

**Teaching and Examination Scheme:**

Teaching Scheme			Credit C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA(M)	ESE(V)	PA(I)	
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

**Content:**

Sr. No.	Practical / Hands on Exercise	Hrs.
1	<b>Operating System Concepts:</b> Need of operating system, Evolution of operating system, Structure of Operating system, Types of Operating System-Interactive (GUI based), Time Sharing, Real Time and Distributed, Operating system concepts, Overview of all system soft wares-Compiler, Interpreter, Assembler, Linker, Loader	06
2	<b>Process and Thread Management:</b> 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	08
3	<b>Memory Management:</b> 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	08
4	<b>File Management :</b> File concept, Directories, Access methods, Allocation methods, File protection,	05
5	<b>Input Output Management:</b> Principles of I/O Hardware, Principles of I/O Software, Secondary storage structure- Disk management, Introduction to Clock	05
6	<b>Case Study:</b> Commonly used Operating System: UNIX, LINUX, Windows, Solaris, BOSS (Bharat Operating System Solutions); Mobile OS – Android, Symbian, IOS	05
7	<b>Utility Software:</b> Anti-Virus, File Management tools, Compression tools and Disk Management tools (Disk Cleanup, Disk Defragmenter, Backup)	05
	<b>Total</b>	42

**Suggested Specification table with Marks (Theory):**

Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
5	25	25	10	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)

**Reference Books:**

1. Operating System Concepts (8th Edition) by Silberschatz, Peter B. Galvin and Greg



Gagne, WileyIndian Edition (2010).Web Technologies, Black Book, dreamtech Press

2. Modern Operating Systems (Third Edition) by Andrew S Tanenbaum, Prentice Hall India (2008)
3. Unix Shell Programming – by Yashwant Kanetkar, BPB publications.

**Course Outcomes:**

After learning the course the students should be able to:

1. Understand various generations of operating System and functions of operating System.
2. Understand the concept of program, process, thread and inter process communication.
3. Analyze and evaluate various CPU Scheduling Algorithms and compare their performance.
4. Compare and evaluate various memory management schemes especially paging and segmentation in operating System and apply various page replacement Techniques.
5. Understand File Systems in Operating System like UNIX/Linux and Windows.
6. Understand Input Output Management and use of device driver and secondary Storage (Disk) Mechanism.
7. Use various utility software to manage and handle operating system