**LECTURE PLAN**

**SUBJECT CODE**- RCS 401 **SUBJECT**-OPERATING SYSTEM

|  |  |  |  |
| --- | --- | --- | --- |
| **UNIT** | **TOPIC** | **NO. OF LECTURE** | **REMARK** |
| 1 | Introduction : Operating system and functions, Classification of Operating systems- Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multiprocess Systems, Multithreaded Systems | 5 |  |
|  | Operating System Structure- Layered structure, System Components, Operating System services, Reentrant Kernels, Monolithic and Microkernel | 5 |  |
| 2 | Concurrent Processes: Process Concept, Principle of Concurrency | 2 |  |
|  | Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem | 2 |  |
|  | Dekker’s solution, Peterson’s solution, Semaphores, Test and Set operation | 3 |  |
|  | Classical Problem in Concurrency- Dining Philosopher Problem, Sleeping Barber Problem | 3 |  |
|  | Inter Process Communication models and Schemes, Process generation | 2 |  |
| 3 | CPU Scheduling: Scheduling Concepts, Performance Criteria, Process States, Process Transition Diagram | 2 |  |
|  | Schedulers, Process Control Block (PCB), Process address space, Process  identification information | 2 |  |
|  | Threads and their management | 1 |  |
|  | Scheduling Algorithms (FCFS,SJF,SRTF,PRIORITY,RR), Multiprocessor Scheduling | 4 |  |
|  | Deadlock: System model, Deadlock characterization, Prevention, Avoidance and detection, Recovery from deadlock | 5 |  |
| 4 | Memory Management: Basic bare machine, Resident monitor | 1 |  |
|  | Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Protection schemes | 2 |  |
|  | Paging, Segmentation, Paged segmentation | 2 |  |
|  | Virtual memory concepts, Demand paging, Performance of demand paging, Page replacement algorithms, Thrashing | 3 |  |
|  | Cache memory organization, Locality of reference | 2 |  |
| 5 | I/O devices, and I/O subsystems, I/O buffering, Disk storage | 2 |  |
|  | disk scheduling | 2 |  |
|  | RAID. File System: File concept, File organization and access mechanism, File directories, and File sharing, File system implementation issues, File system  protection and security | 4 |  |
|  |  | TOTAL=54 |  |

**CLASS**- BTECH (CS) IV SEM  **FACULTY**- PANKAJ TIWARI

References:

1. Silberschatz, Galvin and Gagne, “Operating Systems Concepts”, Wiley

2. SibsankarHalder and Alex A Aravind, “Operating Systems”, Pearson Education

3. D M Dhamdhere, “Operating Systems: A Concept based Approach”, McGraw Hill.