



University of Management and Technology

School of Commerce and Accountancy

Quaid e Azam Campus

Course Outline

Course Title: Operating Systems	
(CS361)	
Program	ADP(CS)
Credits Hours	3
Duration	15 Weeks / 30 Sessions
Prerequisites	
Resource Person	
Contact/Email	

Course Objectives:

Understand the basic structure and organization of a multi-programmed computer system, including the distinction between user and kernel mode, the use of interrupts and context switches, application interfaces and system calls, program linking and loading.

Understand the principles behind memory management, including user-level memory management, virtual memory management and paging.

Understand the principles behind CPU scheduling, including round-robin, priority-based, and multi-level feedback queue based scheduling algorithms.

Understand how an OS provides protection to its applications and how it manages.

Understand how file and storage systems are constructed and what factors influence their performance.

Teaching-Learning Methodology:

Note: Select methodologies as per nature of the course.

- Lectures
- Recommended Text/Supplementary Texts
- Handouts
- Case Studies
- Skill Development Exercises
- Project Report/Term Paper
- Any other Teaching Tool.....

Recommended Text Book:

1. Operating System Concepts 9th Edition
By: Abraham Silberschatz, Galvin, Gagne.

Optional References:

1. Operating Systems: Internals and Design Principles 8th Edition
By: William Stallings

Assessment & Evaluation:

Note: Please Specify the Weightage you want to assign to assignments and Final Project/ Project presentation/Presentation.

Quizzes	15%	
Assignments	}	
Final Project		20%
Project Presentation/Presentations		
Mid Term	25%	
<u>End Term Exam</u>	<u>40%</u>	
Total:	100	

SEHEDULE OF ACTIVITIES

Note: Please fill the tasks/activities column according to your course plan

Week	Contents/Topics to be Taught	Tasks/Activities
1	Introduction to Operating Systems (What is an OS, Batch Systems, Time Sharing Systems etc.)	Course Outline Distribution
2	Computer System Structures (Computer System Operation, I/O Structure, Storage Structure, Storage Hierarchy, Hardware Protection etc.)	
3	Operating System Structures (Operating Systems Concepts, System Calls etc.)	Quiz 1
4	PROCESS MANAGEMENT Processes & Threads (Process Concept, Process Scheduling, Operation on Processes, Cooperating Processes, Threads etc.)	
5	CPU Scheduling (Introduction to Scheduling, Scheduling Criteria, Scheduling Algorithms etc.)	Assignment 1
6	Process Synchronization (The Critical Section Problem, Synchronization Hardware)	
7	Semaphores, Classical Problems of Synchronization, Monitors etc	Assignment 2
8	Deadlocks (Deadlock Characterization, Methods for Handling Deadlocks)	Quiz 2
9	Deadlock Prevention, Avoidance and Detection etc	
10	Memory Management (Logical vs. Physical Address Space, Swapping)	Assignment 3
11	Contiguous Allocation, Paging, Segmentation, Segmentation with Paging etc	Quiz 3
12	Virtual Memory (Demand Paging, PageReplacement, etc.)	
13	Page Replacement Algorithms, Allocation of frames, Thrashing	Quiz 4
14	File System Interface and Implementation (File Concept, Access Methods, Directory Structure, Protection)	
15	File System Structure, Allocation Methods, Free Space Management, Directory Implementation etc	Assignment 4 Presentations (if any)

16	END TERM EXAMINATION	
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