

**PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY, KANURU,  
VIJAYAWADA(AUTONOMOUS)  
INFORMATION TECHNOLOGY**

**OPERATING SYSTEMS (Minor)**

<b>Course Code</b>	20IT5401	<b>Year</b>	II	<b>Semester</b>	II
<b>Course Category</b>	Minor	<b>Branch</b>	IT	<b>Course Type</b>	Theory
<b>Credits</b>	4	<b>L-T-P</b>	4-0-0	<b>Prerequisites</b>	-
<b>Continuous Internal Evaluation :</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

<b>Course Outcomes</b>		<b>Blooms Level</b>
Upon successful completion of the course, the student will be able to:		
<b>CO1</b>	Understand the structure and functionalities of operating systems.	L2
<b>CO2</b>	Apply various concepts to solve problems related to process synchronization, deadlocks and make an effective report.	L3
<b>CO3</b>	Apply different algorithms of CPU scheduling, Page replacement and disk scheduling.	L3
<b>CO4</b>	Analyze process, memory and storage management strategies.	L4

<b>Contribution of Course Outcomes towards achievement of Program Outcomes &amp; Strength of correlations (3:High, 2: Medium, 1:Low)</b>														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	3												3	
<b>CO2</b>			3											
<b>CO3</b>		3											3	
<b>CO4</b>		3												

SYLLABUS		
Unit No	Contents	Mapped CO
UNIT-1	<b>Overview: Introduction:</b> What Operating Systems Do, Computer-System Organization, Computer-System Architecture, Operating-System Structure, Operating-System Operations <b>Operating System Structures:</b> Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls.	CO1
UNIT-2	<b>Process Management:</b> Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication. <b>Threads:</b> Overview, Multicore Programming, Multithreading Models. <b>Process Scheduling:</b> Basic Concepts, Scheduling Criteria, Scheduling Algorithms (First-Come, First-Served Scheduling, Shortest-Job-First Scheduling, Priority Scheduling, Round-Robin Scheduling.)	CO1,CO3,CO4
UNIT-3	<b>Process Synchronization:</b> Background, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization. <b>Deadlocks:</b> System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.	CO1, CO2
UNIT-4	<b>Memory Management:</b> <b>Main Memory:</b> Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table <b>Virtual Memory:</b> Background, Demand Paging, Copy-on-Write, Page Replacement, Basic Page Replacement, FIFO Page Replacement, Optimal Page Replacement, LRU Page Replacement, LRU-Approximation Page Replacement.	CO1, CO3,CO4
UNIT-5	<b>Storage Management:</b> <b>File-System Interface:</b> File Concept, Access Methods, Directory and Disk Structure. <b>File-System Implementation:</b> File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods. <b>Mass-Storage Structure:</b> Overview of Mass-Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling, FCFS Scheduling, SSTF Scheduling, SCAN Scheduling, C-SCAN Scheduling, LOOK Scheduling, Selection of a Disk-Scheduling Algorithm.	CO1, CO3,CO4

Learning Resources	
<b>Text book:</b>	
1	Operating System Concepts, Abraham Silberchatz, Peter Baer Galvin, Greg Gagne, Ninth Edition, 2016, Wiley India.
<b>References:</b>	
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. Dhamdhare, Second Edition, 2010, McGraw Hill.
<b>e-Resources and other Digital Material:</b>	
1	<a href="https://www.youtube.com/watch?v=z3Nw5o9dS7Q&amp;list=PLsylUObW5M3CAGT6OdubyH6FztKfJCcFB">https://www.youtube.com/watch?v=z3Nw5o9dS7Q&amp;list=PLsylUObW5M3CAGT6OdubyH6FztKfJCcFB</a>
2	<a href="http://www.youtube.com/watch?v=MaA0vFKtew&amp;list=PL88oxI15Wi4Kw1aEY2bC5L_4pouojtd4">http://www.youtube.com/watch?v=MaA0vFKtew&amp;list=PL88oxI15Wi4Kw1aEY2bC5L_4pouojtd4</a>