

MANGALORE UNIVERSITY

DEPARTMENT OF M.Sc. COMPUTER SCIENCE

MASTER OF COMPUTER APPLICATIONS (MCA) PROGRAMME

MCAH201 : ADVANCED OPERATING SYSTEM		
Hours/Week: 4 Credits : 4		I.A. Marks: 30 Exams. Marks: 70
<u>Course Outcomes:</u> CO1: Understanding the difference between a distributed and "traditional" system. CO2: Identifying characteristics of distributed systems. CO3: Ability to estimate if a system takes distributed system characteristic into account in a reasonable way. CO4: Knowing the basic structures (e.g. client-server) and knowing the existing middleware frameworks. CO5: Ability to estimate framework suitability for different applications. CO6: Ability to implement a simple distributed software laboratory work with socket and RMI interfaces. CO7: Understanding the mathematical principles behind validity of algorithms solving the problems of distribution. CO8: Understanding the problems that will arise if atomicity and timing issues are not handled in a distributed application.		
	UNIT-I	12 Hours
Operating System Overview : 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. Process description & control: What is aProcess?,ProcessStates,ProcessDescription,ProcessControl,Execution of the Operating System, Security Issues, UNIX SVR4 Process Management.		
	UNIT-II	12 Hours
Threads, SMP, and Microkernel: Processes and Threads, Symmetric Multiprocessing (SMP), Microkernels, Windows Vista Thread and SMPManagement, Solaris Thread and SMP Management, Linux Process and Thread Management.. Virtual Memory :HardwareandControlStructures, Operating System Software,UNIX and Solaris Memory Management, Linux Memory Management,Windows Vista Memory Management, Summary.		
	UNIT-III	12 Hours
Multiprocessor and Real-Time Scheduling: Multiprocessor Scheduling, Real-Time Scheduling, Linux Scheduling, UNIX PreclsSl) Scheduling, Windows VistaScheduling. Distributed Process Management: ProcessMigration, DistributedGlobal States, Distributed MutualExclusion,DistributedDeadlock. Security: Security Threats, Attacks, and Assets, Intruders, Malicious Software Overview, Viruses, Worms, and Bots, Rootkits.		

	UNIT-IV	12 Hours
Kernel Organization: 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. The windows NT/2000/XP kernel: 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.		
REFERENCE BOOKS 1. William Stallings: Operating Systems: Internals and Design Principles, Prentice Hall, 2013, 6th Edition. 2. Gary Nutt: Operating Systems, Pearson, 2014, 3rd Edition. 3. Silberschatz, Galvin, Gagne: Operating System Concepts, Wiley, 2008, 8th Edition. 4. Andrew S. Tanenbaum, Albert S. Woodhull: Operating Systems, Design and Implementation, Prentice Hall, 2006, 3rd Edition. 5. Pradeep K Sinha: Distributed Operating Systems, Concept and Design, PHI, 2007.		

