

Course Curriculum

Course Code: CSE202

Course Level UG

Course Title Operating System

Course Description :

Credit Units

L	T	P/S	SW	AS/DS	FW	No. of PSDA	Total Credit Unit
3	0	2	0	0	0	0	4

Course Objectives :

SN	Objectives
1	After successfully completing the course, students will be able to Provides insight to Operating general purpose computers, Overcome challenges they face in real world use of computers. Understand how memory is managed. In different Operating Systems, Understands the characteristics on which choice of Operating Systems depends, Understand how files and processes are managed on a computer.

Pre-Requisites : General

SN. **Course Code** **Course Name**

Course Contents / Syllabus :

SN.	Module	Descriptors / Topics	Weightage
1	Introduction to operating system	Operating system and function, Evolution of operating system, Batch, Interactive, multiprogramming, Time Sharing and Real Time System, multiprocessor system, Distributed system, System protection. Operating System structure, Operating System Services, System Program and calls.	15.00
2	Process Management	Process concept, State model, process scheduling, job and process synchronization, structure of process management, Threads. Interprocess Communication and Synchronization: Principle of Concurrency, Producer Consumer Problem, Critical Section problem, Semaphores, Hardware Synchronization, Critical Regions, Conditional critical region, Monitor, Inter Process Communication. CPU Scheduling: Job scheduling functions, Process scheduling, Scheduling Algorithms, Non Preemptive and preemptive Strategies, Algorithm Evaluation, Multiprocessor Scheduling. Deadlock: System Deadlock Model, Deadlock Characterization, Methods for handling deadlock, Prevention strategies, Avoidance and Detection, Recovery from deadlock combined approach.	25.00
3	Memory Management	Single Contiguous Allocation: H/W support, S/W support, Advantages and disadvantages, Fragmentation, Paging, Segmentation, Virtual memory concept, Demand paging, Performance, Paged replaced algorithm, Allocation of frames, Thrashing, Cache memory, Swapping, Overlays	25.00
4	Device management	Principles of I/O hardware, Device controller, Device Drivers, Memory mapped I/O, Direct Access Memory, Interrupts, Interrupt Handlers, Application I/O interface, I/O Scheduling, Buffering, Caching, Spooling,	15.00
5	File System and Protection and security	File Concept, File Organization and Access Mechanism, File Directories, Basic file system, File Sharing, Allocation method, Free space management. Policy Mechanism, Authentication, Internal excess Authorization.	20.00

Course Learning Outcomes :

SN. **Course Learning Outcomes**

1	• learn basic concepts and responsibilities of operating system
2	• Design, and implement various CPU scheduling, deadlocks and synchronization algorithm.

3	Discuss, restate, and apply concepts of memory management
4	Analyze and evaluate various I/O component of computing system
5	Identify and demonstrate different storage management techniques and protection policies

Pedagogy for Course Delivery :

SN. Pedagogy Methods

1	<ul style="list-style-type: none"> The class will be taught using online teaching covering theory and case based method. In addition to assigning the case studies, the course instructor will spend considerable time in understanding the concept of innovation through the eyes of the consumer. The instructor will cover the ways to think innovatively liberally using thinking techniques.
---	--

Theory /VAC / Architecture Assessment (L,T & Self Work): 75.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	End Term Examination (OMR)		60.00
3	Internal	CLASS TEST	15.00
4	Internal	CLASS QUIZ	10.00
5	Internal	HOME ASSIGNMENT	10.00

Lab/ Practical/ Studio/Arch. Studio/ Field Work Assessment : 25.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	External	VIVA VOCE	30.00
3	External	PRACTICAL	30.00
4	Internal	VIVA VOCE	10.00
5	Internal	PRACTICAL / LAB RECORDS	15.00
6	Internal	PERFORMANCE	10.00

Lab/ Practical details, if applicable :

SN Lab / Practical Details

1	Use of Basic UNIX Shell Commands/Linux Commands.
2	Commands related to inode, I/O redirection and piping, process control commands, mails
3	Shell Programming: Shell script exercises based on following: (i) Interactive shell scripts (ii) Positional parameters (iii) Arithmetic (iv) if-then-fi, if-then- else-fi, nested if-else (v) Logical operators (vi) else + if equals elif, case structure (vii) while, until, for loops, use of break
4	Write a shell script that accept a file name starting and ending line numbers as arguments and display all the lines between given line no.
5	Write a shell script that delete all lines containing a specified word.
6	Write a shell script that displays a list of all the files in the current directory
7	Simulation of Unix commands using C.

8	Implement the following CPU Scheduling Algorithms. i) FCFS ii) Shortest Job First.
9	Implement the following CPU Scheduling Algorithms. i) Round Robin ii) priority based

List of Professional skill development activities :

No.of PSDA : 0
SN.

PSDA Point

Text & References :

SN.	Type	Title/Name	Description	ISBN/ URL
1	Book	1. Milenekovic, "Operating System Concepts", McGraw Hill		
2	Book	2. A. Silberschatz, P.B. Galvin "Operating System Concepts", John Willey & son		
3	Book	2. Tannenbaum, "Operating system design and implementation", PHI		
4	Book	8. YashwantKantikar, "Shell Programming", PBP Publication.		
5	Book	5. B. W. Kernighan & R. Pike, "The UNIX Programming Environment" Prentice Hall of India, 2000		
6	Book	Willam Stalling " Operating system" Pearson Education		
7	Book	Sumitabha Das " Your UNIX The ultimate guide" Tata Mcgraw Hill		