PVP SIDDHARTHA INSTITUTE OF TEHNOLOGY, KANURU, VIJAYAWADA
(AUTONOMOUS)

INFORMATION TECHNOLOGY

ADVANCED OPERATING SYSTEMS

Course Code	19IT4601B	**Year**	III	**Semester**	II
Course Category	PC	**Branch**	IT	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	OPERATING SYSTEM
Continuous Internal Evaluation	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		**Blooms Taxonomy Level**
Upon successful completion of the course, the student will be able to		
CO1	Outline the fundamentals of Operating Systems	**L2**
CO2	Illustrate Distributed operating system concepts that includes architecture, Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols	**L3**
CO3	Demonstrate the distributed resource management components viz. the algorithms for implementation of distributed shared memory, recovery and commit protocols	**L3**
CO4	Outline the components and management aspects of Real time, Mobile operating systems	**L1**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2	2								1	2	1
CO2	2		2	2								1	2	1
CO3	2		2	2								1	2	1
CO4	2		2	2								1	2	1

Syllabus		
Unit No	**Contents**	**Mapped CO**
I	**Fundamentals Of Operating Systems** Overview – Synchronization Mechanisms – Processes and Threads - Process Scheduling –Deadlocks: Detection, Prevention and Recovery – Models of Resources – Memory Management Techniques.	**CO1**
II	**Distributed Operating Systems** : Issues in Distributed Operating System – Architecture – Communication Primitives –Lamport's Logical clocks – Causal Ordering of Messages – Distributed Mutual Exclusion Algorithms – Centralized and Distributed Deadlock Detection Algorithms – Agreement Protocols.	**CO2**
III	**Distributed Resource Management**: Distributed File Systems – Design Issues - Distributed Shared Memory – Algorithms for Implementing Distributed Shared memory–Issues in Load Distributing – Scheduling Algorithms	**CO3**
IV	**Failure Recover and Fault Tolerance** Synchronous and Asynchronous Check Pointing and Recovery – Fault Tolerance – Two-Phase Commit Protocol – Nonblocking Commit Protocol – Security and Protection.	**CO3**
V	**Real Time And Mobile Operating Systems** Basic Model of Real Time Systems - Characteristics- Applications of Real Time Systems –Real Time Task Scheduling - Handling Resource Sharing - Mobile Operating Systems –Micro Kernel Design - Client Server Resource Access – Processes and Threads - Memory Management File system.	**CO4**

Learning Resources
Text books
1. Mukesh Singhal and Niranjan G. Shivaratri, "Advanced Concepts in Operating Systems – Distributed, Database, and Multiprocessor Operating Systems", Tata McGraw-Hill, 2017. 2. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, "Operating System Concepts", Tenth Edition, John Wiley & Sons, 2018.
References
1. Daniel P Bovet and Marco Cesati, "Understanding the Linux kernel", 3rd edition, O'Reilly,2005. 2. Rajib Mall, "Real-Time Systems: Theory and Practice", Pearson Education India, 2006.
e-Resources and other Digital Material
1. https://www.youtube.com watch?v=GTObrKKbRww&list=PLAwxTw4SYaPkKfusBLVfklgfdcB3BNpwX 2. https://omscs.gatech.edu/cs-6210-advanced-operating-systems-course-videos