

Course Title: Advance Operating Systems
Credit Hours: 3
Pre-requisite: Undergraduate level Operating Systems concepts and Comfortable with C programming language
Instructor: Dr Muhammad Kamran Nishat (kamran.nishat@pafkiet.edu.pk)

Aims & Objectives:

This course introduces advanced operating system topic sand introduces recent developments in systems research. The course involves teaching of fundamental OS concepts followed by reading and understanding classic and new research papers on operating systems. Topics include operating system structure, threads and synchronization, virtual memory management, file systems, virtualization and OS requirements for distributed systems.

Detailed Course Contents:

See the attached Lecture plan.

Text and reference reading:

- Operating System Concepts, Eighth Edition " by Silberschatz, Galvin, and Gagne [ONLY FOR BACKGROUND KNOWLEDGE]
- Operating Systems: Three Easy Pieces [online book] Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau
- Distributed Systems Concepts and Design, 5th edition, Colouris and others. Papers listed below and order of topics are subject to change.

Marks Distribution:

Assignments -----	15% (3-4 assignments)
Quizzes -----	10%
Course Project-----	15%
Final Exam -----	40%
Mid Term -----	20%

Advance Operating Systems

Week-wise tentative lecture plan

Week	Contents	Reference
1	Introduction to OS	
2	Processes and Threads	
3,4	Threads and Concurrency, Synchronization	
5,6	Naming, IO Management	
7,8	Virtualization	
9,10	Interprocess Communication, RPC	
11,12	Distributed File Systems, Distributed Shared Memory	
13,14	Time Synchronization	
15	Data Center Technology	