Prasad.V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

Operating Systems

Course Code	19IT3402	**Year**	II	**Semester**	II
Course Category	PC	**Branch**	IT	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	
Continuous Internal Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to:		
CO1	Outline the structure and functionalities of operating systems.	
CO2	Illustrate various methods for process scheduling, process synchronization and deadlock handling.	
CO3	Demonstrate various memory management approaches.	
CO4	Summarize file system and mass storage handling.	
Course Content		
UNIT-1	**Overview:** **Introduction**: What Operating Systems Do, Computer System Organization, Computer-System Architecture, Operating System Structure, Operating system Operations. **Operating-System Structures**: Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls.	**CO1**
UNIT-2	**Process Management:** **Processes:** Process concept, Process Scheduling, Operations on Processes, Inter-process Communication.	**CO2**

	Threads: Overview, Multithreading models **CPU Scheduling**: Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, Priority, RR)	
UNIT-3	**Process Synchronization**: The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors. **Deadlocks:** System Model, Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.	**CO2**
UNIT-4	**Memory Management:** **Main Memory:** Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table. **Virtual Memory**: Background, Demand Paging, Page-Replacement, Allocation of Frames, Thrashing.	**CO3**
UNIT-5	**Storage Management:** **Mass-Storage Structure**: Overview of Mass-Storage Structure, Disk Scheduling. **File-System Interface**: File concept, Access Methods, Directory & Disk Structure. **File-System Implementation**: File-System Structure, Allocation Methods, Free-Space Management	**CO4**

Learning Resources

Text books

1. Operating System Concepts, Abraham Silberchatz, Peter Baer Galvin, Greg Gagne, Ninth Edition, 2016, Wiley India.

References

1. Operating Systems - Internal and Design Principles, William Stallings, Ninth Edition, 2018, Pearson.
2. Operating Systems - Harvey M.Deitel, Paul J Deitel and David R.Choffnes , Third Edition, 2019, Pearson.
3. Operating Systems - A Concept based Approach- D.M. Dhamdhere, Second Edition, 2010, McGraw Hill.

e-Resources and other Digital Material

1. http://nptel.ac.in/downloads/106108101/

2. http://www.youtube.com/watch?v=MaA0vFKtew&list=PL88oxI15Wi4Kw1aEY2bC5l_4pouojjtd4
3. http://www.jntuk-coeerd.in
4. http://iit.qau.edu.pk/books/OS_Eighth Edition.pdf