1. **Introduction**

* What is Operating system? (done)
* Why we need operating System? (done)
* What Operating System do? (done)
* Computer System Organization
* Computer System Architecture
* Computer System Structure
* Types of OS and their advantage and disadvantage
  + Batch Processing OS
  + Multiprogramming OS
  + Multitasking OS
  + Multiprocessing OS
  + Time sharing OS
  + Real Time OS
  + Distributed OS
* Difference btw Multiprogramming and multiprocessing
* Difference btw Multiprogramming and Multitasking
* Difference between Multiprocessing and Multitasking

1. **Operating system structure**

* Operating system services
* User Operating-System Interface
* System calls
* Types of system Calls
* System Programs
* Operating System Design and Implementation

1. **Process Management**

* Process concept
* Operations on processes
* Interprocess Communication
* Communication in Client-Server Systems
* Process State
* Process Control Block
* Context Switching

1. **Multithreaded Programming (Very Important)**

* Overview
* Multithreading Models
* Threading Issues
* Difference between process and thread (Important)

1. **Process Scheduling**

* Basic Concepts
* Scheduling Criteria
* Scheduling Algorithms (Important)

1. **Process Synchronization**

* Background
* Critical-Section Problems
* Peterson’s Solution
* Synchronization Hardware
* Semaphores and Mutex
* Classic Problems of synchronization
* Monitors

1. Deadlocks

* System Model
* Deadlock Characterization
* Methods for handling Deadlocks
* Deadlock Prevention
* Deadlock Avoidance
* Deadlock Detection
* Recovery from Deadlock

1. Memory Management Strategies

* Background
* Swapping
* Contiguous Memory Allocation
* Paging
* Structure of Page Table
* Segmentation
* Best Fit, First Fit, Next Fit and Worst Fit in Operating System.

1. Virtual Memory Management

* Concept of Virtual Memory (Important)
* Demand Paging (important)
* Copy-on-Write
* Page Replacement
  + FCFS and LRU (Important)
* Allocation of frames
* Thrashing
* Segmentation in Memory Management
* Translation Lookaside Buffer.

**12. Secondary Storage Structure**

* Overview of Mass Storage Structure (One Reading)
* Disk Structure (one reading)
* Disk Attachment ( one reading)
* Disk scheduling ***(Important)***