

BCA 202: Introduction to Operating Systems

Teaching Scheme Lectures: 4 hrs/Week Tutorials: 2 hr/Week Credits: 6	Examination Scheme Class Test -20Marks Teachers Assessment - 10Marks Attendance – 20 Marks End Semester Exam – 100 marks
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Prerequisite: - Programming languages, Data Structures, Microprocessor peripherals and interfacing

Course Objectives:

1. Define and list the functions of an operating system.
2. list resources involved in process creation and management.
3. Explain the use of paging and segmentation
4. Explain the function and structure of the I/O system.
5. Describe path names and directory structure visible to end users

Detailed Syllabus:

Unit-1 Introduction: Operating System, Simple Batch Systems, Multi programmed Batched Systems, TimeSharing Systems, Real-Time Systems, System Components, Operating System Services & Functions.	
Unit-2 Process: Process Concept, Process Scheduling, CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms with examples.	
Unit-3 Process Communication and Synchronization: Co-operating Process, Inter-process communication, Threads (Thread Concept, Single and Multiple Threads, Benefits). Introduction to process synchronization, Critical Section Problem.	
Unit-4 Deadlock: Deadlocks: Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.	
Unit-5 Memory Management: Logical versus Physical Address Space, Swapping, Contiguous Allocation (Memory Allocation, Fragmentation), Paging (Basic Method, Hardware Support), Segmentation (Basic Method, Hardware). Virtual Memory: Demand Paging, Page Replacement, Page Replacement Algorithms.	
Unit-6 File System: File Concept, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free-Space Management, Protection of File System. Input/output Management. Linux Case Study.	

Text and Reference Books

1. Operating System concepts, A. Silberschatz, Peter B. Galvin, Addison Wesley publishing Company, 6th Edition.
2. Operating System Concepts & Design, MilenKovic, TMH publication, 2001.
3. Operating System Concepts, Sibsankar, Halder, Pearson Education, 2009.
4. Operating Systems, Deitel H.M, Addison Wesley, 2nd Edition.
5. Operating Systems, Stalling W, Prentice Hall, 4th Edition.
6. Operating System Concepts, Tanenbaum, Prentice Hall, 3rd.

Course Outcomes:

After completing the course, students will be able to:

1. Differentiate between multiprocessing, multiprogramming, and multitasking.
2. Differentiate between programs, processes and threads.
3. Apply segmentation and paging techniques.
4. Compare file naming in Linux and Windows.
5. Awareness of various Operating System