

OPERATING SYSTEMS (3-0-3)

Course Objectives:

- To understand Operating system structure and services.
- To understand the concepts of Process, memory, storage,
- To explore different applications of data structures.

Unit I: (08 Hours)

Introduction to Operating System, System Structures: Operating system services, User and Operating-System Interface, system calls, system programs, Operating system design and implementation, Batch processing, multi-programming, time-sharing and real-time systems

Unit II: (10 Hours)

Process Management: Process Concept, Operations on processes, Process scheduling, Inter process Communication, Threads, Multithreading Models. CPU Scheduling algorithms: Scheduling Criteria, FCFS, SJF, Priority, Round Robin, Multilevel Queue, Multilevel Feedback Queue. Deadlocks: Deadlock detection, deadlock prevention, and deadlock avoidance fundamentals.

Unit III: (10 Hours)

Memory Management Strategies: Swapping, Contiguous Memory Allocation, Segmentation, Paging, Virtual Memory Management: Concepts, Demand Paging, Page Replacement techniques: FIFO, LRU, Optimal, Thrashing.

Unit IV: (08 Hours)

Storage Management: Overview of Mass-Storage Structure, Disk Scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK, RAID technology.

Unit V: (04 Hours)

File System concept, Access Methods, Directory and Disk S systems, File, Sharing and File Protection.

Course Outcomes:

Upon completion of this course, students will be able to:

- Understand various services offered by an OS as a resource manager.
- Understand the concept of a process and various CPU scheduling techniques
- Learn the concepts on effective memory management and virtual memory
- Learn various approaches to disk scheduling & file management techniques

Text Books:

1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, Eighth Edition, Wiley Student Edition 2009
2. Operating Systems, Rajiv Chopra, S. Chand Pubs

Reference Books:

1. Modern Operating System, Tanenbaum, Pearson, 4/ed. 2014
2. Operating Systems 5th Edition, William Stallings, Pearson Education India
3. Richard Blum, Linux Command Line and Shell Scripting Bible, O' Reilly