|  |  |  |
| --- | --- | --- |
| **Week** | **Topic to be covered** | **Lectures** |
| Week1 | Introduction, OS Components, OS structure and Architecture | 3 |
| Week2 | Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication,  Communication in Client-Server Systems | 3 |
| Week3 | Scheduling Criteria ,Scheduling Algorithms, First Come, First Served (FCFS), Shortest Job First (SJF) Priority, Round Robin (RR) | 3 |
| Week4 | Multi-level Queue Scheduling,Multi-level Feedback Queue Scheduling, Multiple-Processor Scheduling,Thread Scheduling, Algorithm Evaluation | 3 |
| Week5 | Threads: Processes vs. Threads, User vs. Kernel Threads,Multithreading Models, Threading Issues, Pthreads, Linux Threads, Windows XP Threads | 3 |
| Week6 | Inter Process Communication: Background, The Critical-Section Problem, Peterson’s Solution Synchronization Hardware, Semaphores Classic Problems of Synchronization ,Monitors Synchronization Examples ,Atomic Transactions | 3 |
| Week7 | Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection , Recovery from Deadlock | 3 |
| Week8 | Memory management: Background, Swapping, Contiguous memory allocation, Paging, Structure of Page Table, Types of Paging. | 3 |
| Week9 | Segmentation, Segmentation with Paging, Virtual Memory Concept. | 3 |
| Week 10 | Virtual Memory, Demanded Paging, Page replacement algorithms, Thrashing | 3 |
| Week 11 | File concept, Access models, Directory structure, Protection, File-system Structure, Allocation methods, Free space management. Overview, I/O hardware, Application I/O interface. | 2 |
| Week12 | Disk structure, Disk scheduling, Disk management., Swap-space management | 2 |
| Week 13 | Overview of system security, Security methods and devices, Protection, access, and authentication, Models of protection, Memory protection. | 2 |
| Week 14 | System programming: Introduction, Components of a Programming System: Assemblers, Loaders, Macros, Compliers, Formal System | 2 |
| Week 15 | Distributed O.S, Interrupts and Exceptions, Kernel Synchronization, System Calls and System Signals | 2 |
| Week 16 | Case Studies : Windows, Linux ,IBM | 2 |