

## **23CS22P1 - OPERATING SYSTEMS LAB**

(CSE)

<b>Course Category:</b>	Professional Core	<b>Credits:</b>	1.5
<b>Course Type:</b>	Practical	<b>Lecture-Tutorial-Practical:</b>	0-0-3
<b>Prerequisite:</b>	<ul style="list-style-type: none"><li>Understanding of fundamental operating system concepts such as processes, threads, scheduling algorithms, synchronization, deadlock handling, memory</li><li>Management (paging, segmentation), file systems, and I/O management.</li></ul>	<b>Sessional Evaluation:</b> <b>Univ. Exam Evaluation:</b> <b>Total Marks:</b>	30 70 100
<b>Objectives:</b>	<b>Students undergoing this course are expected:</b> <ul style="list-style-type: none"><li>Provide insights into system calls, file systems, semaphores,</li><li>Develop and debug CPU Scheduling algorithms, page replacement algorithms, thread implementation</li><li>Implement Bankers Algorithms to Avoid the Dead Lock</li></ul>		

<b>Course Outcomes</b>	<b>Upon successful completion of the course, the students will be able to:</b>	
	CO1	Trace different CPU Scheduling algorithms (L2).
	CO2	Implement Bankers Algorithms to Avoid the Dead Lock (L3).
	CO3	Evaluate Page replacement algorithms (L5).
	CO4	Illustrate the file organization techniques (L4).
	CO5	Illustrate Inter process Communication and concurrent execution of threads (L4)
<b>Course Content</b>	<b><u>Sample Experiments</u></b> <ol style="list-style-type: none"><li>Practicing of Basic UNIX Commands.</li><li>Write programs using the following UNIX operating system calls fork, exec, getpid, exit, wait, close, stat, opendir and readdir</li><li>Simulate UNIX commands like cp, ls, grep, etc.,</li><li>Simulate the following CPU scheduling algorithms<ol style="list-style-type: none"><li>FCFS</li><li>SJF</li><li>Priority</li><li>Round Robin</li></ol></li><li>Write a program to illustrate concurrent execution of threads using pthreads library.</li><li>Write a program to solve producer-consumer problem using Semaphores.</li><li>Implement the following memory allocation methods for fixed partition<ol style="list-style-type: none"><li>First fit</li><li>Worst fit</li><li>Best fit</li></ol></li><li>Simulate the following page replacement algorithms<ol style="list-style-type: none"><li>FIFO</li><li>LRU</li><li>LFU</li></ol></li></ol>	

	<p>9. Simulate Paging Technique of memory management.</p> <p>10. Implement Bankers Algorithm for Dead Lock avoidance and prevention</p> <p>11. Simulate the following file allocation strategies a) Sequential b) Indexed c) Linked</p>
<b>Text Books &amp; References Books</b>	<p><b>REFERENCE BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.</li> <li>2. Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson, 2016</li> <li>3. Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018</li> <li>4. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGraw- Hill, 2013</li> </ol>
<b>E-Resources</b>	<ol style="list-style-type: none"> <li>1. <a href="https://www.cse.iitb.ac.in/~mythili/os/">https://www.cse.iitb.ac.in/~mythili/os/</a></li> <li>2. <a href="http://peterindia.net/OperatingSystems.html">http://peterindia.net/OperatingSystems.html</a></li> </ol>