III B.Tech I SEMESTER
JNTUA COLLEGE OF ENGINEERING (AUTONOMOUS) PULIVENDULA
19ACS55c- INTRODUCTION TO OPERATING SYSTEMS
<u>Open Elective-1</u>

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Course Objectives:
- To make the students understand the basic operating system concepts such as processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection.
- To get acquaintance with the class of abstractions afford by general purpose operating systems that aid the development of user applications

UNIT – 1: OPERATING SYSTEMS OVERVIEW

Operating Systems Overview: Operating system functions, Operating system structure, operating systems Operations, protection and security.

Operating System Structure: Operating System Services, User and Operating-System Interface, systems calls, Types of System Calls, system programs.

Learning Outcomes:
At the end of this unit, the student will be able to
- Understand what makes a computer system function and the primary PC components. **L2**
- Understand past and current trends in computer technology.   **L3**

UNIT – II: THREADS

Threads: overview, Multicore Programming, Multithreading Models, Thread Libraries, Implicit threading, Threading Issues.

CPU Scheduling: Scheduling-Criteria, Scheduling Algorithms, Thread Scheduling.

. Learning Outcomes:
At the end of this unit, the student will be able to
- Understand past and current trends in computer technology. **L3**
- Use basic software applications.   **L4**

UNIT – III: MEMORY MANAGEMENT

Memory Management: Swapping, contiguous memory allocation, segmentation, paging, structure of the page table.

Deadlocks: System Model, deadlock characterization, Methods of handling Deadlocks, Deadlock prevention, Detection and Avoidance, Recovery from deadlock.

Learning Outcomes:
At the end of this unit, the student will be able to
- Use basic software applications.   **L4**
- Add functionality to the exiting operating systems **L5**

UNIT – IV: MASS-STORAGE STRUCTURE

Mass-storage structure: Overview of Mass-storage structure, Disk structure, Disk attachment, Disk scheduling, Swap-space management, RAID structure, Stable-storage implementation.

Learning Outcomes:

At the end of this unit, the student will be able to
- Add functionality to the exiting operating systems   **L5**
- Design new operating systems   **L6**

UNIT – V: I/O systems

I/O systems: I/O Hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O requests to Hardware operations.

Learning Outcomes:
At the end of this unit, the student will be able to
- Add functionality to the exiting operating systems   **L5**
- Design new operating systems   **L6**

Text Books:
1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Ninth Edition, 2012, Wiley.
2. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition, 2009, Pearson Education.

Reference Books:
1. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
2. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
3. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
4. Operating Systems, A.S.Godbole, Second Edition, TMH.
5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
6. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
7. Operating Systems, R.Elmasri, A,G.Carrick and D.Levine, Mc Graw Hill.

Course Outcomes:
At the end of this Course the student will be able to
- Understand what makes a computer system function and the primary PC components. **L2**
- Understand past and current trends in computer technology.   **L3**
- Use basic software applications.   **L4**
- Add functionality to the exiting operating systems   **L5**
- Design new operating systems   **L6**