| 1st Semester | MCA01004 | Operating System | L-T-P 3-0-0 | 3 CREDITS |
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**MODULE-I** **(08 Hours)**

Overview of Operating Systems: Introduction, how OS takes System Control, Why OS is essential, Functions of the Operating Systems, Evolution of Operating Systems, Generations of OS.

**MODULE-II** **(08 Hours)**

Operating System Structure & Processes: Introduction, System Components, Operating System Structure, Operating System Services, System Calls, System Programs, Process, Process States, Process Control.

**MODULE-III** **(08 Hours)**

Operating System Services for Process Management & Scheduling: Introduction, Process Creation, Termination & Other Issues, Threads, Multithreading, Types of Threads, Schedulers, Types of Schedulers, Types of Scheduling, Scheduling Algorithms, Types of Scheduling Algorithms.

**MODULE-IV** **(08 Hours)**

Process Synchronization, Interprocess Communication & Deadlock: Introduction, Data Access and Control Synchronization, Critical Sections, Race Condition, Classical Problems & Solutions of Process Synchronization, Semaphores, Message Passing, Deadlock, Conditions for Deadlock, Resource Allocation Graph, Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlocks.

**MODULE-V** **(08 Hours)**

Memory Management & Virtual Memory: Introduction, Memory Management Schemes, Sharing and Protection in Paging, Sharing and Protection in Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing

**Books:**


1. Silberschatz and Galvin, “Operating System Concepts”, John Wiley Publishing
2. William Stallings, “Operating Systems Internals & Design Principles”, Pearson Education
3. Naresh Chauhan, “Principles of Operating Systems”, Oxford India Publications
4. Pabitra Pal Choudhury, “Operating System Principles and Design”, PHI Publication
5. Sibsankar Halder and Alex A. Aravind, “Operating System”, Pearson Education