Philadelphia University

Faculty of: Administrative & Financial Sciences

Department of Business Networking and Systems Management

	Course Syllabus
Course Title: Operating System	**Course code: 371214**
Course Level:2nd year	**Course prerequisite (s) and/or co requisite (s): 0371225**
Lecture Time:	**Creditours:3**

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Sundus A. Hamoodi	Assistant Prof.	32418		SundusHamodi@yahoo.com

Course module description:

This course introduces the fundamentals of operating systems design and implementation. Development of operating systems over the last fifty years will be presented through historical perspective. Most important components operating systems will introduce.

The operating system provides a well-known, convenient, and efficient interface between user programs and the basic hardware of the computer on which they run. The operating system is responsible for permitting resources to be shared, providing common services desired by many diverse programs. This course focuses on learning main operating subsystems: process management (processes, threads, CPU scheduling, synchronization, and deadlock), memory management (segmentation, calling, swapping), file systems, and operating system support for distributed systems.

Course module objectives:

_ Understand the primary concepts of operating Systems
_ Understand the Process services.
_ Understand, explain, demonstrate, and evaluate CPU scheduling methods
_ Understand relationship between an operating system and its underlying Hardware.
_ Understand implementation of process management functions, system calls and interrupt handling mechanisms._ Give an explanation of Deadlock and related issues.

Course/ module components

- **Text Book**

Title: Operating System Concepts with Java
Author: Silberschatz, Abraham Galvin, Peter Baer Gagne, Greg
Publisher: John Wiley & Sons-Edition: 7th

HOMEWORK:
Homework is an essential part of the educational process.
The homework in this course will reinforce the material covered in the classroom and provide time for practice. Students will earn points for each homework assignment completed. Homework assignments will be graded based on completion.

Teaching methods:

- Duration: 16 weeks in first semester, 48 hours in total
- Lectures: 32 hours (2.5 hours per week)

Assessment will be by examination, Lectures, discussion groups, tutorials, problem solving.

Learning outcomes:

- Knowledge and understanding

On completing the module, students should:

- Be able to understand and perceptive of the overall Operating System Concepts
- Be able to determine the most important components of operating System
- Be able to understand the process of the following major components of I/O device manager, the memory manager, the process manager and the file manager
- Be able to understand the overall structure and functionality of a modern operating system and of its interactions with the underlying computer hardware and overlying user-program

- Cognitive skills (thinking and analysis).

- The lecturer will present the material in interactive ways that motivate the thinking side of students.
- Performing the learning objectives for each module components in clear manner to cover the material and asked questions by the students.
- encourage students to thinking by permit group discussions in an effective way

- Communication skills (personal and academic).

Improving the students communication skills through interactive teaching methods adopted in the class

Practical and subject specific skills (Transferable Skills).

Discussion Groups enable students to analyze case studies in different operating system subjects. Using Internet for searching and prepare their reports give students chance to enhance their abilities in doing research in efficient way.

Assessment instruments

- Short reports and/ or presentations, and/ or Short research projects
- Quizzes.
- Home works
- Final examination: 50 marks

Allocation of Marks	
Assessment Instruments	**Mark**
First examination	**20**
Second examination	**20**
Final examination: 50 marks	**50**
Reports, research projects, Quizzes, Home works, Projects (Some Assignments need presentation)	**10**
Total	**100**

Documentation and academic honesty

- Documentation style (with illustrative examples)

This course is given from the textbook mentioned above. It is copyright protected. Students are encouraged to purchase this textbook

- Avoiding plagiarism.

Students are advised to avoid plagiarism in their home-works and assignments.

Course/module academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Operating System definition, Operating System goals, Operating System Components, Early Systems, Simple Batch Systems, Control Cards, Spooling, Multi Batch Systems, Different problems in operating System, Multiprogramming features	

(2)	Time-Sharing Systems, Personal-Computer Systems, Parallel Systems, Symmetric multiprocessing, Distributed Systems, and Real-Time Systems.	
(3)	Computer-System Operation, Common Functions of Interrupts, Interrupt Handing, I/O Structure	Assignment 1
(4)	Direct Memory Access (DMA) Structure, Storage Structure, Storage Hierarchy.	
(5)	Computer System Structures, Process Management, Main-Memory Management, Secondary Storage Management ,System Management	Assignment 2
(6) First examination	First Exam, File Management, Protection System.	
(7)	Networking, Distributed Systems, Command-Interpreter System, Operating System Service, System Calls, System Structure	
(8)	Virtual Machine, Virtual Machine advantage and disadvantage, System Goals, Mechanisms and Policies, System Implementation.	
(9)	Process Concept and state, Process Control Block (PCB), Process Scheduling queues, Context Switch, Process creation, Termination and cooperating	Assignment 3
(10)	Producer-Consumer Problem, Interprocess Communication (IPC), Direct and Indirect communication, Error Recovery.	
(11) Second examination	Second Exam, Basic Concept of CPU Scheduling, Dispatcher, Scheduling Criteria, FCFS scheduling,	

(12)	SJF Scheduling, Priority Scheduling, RR scheduling, Multilevel queue,	Assignment 4
(13)	Examples from different scheduling. Process synchronization; Background Producer process	
(14)	Critical-Section Problem and Solution, Semaphore	Assignment 5
(15) Specimen examination (Optional)	Deadlock Problem, Characterization and Prevention, Starvation	
(16) Final Examination	Discussion and Revision +Final Exam	

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 college/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

Title: Applied Operating System Concepts
Author: Abraham Silberschatz, Peter Galvin, Greg Gagne, Peter Galbin
Publisher: John Wiley
Edition: 5th

Title: Operating Systems Design and Implementation
Author: Andrew S Tanenbaum

Publisher: Pearson Education Limited
Edition: 3rd, Title: Operating Systems
Author: Gary J. Nutt, Nancy Clegg, Publisher: Pearson Education Limited
Edition: 3rd

Title: Operating Systems Principles
Author: Lubomir Bic, Alan C. Shaw
Publisher: Prentice-Hall
Edition: Int

Journals

www.acm.org
http://www.ieee.org/index.html

Websites

http://courses.cs.vt.edu/csonline/OS/Lessons/index.html

http://pages.cs.wisc.edu/~bart/537/lecturenotes/