

<u>OPERATING SYSTEM</u> B.E., V Semester, Electronics & Communication Engineering / Telecommunication Engineering [As per Choice Based Credit System (CBCS) Scheme]			
Course Code	17EC553	CIE Marks	40
Number of Lecture Hours/Week	03	SEE Marks	60
Total Number of Lecture Hours	40 (8 Hours / Module)	Exam Hours	03
CREDITS – 03			
Course objectives: This course will enable students to: <ul style="list-style-type: none"> • Understand the services provided by an operating system. • Understand how processes are synchronized and scheduled. • Understand different approaches of memory management and virtual memory management. • Understand the structure and organization of the file system • Understand interprocess communication and deadlock situations. 			
Module-1			
Introduction to Operating Systems OS, Goals of an OS, Operation of an OS, Computational Structures, Resource allocation techniques, Efficiency, System Performance and User Convenience, Classes operating System, Batch processing, Multi programming, Time Sharing Systems, Real Time and distributed Operating Systems (Topics from Sections 1.2, 1.3, 2.2 to 2.8 of Text). L1, L2			
Module-2			
Process Management: OS View of Processes, PCB, Fundamental State Transitions, Threads, Kernel and User level Threads, Non-preemptive scheduling- FCFS and SRN, Preemptive Scheduling- RR and LCN, Long term, medium term and short term scheduling in a time sharing system (Topics from Sections 3.3, 3.3.1 to 3.3.4, 3.4, 3.4.1, 3.4.2 , 4.2, 4.3, 4.4.1 of Text). L1, L2			
Module-3			
Memory Management: Contiguous Memory allocation, Non-Contiguous Memory Allocation, Paging, Segmentation, Segmentation with paging, Virtual Memory Management, Demand Paging, Paging Hardware, VM handler, FIFO, LRU page replacement policies (Topics from Sections 5.5 to 5.9, 6.1 to 6.3, except Optimal policy and 6.3.1 of Text). L1, L2			
Module-4			
File Systems: File systems and IOCS, File Operations, File Organizations, Directory structures, File Protection, Interface between File system and IOCS, Allocation of disk space, Implementing file access (Topics from Sections 7.1 to 7.8 of Text). L1, L2, L3			
Module-5			
Message Passing and Deadlocks: Overview of Message Passing, Implementing message passing, Mailboxes, Deadlocks, Deadlocks in resource allocation, Resource state modelling, Deadlock detection algorithm, Deadlock Prevention (Topics from Sections 10.1 to 10.3, 11.1 to 11.5 of Text). L1, L2, L3			

Course outcomes: After studying this course, students will be able to:

- Explain the goals, structure, operation and types of operating systems.
- Apply scheduling techniques to find performance factors.
- Explain organization of file systems and IOCS.
- Apply suitable techniques for contiguous and non-contiguous memory allocation.
- Describe message passing, deadlock detection and prevention methods.

Text Book:

Operating Systems – A concept based approach, by Dhamdare, TMH, 2nd edition.

Reference Books:

1. Operating systems concepts, Silberschatz and Galvin, John Wiley India Pvt. Ltd, 5th edition, 2001.
2. Operating system–internals and design system, William Stalling, Pearson Education, 4th ed, 2006.
3. Design of operating systems, Tannanbhaum, TMH, 2001.



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