheduling and disk scheduling. 4. Make changes in the OS configurations as per need
Indicative Contents المحتويات الإرشادية	Operating systems course is intended as a general introduced to the techniques used to implement operating systems and related kinds of systems software. The topics covered will be functions and structure of operating systems, process management (creation, synchronization, and communication); processor scheduling; deadlock prevention, avoidance, and recovery; main-memory management; virtual memory management (swapping, paging, segmentation and page-replacement algorithms).
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures. 2. Homework and Assignments. 3. Tests and Exams. 4. In-Class Questions and Discussions. 5. Extracurricular Activities. 6. Seminars. 7. In- and Out-Class oral conversations.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.266
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3.733
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	3,8,12and14	LO #1and 2
	Assignments	3	5% (5)	5,11,15	LO #2,3, and 4
	Lab.	15	15%(15)	1-15	LO # 2,3,and 4
Summative assessment	Comprehensive Exam	1	5% (5)	12	LO # 4
	Projects	2 hr	5% (10)	15	LO # 1-4
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to operating systems Basic concepts and definitions
Week 2	Processes Process States
Week 3	Process Description Process Control
Week 4	Memory Management Requirements Memory Partitioning
Week 5	Paging

Week 6	Segmentation
Week 7	Virtual Memory Hardware and Control Structures
Week 8	Operating System Software Principles of Concurrency
Week 9	Mutual Exclusion: Hardware Support Semaphores
Week 10	Deadlock and Starvation Principles of Deadlock
Week 11	Deadlock Prevention Deadlock Avoidance
Week 12	Deadlock Detection I/O management
Week 13	Disk scheduling I/O Devices
Week 14	Organization of I/O functions Operating System Design issues
Week 15	Uniprocessor Scheduling Types of Processor Scheduling Scheduling Algorithms
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Basic Linux Commands and Overview
Week 2-5	Write Shell Script for followings:□ ➤ To find the global complete path for any file. ➤ To broadcast a message to a specified user or a group of users logged on any terminal. ➤ To copy the file system from two directories to a new directory in such a way that only the latest file is copied in case there are common files in both the directories. ➤ To compare identically named files in two different directories and if they are same, copy one of them in a third directory. ➤ To delete zero sized files from a given directory (and all its sub- directories). ➤ To display the name of those files (in the given directory) which are having multiple links. ➤ To display the name of all executable files in the given directory. ➤ Write a script to display the date, time and a welcome message (like Good Morning etc.).

	The time should be displayed with “a.m.” or “p.m.” and not in 24 hours notation. ➤ Write a script to display the directory in the descending order of the size of each file. □ ➤ Write a script to implement the following commands: Tree (of DOS) which (of UNIX)
Week6	Implementation Of FCFS (First Come First Serve) CPU Scheduling.
Week 7	Implementation Of SJF (Shortest Job First) CPU Scheduling.
Week 8	Implementation Of Round Robin (RR) CPU Scheduling.
Week 9	Implementation Of Priority CPU Scheduling Algorithm
Week 10	Implementation Of FIFO Replacement Algorithm.
Week 11	Implementation Of Optimal Page Replacement Algorithm
Week 12	Implementation Of LRU Page Replacement Algorithm by Stack method
Week 13	Project
Week 14	Project
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	William Stallings, OPERATING SYSTEMS Internal and Design Principles, 6th Edition	Yes
Recommended Texts	1. Operating System Concepts, 9th edition Peter B. Galvin, Greg Gagne, Abraham Silberschatz, John Wiley & Sons, Inc. 2. Modern Operating Systems -By Andrew S. Tanenbaum (PHI) 3. Operating Systems 5th Edition, William Stallings, Pearson Education India	No
Websites	https://ldrp.ac.in/images/syllabus/BE-Computer/CE503%20-%20Operating%20System.pdf	

APPENDIX:

GRADING SCHEME				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

