

QFO-AP-VA-008	رمز النموذج :	اسم النموذج : خطة المادة الدراسية	 جامعة فيلادلفيا Philadelphia University
2	رقم الإصدار: (Rev)	الجهة المصدرة: نائب الرئيس للشؤون الأكاديمية	
2021-5-4	تاريخ الإصدار:	الجهة المدققة : اللجنة العليا لضمان الجودة	
4	عدد صفحات النموذج :		

Course Title: Operating Systems			Course code: 750335								
Course Level: 3			Course prerequisite: 750332								
Lecture Time:			Credit hours: 3								
	UR	☐	FR	☐	DR	☒	C	☐	E	☐	

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address

The Learning Style Used in Teaching the Course

The Learning Style			
Blended Learning		☐	
Electronic Learning		☐	
Face-to-Face Learning		☒	
Face-to-Face	Electronic	Blended	Percentage
100%			

Course module description:

This course will provide an introduction to operating system design and implementation. The operating system provides a well-known, convenient, and efficient interface between user programs and the bare hardware of the computer on which they run. In addition, the operating system is responsible for allowing resources (e.g., disks, networks, and processors) to be shared, providing standard services needed by many different programs (e.g., file service, the ability to start or stop processes, and access to the printer), and protecting individual programs from one another.

The course will start with a brief historical perspective of the evolution of operating systems over the last fifty years and then cover the major components of most operating systems. This discussion will cover the tradeoffs that can be made between performance and functionality during the design and implementation of an operating system. Particular emphasis will be given to three major OS subsystems: process management (processes, threads, CPU scheduling, synchronization, and deadlock), memory management (segmentation, paging, swapping), file systems, and operating system support distributed systems.

Course module objectives:

The aims of this module are to introduce the basic principles of computer systems organization and operation; to show how hardware is controlled by program at the hardware/software interface; to outline the basic OS resource management functions: memory, file, device (I/O), process management, and OS security/protection. Two concrete examples of operating systems are used to illustrate how principles and techniques are deployed in practice.

Course/ module components**Textbook**

978-1-119-45408-3	Operating system concepts	Silberschatz, Abraham (Author) Galvin, Peter Baer (Author) Gagne, Greg (Author)	Hoboken: John Wiley and Sons	2019
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Teaching methods:

Lectures, discussion groups, tutorials.

Learning outcomes:**A - Knowledge and Understanding:**

1. Proficient articulation of the inherent mathematical principles integral to CPU scheduling, elucidating the application of mathematical concepts in facilitating effective process management within operating systems.
2. In-depth exploration and discussion of a diverse spectrum of principles and tools utilized by operating system developers.

B - Intellectual Skills:

1. Profound analysis of intricate problems encountered in operating systems, including race conditions, deadlock scenarios, resource allocation challenges, and page fault occurrences.
2. Proficient design and formulation of system protocols addressing the intricacies of process synchronization.

C - Practical Skills:

1. Demonstrated proficiency in the articulation of coherent and meticulously structured technical reports specific to operating systems.
2. Applied proficiency in leveraging appropriate software-based design support tools within the Ubuntu environment.

D - Transferable Skills:

1. Integrated Communication and Team Collaboration.
2. Mature Computer Literacy and Effective Time Management.

Learning Outcomes Achievement

Module Number	Module Name	Knowledge & Understanding				Intellectual Skills				Practical Skills				Transferable Skills & Personal Qualities			
		A1	A2			B1	B2			C1	C2			D1	D2		
0750335	Operating Systems	A , D	A , D			A , D	A , D			A , D	A			D	A , D		

Development (D): A1, A2, B1, B2, C1, D2 are developed through lectures, home works, tutorials. and lab sessions

Assessment (A): A1, A2, B1, B2, C1, C2, D1 and D2 are assessed by quizzes, written exams, and labs work.

Assessment instruments

- Short reports and/ or presentations, and Short research projects
- Quizzes.
- Home works
- Final examination: 40 marks

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
Mid Exam	30
Reports, research projects, Quizzes, Home works, Projects	30
Final examination:	40
Total	100

Documentation and academic honesty

- Documentation style (with illustrative examples)
- Protection by copyright
- Avoiding plagiarism.

Course/module academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Operating system functions, the evolution of operating system.	
(2)	Operating system services, system structure.	
(3)	process description and control,	
(4)	process / CPU scheduling,	
(5)	cooperating processes	
(6) First examination	Thread overview	

(7)	Process synchronization: basic concepts	
(8)	semaphores, monitor, message passing	
(9)	Deadlocks	
(10)	Memory management: memory management requirement	
(11)	memory partitioning	

Second examination		
(12)	paging, segmentation, segmentation with paging	
(13)	Virtual memory : Basic concepts, demand paging, page replacement	
(14)	- File management: File concepts, access methods, file organization,	
(15) Specimen examination (Optional)	file directories, file sharing, record blocking,	
(16) Final Examination		

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module references

Books

1. Operating Systems; William Stallings; Prentice Hall; 2001
2. Abraham Silberschatz; Operating System Concepts; Addison-Wesley; 2009 8th edition

Journals

Journal of computer and system sciences

Websites

www.pearsoned.co.uk