(CS603) ADVANCED OPERATING SYSTEMS

Objective of the Course :

Objective of the Course: This course contains the basic and advanced concepts of operating systems. After completing this course students should understand how the operating system defines an abstraction of hardware behavior with which programmers can control the hardware. It also enables the students to understand how operating system manages resource sharing among the computer's users.

UNIT - I

Introduction to operating system & Process Scheduling : What Operating System do, Operating System structure. Process Concept: Overview , Process scheduling, Operations on process, Inter process communication, Process scheduling criteria, uniprocess scheduling and multi process scheduling algorithms , and case study: process scheduling in Linux.

UNIT - II

Process synchronization & Deadlocking : Process Synchronization– Background, Hardware Support to Process Synchronization, Semaphores, Monitors, Deadlock prevention, Deadlock Avoidance and Deadlock Detection and Recovery, Case Study: Unix, Windows2000 Concurrency Mechanisms.

UNIT - III

Memory Management & Introduction to Distributed Systems : Segmentation, Demand Paging, Page Replacement Algorithms, Contiguous, Linked and Indexed Allocation, Case Study: Unix, Linux Memory management. Introduction to Distributed Systems, Goals, Hardware Concepts, Software Concepts, Design Issues of Distributed Systems.

UNIT - IV

Communication in Distributed Systems (12 Hours) : Communication in Distributed Systems, The Client Server Model, Remote Procedure Call, Group Communication, Case Study: Remote Procedure call in DCE. Processes And Processors in distributed Systems, Processor Allocation, and Scheduling in Distributed Systems.

UNIT - V

Process Synchronization & Deadlock in Distributed Systems (12 Hrs) : Synchronization in Distributed Systems, Clock Synchronization, Mutual Exclusion, Election Algorithms, Atomic Transactions, Deadlocks in Distributed Systems. Case Study: Process Management in MACH and CHORUS.

TEXT BOOKS :

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, "Operating System Principles" , 7th ed., John Wiley & Sons Inc., 2006.
2. Andrew S. Tanenbaum, "Distributed Operating Systems", 1st ed., Pearson Education, 1995.

REFERENCE BOOK :

1. William Stallings, "Operating Systems – Operating System: Internals and Design Principles", 4th ed., Prentice Hall, 2005.