

Course Title:				Operating Systems				
Course Code:				CSL DC203				
Course Coordinator				Sudesh Kumar				
Credits				3				
Evaluation Scheme Total 100 Marks								
Quiz (Total 20 Marks)				Assignment/Project (Total 20 marks) (Minimum Two Assignments or one Project)		Mid-Term	Major Examination	Total
Quiz I (5 marks)	Quiz II (5 marks)	Quiz III (5 marks)	Quiz IV (5 marks)			20 marks) (1 ½ Hour Duration)	(40 marks) (3 Hour Duration)	100 Marks
WEEKS				TOPICS TO BE COVERED				
Week 1				Introduction to OS: Processor management, memory management, file system management, system calls.				
Week 2				Memory management: Single user contiguous: protection; fixed partition multiprogramming; protection, fragmentation,				
Week 3				relocation; variable partition multiprogramming: compaction, storage placement strategies; multiprogramming with storage swapping;				
Week 4				Paging, Multilevel Paging, Look aside Buffer, Problems on paging and multilevel paging				
Week 5				virtual memory: page replacement and strategies, locality, working sets, page fault frequency, demand paging, optimization technique.				
Week 6				segmentation; paging and segmentation together.				
Week 7				Processor management: Scheduling levels, quantities to be optimized ,				
Week 8				pre-emptive/non pre-emptive, interrupting clock, FIFO,				
Week 9				shortest job first, shortest remaining job first, round robin, priority, multilevel queues, multilevel feedback queues.				
Week 10				File systems: directory organization, functions, data hierarchy, blocking and buffering, file organization, free space management.				
Week 11 (13-17 October, 2025)				Mid-Term				
31 st October, 2025				Showing of Mid-Term Answer Sheets				
Week 13				allocation techniques: contiguous, non-contiguous; sector oriented linked; block: block chaining , index block chaining, block oriented file mapping.				
Week 14				Device management: types: block, character; PIO, DMA, I/O channels, virtual devices.				
Week 15				Dead locks: Resource concepts, necessary conditions, resource allocation graph, deadlock prevention: three strategies of Havender, deadlock avoidance:				

Week 16	Bankers algorithm, deadlock detection: reduction of resource allocation graph, deadlock recovery.
Week 17	Concurrent processes: Mutual exclusion and Bernstein's conditions, Fork/Join construct, PARBEGIN/PAREND construct; semaphores: use of semaphores to complement PARBEGIN/PAREND; critical section problem ;
Week 18	2 process critical section problem and solution, both H/W and S/W; monitors; message passing ; case studies: dining philosophers problem, reader writer problem and disk head scheduler problem.
Week 19	Disk scheduling: operations of disks, quantities to be optimized, seek optimization : FCFS, SSTF, SCAN, C-SCAN, M-STEP SCAN, Eschenbach; rotation optimization, system consideration, disk caching and other optimizations.
(08-12 December, 2025)	Revision Week
(15-24 December, 2025)	Major Examinations
8 January ,2026	Showing of Major Exams Answer Sheets

Course Outcomes:

CO1: Students will be able to define the operating system related terms.

CO2: Students will learn different types of operating systems along with concept of file management systems and CPU scheduling algorithms used in operating system.

CO3: Students will have knowledge of memory management, I/o Devices management, process scheduling, process synchronization and deadlock handling algorithms.

CO4: Students will be able to analyse and implement various approaches used for management, scheduling, allocation and communication in operating system.

Recommended Books:

1. Operating system concepts: Silberschatz Addison Wesley Longman/ Wiley
2. Modern Operating Systems: Tanenbaum, PH(I)
3. Operating systems: H.M.Deitel, Addison Wesley Longman
4. Operating systems: Madnick and Donovan, McGraw-Hill

Calendar of Quizzes/Assignment etc. to be provided as per below details and exact dates to be fixed in consultation with other course coordinators to avoid overlap of Quizzes of different courses.

Component	Date
Quiz-I	22-26 September,2025
Quiz-II	8-10 October,2025
Assignment-I	29 September-3 October ,2025
Mid-Term	13-17 October, 2025
Assignment-II/ Project Submission	17-21 November,2025
Quiz-III	10-14 November,2025
Quiz-IV	8-12 December,2025
Major Exam	15-24 December, 2025

Note: One surprise Quiz may be fixed out of Quiz-II, Quiz-III or Quiz-IV.

Signature of Course Coordinator :