

CSE204C OPERATING SYSTEMS
B. Tech. Semester –I V (Computer Science and Engg.)
w.e.f. 2019-2020

L	T	P	Credits	Class Work	: 25 Marks
3	0	0	3	Examination	: 75 Marks
				Total	: 100Marks
				Duration of Examination	: 3 Hours

Course Objectives:

1. To understand the mechanisms of OS to handle processes and threads and their communication.
2. To understand the process management mechanisms and scheduling algorithms.
3. To understand the mechanisms involved in memory management in OS and virtual memory concepts.
4. To understand the file management and deadlocks handling techniques in OS.

UNIT-I

Introduction: Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading etc)., Generations of operating systems Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services, architecture, System programs and calls. Monolithic , microkernel operating systems, concept of virtual machine
Unix System and Windows NT Overview: Unix system call for processes and file system management, Shell interpreter, Windows NT architecture overview, Windows NT file system.

UNIT-II

Process Management: Process definition, different states of a process , process state transitions, process control box(PCB), context switching

Thread: Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads,

Process scheduling, Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF, RR; Multiprocessor scheduling: Real Time scheduling: RM and EDF.

UNIT-III

Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation, fixed and variable partitions – internal and external fragmentation and compaction; Paging : principle of operation- page allocation – page allocation- hardware support for paging, Protection and sharing disadvantages of paging , Segmentation techniques, segmentation with paging;

Virtual Memory: basic concepts of VM, management - Demand Paging & Page-Replacement Algorithms; Demand Segmentation.

UNIT-IV

Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests,

B. Tech. 3rd semester to 8th semester CSE: Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

Performance Issues.

File System: Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management and its associated algorithms, Introduction to distributed file system.