II B.Tech - II Semester
(17CS401) OPERATING SYSTEMS

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
40	60	100	3	1	-	3

Pre-Requisites: knowledge on computer hardware, basic c programming

Course Objectives:

- Study the basic concepts and functions of operating systems. • Understand the structure and functions of OS.
- Learn about Processes, Threads and Scheduling algorithms. • Understand the principles of concurrency and Deadlocks.
- Learn various memory management schemes.
- Study I/O management and File systems.
- Learn the basics of Linux system and perform administrative tasks on Linux Servers.

UNIT-I:
Introduction to Operating System Concept: Types of operating systems, operating systems concepts, operating systems services, Introduction to System call, System call types.

UNIT-II:
Process Management – Process concept, The process, Process State Diagram , Process control block, Process Scheduling- Scheduling Queues, Schedulers, Operations on Processes, Interprocess Communication, Threading Issues, Scheduling-Basic Concepts, Scheduling Criteria, Scheduling Algorithms.

UNIT-III:
Concurrency: Process Synchronization, The Critical- Section Problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization examples.

UNIT-IV:
Deadlock: Principles of deadlock – System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery form Deadlock

UNIT-V:
Memory Management: Swapping, Contiguous Memory Allocation, Paging, structure of the Page Table, Segmentation Virtual Memory Management: Virtual Memory, Demand Paging, Page-Replacement Algorithms, Thrashing

UNIT-VI:
File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection. File System implementation- File system structure, allocation methods, free-space management Mass-storage structure overview of Mass-storage structure, Disk scheduling, Device drivers,

Course Outcomes:

CO-1	Survey the operating system services.	L1
CO-2	Evaluate Scheduling algorithms for process management.	L5
CO-3	Evaluate process synchronization techniques for concurrency.	L5
CO-4	Compare various memory management schemes.	L4
CO-5	Evaluate Process synchronization techniques for deadlocks.	L5
CO-6	Analyze the structure of file systems on secondary storage devices.	L4

CO-PO/PSO Mapping Matrix:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1	3	2	1	2	-	-	-	-	-	-	-	-	2	2	2
CO-2	2	3	1	2	2	-	-	-	-	-	-	-	-	2	-
CO-3	3	3	1	2	2	-	-	-	-	-	-	-	1	2	-
CO-4	3	3	1	2	2	-	-	-	-	-	-	-	1	2	-
CO-5	3	2	2	2	2	-	-	-	-	-	-	-	2	2	-
CO-6	2	2	2	2	-	-	-	-	-	-	-	-	1	2	2

Text Books:

1. Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin and Greg Gagne 9th Edition, John Wiley and Sons Inc., 2012.
2.Operating Systems – Internals and Design Principles, William Stallings, 7th Edition, Prentice Hall, 2011.
3. Operating Systems-S Halder, Alex A Aravind Pearson Education Second Edition 2016.

Reference Books:

1. Modern Operating Systems, Andrew S. Tanenbaum, Second Edition, Addison Wesley, 2001.
2. Operating Systems: A Design-Oriented Approach, Charles Crowley, Tata Mc Graw Hill Education", 1996
3. Operating Systems: A Concept-Based Approach, D M Dhamdhere, Second Edition, Tata Mc Graw-Hill Education, 2007.