



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

(Autonomous)

Department of Artificial Intelligence

(Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)

(Aziz Nagar, C.B. Post, Hyderabad -500075)

III YEAR B.Tech. AI – I Sem

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Operating Systems

Course Outcomes:

- Understand the basic functions of Operating systems and concepts of process management.
- Analyze the concepts of concurrency and Memory management.
- Analyze the deadlock concepts and file system interface and management.
- Understand the concepts of MASS storage structure and compare different protection methods of OS.

UNIT - I:

Operating System Introduction: Operating Systems Objectives and functions, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, Time Sharing, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, Special - Purpose Systems, Operating System services, user OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, Virtual Machines.

UNIT - II:

Process and CPU Scheduling: Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switching, Preemptive Scheduling, Scheduling Criteria, Scheduling algorithms, thread scheduling, Case studies: Linux, Windows, Android

Process Coordination: Process Synchronization, The Critical section Problem, Peterson's solution, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Linux, Windows, Android

UNIT - III:

Memory Management and Virtual Memory: Logical & Physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table, Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms, Thrashing.



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UNIT - IV:

File System Interface: The Concept of a File, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Implementation - File System Structure, File System Implementation, Allocation methods, Free-space Management, Directory Implementation, Efficiency and Performance.

Mass Storage Structure: Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling, Disk Management.

UNIT - V:

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.

Protection: System Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights, Capability-Based Systems, Language-Based Protection.

TEXT BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.

REFERENCES BOOKS:

1. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
2. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhare, TMH.
3. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
4. Operating Systems, A. S. Godbole, 2nd Edition, TMH

BOS Members' Signatures :-

1. DR. SIDDHARTHA GHOSH Chairman , BOS for AI&DS, VJIT	2. DR. OBV RAMANAIAH JNTUH Nominee	3. DR. MV KRISHNAMURTHY MD, UOSD Pvt. Ltd.	4. MR. PRASAD YERRAMSETTI Lead Program Manager in Data Science, Microsoft
5. MR. GOPALKRISHNA MADDIPATLA Director of Intelligence Automation (ML) Practice, EPAM Solutions, Hyderabad	6. DR. PADMAJA SAVARAM , HOD, CSE, Keshav Memorial Institute of Technology, Hyderabad	7. DR. V. VIJAYA KUMAR DEAN CSE & IT, Anurag Group of Institutes	8. DR. B. VIJAYA KUMAR HOD, CSE, VJIT
			DATE OF BOS MEETING
9. DR. K. VASANTH HOD, ECE, VJIT	10. DR. D ARUNA KUMARI Professor in CSE, VJIT	11. PROF. B. SRINIVASULU HOD, IT, VJIT	23- 06 – 2020