

## CAP213:PRINCIPLES OF OPERATING SYSTEMS

L:4 T:0 P:0 Credits:4

**Course Outcomes:** Through this course students should be able to

CO1 :: identify the evolution of OS functionality, structures, and layers.

CO2 :: identify CPU management takes place through multiprocessing and switching between various processes.

CO3 :: explore different file system allocation and access techniques.

CO4 :: explore different disk management techniques

CO5 :: NULL

### Unit I

**Introduction to operating system** : Introduction, Types of operating systems, System components, Operating system services, System calls

**Process** : Process concept, Process states, Operations on processes

### Unit II

**Process Management** : Process control block, Context switching, Process scheduling, Interprocess communication, Threads and Multithreading, a case study on Windows/Linux

### Unit III

**CPU Scheduling** : Introduction, Types of scheduling, Scheduling Criteria, Scheduling Algorithms, a case study on Windows/Linux

**Process Synchronization** : Background, Critical section problem, Semaphores, Concept of serializability

### Unit IV

**Deadlocks** : Deadlock Characterization, Methods for handling deadlocks, Deadlock Prevention, Deadlock avoidance, Recovery from Deadlock, a case study on Windows/Linux

### Unit V

**Memory Management** : logical versus physical address space, Address Binding, Dynamic Loading & Dynamic Linking, Overlays, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Page Replacement Algorithms, Allocation of frames, Thrashing, Working-set model, a case study on Windows/Linux

### Unit VI

**Protection** : Introduction, File Access Methods, Access Matrix

**Disk Management** : Disk structure, disk scheduling, FCFS scheduling, SSTF scheduling, SCAN scheduling, C-SCAN scheduling, a case study on Windows/Linux

### Text Books:

1. OPERATING SYSTEMS CONCEPTS by A SILBERSCHARTZ AND GALVIN, ADDISON-WESLEY

### References:

1. OPERATING SYSTEMS CONCEPTS AND DESIGN by MILAN MILANKOVIC, MC GRAW HILL
2. . MODERN OPERATING SYSTEM by ANDREW S. TANENBAUM, PRENTICE HALL

