SARDAR   RAJA COLLEGE   OF ENGINEERING

DEPARTMENT OF COMPUTER APPLICATIONS

Subject Name   :   **OPERATING SYSTEMS**

Subject Code   :   **MC7204**

Year   :   **I – MCA**

Semester   :   **II**

Mrs. D.SHERLIN

Asst.Prof / MCA

COURSE OBJECTIVES:

- To be aware of the evolution and fundamental principles of operating system, processes and their communication

- To understand the various operating system components like process management, memory management and

- To know about file management and the distributed file system concepts in operating systems

- To be aware of components of operating system with relevant case study

MC7204   OPERATING SYSTEMS   **L T P C 3 0 0 3**

UNIT I INTRODUCTION   9

Introduction -Types of operating systems-operating systems structures-Systems components operating systems services-System calls-Systems programs-Processes-process concept- process scheduling- operation on processes-co-operating processes-Inter process communications-CPU Scheduling-Scheduling criteria-Scheduling algorithms-Multiple-processor Scheduling

UNIT II PROCESS SYNCHRONIZATION   9

Process Synchronization –Critical Section problem – Semaphores-Classical problems of synchronization-critical regions-Monitors-Deadlock Characterization-Deadlock handling-Deadlock Prevention-Deadlock avoidance-Deadlock Detection-Deadlock Recovery –Threads-Multithreading Models

UNIT III MEMORY MANAGEMENT   9

Memory Management-Swapping-Contiguous Memory allocation-Paging-Segmentation-Virtual Memory-Demand paging-Page Replacement-Thrashing

UNIT IV DISK SCHEDULING AND DISTRIBUTED SYSTEMS   9

Disk Structures-Disk Scheduling-File Systems Interface-File concepts-Access methods-Directory Structures-File System Implementation-File Systems structures-Directory Implementation-Allocation Methods-Free Space management-Distributed File systems-Naming and Transparency-Remote File Accesses- Stateful Versus Stateless Service-File replication.

UNIT V CASE STUDIES   9

Linux System-design Principles- process management-File Systems-Windows Vista-Systems Structures-Process management-memory management-Android OS-Virtual machine OS.

TOTAL : 45 PERIODS

REFERENCES:

1. Abraham Silberschalz Peter B Galvin, G.Gagne, ”Operating Systems Concepts”, Seventh Edition,Addision Wesley Publishing Co.,2010
2. Andrew S.Tanenbaum, “Modern operating Systems”, Third Edition, PHI Learning Pvt.Ltd., 2008
3. William Stallings, “Operating Systems: Internals and Design Principles”,Seventh Edition, PrenticeHall, 2011.
4. H M Deital, P J Deital and D R Choffnes, “Operating Systems” ,3rd edition, Pearson Education,2011.
5. D M Dhamdhere, “ Operating Systems: A Concept-based Approach”, Second Edition, Tata McGraw-Hill Education, 2007.

COURSE OUTCOMES:

- Able to understand the operating system components and its services

- Implement the algorithms in process management and solving the issues of IPC

- Able to demonstrate the mapping between the physical memory and virtual memory

- Able to understand file handling concepts in OS perspective

- Able to understand the operating system components and services with the recent OS

MICRO LESSON PLAN

Hours	LECTURE TOPICS	READING
UNIT I INTRODUCTION		
1	Introduction **(AV CLASS)**	R1
2	Types of operating systems, operating systems structures	R1
3	Systems components operating systems services, System calls, Systems programs	R1
4	Processes - process concept, process scheduling , operation on processes **(AV CLASS)**	R1
5	Co-operating processes, Inter process communications	R1
6	CPU Scheduling	R1
7	Scheduling criteria	R1
8	Scheduling algorithms	R1
9	Multiple-Processor Scheduling	R1
10	**Review Unit I**	
UNIT II PROCESS SYNCHRONIZATION		
11	Process Synchronization	R1
12	Critical Section problem	R1
13	Semaphores	R1
14	Classical problems of synchronization	R1
15	Critical regions, Monitors	R1
16	Deadlock Characterization, Deadlock handling **(AV CLASS)**	R1
17	Deadlock Prevention, Deadlock avoidance	R1

18	Deadlock Detection, Deadlock Recovery	R1
19	Threads, Multithreading Models **(AV CLASS)**	R1
20	**Review Unit II**	

UNIT III MEMORY MANAGEMENT

21	Memory Management **(AV CLASS)**	R1
22	Swapping	R1
23	Contiguous Memory allocation	R1
24	Paging **(AV CLASS)**	R1
25	Segmentation	R1
26	Virtual Memory **(AV CLASS)**	R1
27	Demand paging	R1
28	Page Replacement	R1
29	Thrashing	R1
30	**Review Unit III**	

UNIT IV DISK SCHEDULING AND DISTRIBUTED SYSTEMS

31	Disk Structures	R1
32	Disk Scheduling **(AV CLASS)**	R1
33	File Systems Interface , File concepts, Access methods	R1
34	Directory Structures, File System Implementation	R1
35	File Systems structures	R1
36	Directory Implementation, Allocation Methods **(AV CLASS)**	R1
37	Free Space management, Distributed File systems **(AV CLASS)**	R1

38	Naming and Transparency, Remote File Accesses	R1
39	Stateful Versus Stateless Service, File replication	R1
40	**Review Unit IV**	
UNIT V CASE STUDIES		
41	Linux System **(AV CLASS)**	R1 & R2
42	Design Principles	R2
43	process management	R1 & R2
44	File Systems	R2
45	Windows Vista	R2
46	Systems Structures	R1 & R2
47	Process management	R1 & R2
48	Memory management	R1 & R2
49	Android OS	R2
50	Virtual machine OS	R2
51	**Review Unit V**	