

  
**MANGALORE UNIVERSITY**  
**DEPARTMENT OF M.Sc. COMPUTER SCIENCE**

<b>CSH 451: ADVANCED OPERATING SYSTEM</b>		
<b>Hours/Week: 4</b> <b>Credits : 4</b>		<b>I.A. Marks: 30</b> <b>Exam. Marks: 70</b>
<b><u>Course Outcomes:</u></b>		
<p>CO1: Analyze the structure of OS and basic architectural components involved in OS design</p> <p>CO2: Analyze and design the applications to run in parallel either using process or thread models of different OS</p> <p>CO3: Analyze the various device and resource management techniques for timesharing and distributed systems</p> <p>CO4: Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system</p> <p>CO5: Interpret the mechanisms adopted for file sharing in distributed Applications</p> <p>CO6: Conceptualize the components involved in designing a contemporary OS</p>		
	<b>UNIT-I</b>	<b>12 Hrs.</b>
<p><b>Operating System Overview :</b> Operating System Objectives and Functions, The Evolution of Operating Systems, Major Achievements, Developments Leading to Modern Operating Systems, Microsoft Windows Overview, Traditional UNIX Systems, Modern UNIX Systems, Linux. <b>Process description &amp; control :</b> What is a Process?, Process States, Process Description, Process Control, Execution of the Operating System, Security Issues, UNIX SVR4 Process Management.</p>		
	<b>UNIT-II</b>	<b>12 Hrs.</b>
<p><b>Threads, SMP, and Microkernel:</b> Processes and Threads, Symmetric Multiprocessing (SMP), Microkernels, Windows Vista Thread and SMP Management, Solaris Thread and SMP Management, Linux Process and Thread Management..</p> <p><b>Virtual Memory :</b> Hardware and Control Structures, Operating System Software, UNIX and Solaris Memory Management, Linux Memory Management, Windows Vista Memory Management, Summary.</p>		

	<b>UNIT-III</b>	<b>12 Hrs.</b>
<p><b>Multiprocessor and Real-Time Scheduling:</b> Multiprocessor Scheduling, Real-Time Scheduling, Linux Scheduling, UNIX PreclsSI) Scheduling, Windows Vista Scheduling.</p> <p><b>Distributed Process Management:</b> Process Migration, Distributed Global States, Distributed Mutual Exclusion, Distributed Deadlock. <b>Security:</b> Security Threats, Attacks, and Assets, Intruders, Malicious Software Overview, Viruses, Worms, and Bots, Rootkits</p>		
	<b>UNIT-IV</b>	<b>12 Hrs.</b>
<p><b>Kernel Organization:</b> Using Kernel Services, Daemons, Starting the Kernel, Control in the Machine, Modules and Device Management, Module Organization, Module Installation and Removal, Process and Resource Management, Running Process Manager, Creating a new Task, IPC and Synchronization, The Scheduler, Memory Manager, The Virtual Address Space, The Page Fault Handler, File Management.</p> <p><b>The windows NT/2000/XP kernel:</b> Introduction, The NT kernel, Objects, Threads, Multiplication Synchronization, Traps, Interrupts and Exceptions, The NT executive , Object Manager, Process and Thread Manager, Virtual Memory Manager, I/o Manager, The cache Manager , Kernel local procedure calls and IPC, The native API, subsystems.</p>		
<p><b>REFERENCE BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. William Stallings: Operating Systems: Internals and Design Principles, 6th Edition, Prentice Hall, 2013.</li> <li>2. Gary Nutt: Operating Systems, 3rd Edition, Pearson, 2014.</li> <li>3. Silberschatz, Galvin, Gagne: Operating System Concepts, 8th Edition, Wiley, 2008</li> <li>4. Andrew S. Tanenbaum, Albert S. Woodhull: Operating Systems, Design and Implementation, 3rd Edition, Prentice Hall, 2006.</li> <li>5. Pradeep K Sinha: Distributed Operating Systems, Concept and Design, PHI, 2007.</li> </ol>		