Lesson Plan Odd Semester 2022

Stream : CSE
Subject : Operating Systems
Subject Code : PCC-CS502

1. Textbook:

T1: Operating System Concepts – Avi Silberschatz, Peter Galvin, Greg Gagne, Wiley Asia Student Edition
T2: Operating Systems: Internals and Design Principles – William Stallings, Prentice Hall of India.

2. References

R1: Operating Systems – Harvey M. Deitel, Paul J. Deitel, David R. Choffnes, Pearson
R2: Operating System Design and Implementation – Andrew S. Tanenbaum , PHI

3. E-Learning Courses for Reference:

W1: https://onlinecourses.nptel.ac.in/noc22_cs78/

Lecture No. (L)	Description	Reference(s) Text
L1	Overview of Operating Systems, Types of Operating Systems, OS Services, System Calls	T1, T2
L2	Structure of an OS - Layered, Monolithic, Microkernel Operating Systems,	T1, T2
L3	Concept of Virtual Machine. Case study on UNIX and WINDOWS Operating System.	T1, R1
L4	Process definition, Different states of a Process, Process State transitions	T1
L5	Process Control Block (PCB), Context switching, Process creation, termination	T1, T2
L6	Thread definition, Various states, Benefits of threads, Types of threads, Concept of multithreads,	T1, T2
L7	Process Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time	T1, T2
L8	Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF	T1, T2
L9	Scheduling algorithms: RR, HRN, Feedback queue scheduling	T1, T2
L10	Suspended state, long term, short term scheduler	T2, R1
L11	Mid term scheduler	T1, T2
L12	Process synchronization, Mutual Exclusion , Race Conditions	T1, T2
L13	Critical section problem, Solution with shared variables, Petersons solution	T1, T2
L14	Semaphore, CS solution with semaphore	T1, T2
L15	Classical IPC Problems: The Producer Consumer Problem	T1, T2
L16	Reader's & Writer Problem	T1, T2
L17	Dinning Philosopher Problem, Monitor, message passing	T1, T2
L18	Definition, Necessary and sufficient conditions for Deadlock	T1, T2
L19	Deadlock Prevention	T1, T2
L20	Deadlock Avoidance: Banker's algorithm,	T1, T2
L21	Deadlock detection and Recovery	T2, R1
L22	Memory management : Basic concept, Logical and Physical address, Address binding	T2, R1
L23	Memory allocation: Contiguous Memory allocation, Fixed and variable partition	T2, R1
L24	Internal and External fragmentation and Compaction	T2, R1

L25	Paging: Principle of operation –Page allocation, address translation	T2, R1
L26	Translation Lookaside Buffer (TLB), Locality of reference	T1, R1
L27	Basics of Virtual Memory	T2, R1
L28	Page fault , Dirty page/Dirty bit – Demand paging, Page Replacement algorithms: FIFO	T2, R1
L29	Not recently used (NRU) , Optimal	T2, R1
L30	Interrupt handlers, Device drivers	T1, T2
L31	Disk structure, Disk scheduling algorithms	T1, T2
L32	Concept of File, Access methods, File types, File operation, Directory structure	T1, T2
L33	File System structure, Allocation methods (contiguous, linked, indexed),	T1, T2
L34	Free-space management, directory implementation (linear list, hash table),	T1, T2
L35	Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN	T1, T2
L36*	Tutorial Scheduling algorithm	T1, T2, R1
L37*	Tutorial Bankers algorithm	T1, T2, R1
L38*	Tutorial Paging	T1, T2, R1
L39*	Tutorial Page replacement	T1, T2, R1
L40*	Tutorial Disk scheduling	T1, T2, R1