



Program	BACHELOR OF VOCATION (B.Voc.)	Semester - 3
Type of Course	-	
Prerequisite		
Rationale	-	
Effective From A.Y.	2024-25	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				SEE T	IAT	SEE P	CCE	
3	1	-	4	50	-	-	20	70

SEE - Semester End Examination, IAT - Internal Assessment Test, CCE - Continues & Comprehensive Evaluation

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	Introduction Computer system overview, Architecture, Goals and structures of OS, Basic functions, Interaction of OS and hardware architecture, System calls, Batch, Multiprogramming, Multitasking, Time sharing, Parallel, Distributed and real-time OS	6	10
2	Process and Threads Management Concept of process and threads process states, Process management, Context switching, Interaction between processes and OS, Multithreading, Concurrency: Principles of concurrency, Mutual exclusion: S/W approaches, H/W support, Semaphores, Pipes, Message passing, Classical problems of synchronization: Readers-writers, Producer consumer, and Dining philosopher problem, Scheduling algorithms: FCFS, SJF, RR, Priority	10	25
3	Memory Management Memory partitioning, Swapping, Paging, Segmentation, Virtual memory – Overlays, Demand paging, Performance of demand paging, Virtual memory concepts, Page replacement algorithms-Optimal, FIFO, LRU, Allocation algorithms	9	25
4	File Management and Input Output Management File concept, Directories, Access methods, Allocation methods, File protection Principles of I/O Hardware, Principles of I/O Software, Secondary storage structure- Disk management, Introduction to clock	10	20
5	Virtualization and Utility Software Virtual machines: supporting multiple operating systems simultaneously on a single hardware platform; running one operating system on top of another, True or pure virtualization. Anti-virus, File management tools, Compression tools, and disk management tools (Disk cleanup, Disk defragmenter, Backup)	10	20
Total		45	100



Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application
Weightage	30	40	30

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes

At the end of this course, students will be able to:

C01	Understand various generations of operating system and functions of operating system
C02	Understand the concept of program, process, thread and inter process communication. Analyze and evaluate various CPU scheduling algorithms and compare their performance
C03	Compare and evaluate various memory management schemes especially paging and segmentation in operating system and apply various page replacement techniques
C04	Understand file systems in operating systems like UNIX/Linux and Windows. Understand input-output management and use of device drivers and secondary storage (Disk) mechanisms
C05	Understand virtualization concept

Reference Books

1.	Operating Systems: Internals & Design Principles (TextBook) By William Stallings Pearson Education India
2.	Operating System Concepts By Peter B. Galvin, Greg Gagne, Abraham Silberschatz John Wiley & Sons, Inc.
3.	Modern Operating Systems By Andrew S. Tanenbaum PHI