Academic Plan for 6th Semester

Operating System Subject Code:- ETCS-304

Credits: 4

Objective: *The goal of this course is to provide an introduction to the internal operation of modern operating systems. The course will cover processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, and file systems.*

	Topic	Lecture /Tutorials
	1st Term	
1	**INTRODUCTION**	
1.1	What is an Operating System, Simple Batch Systems	2
1.2	Multiprogrammed Batches systems	
1.3	Time-Sharing Systems	
1.4	Personal-computer systems	
1.5	Parallel systems	
1.6	Distributed Systems	
1.7	Real-Time Systems	
1.8	OS – A Resource Manager	
2	**MEMORY MANAGEMENT**	3
2.1	Memory Organization	
2.2	Memory Hierarchy	
2.3	Memory Management Strategies	
2.4	Contiguous versus non- Contiguous memory allocation	
2.5	Partition Management Techniques	
2.6	Logical versus Physical Address space	
2.7	Swapping	
2.8	Paging	
2.9	Segmentation	1
2.10	Segmentation with Paging	
3	**VIRTUAL MEMORY**	2
3.1	Demand Paging	
3.2	Page Replacement	
3.3	Page-replacement Algorithms	
3.4	Performance of Demand Paging	2
3.5	Thrashing	
3.6	Demand Segmentation	
3.7	Overlay Concepts	
4	**PROCESSES**	3
4.1	Introduction	
4.2	Process states	
4.3	Process management	
4.4	Interrupts	
4.5	Interprocess Communication	
4.6	Threads: Introduction, Thread states	
4.7	Thread Operation, Threading Models.	
4.8	Processor Scheduling	
4.9	Scheduling levels	
4.10	Pre emptive vs non Pre emptive scheduling	
4.11	Priorities	
5	**CPU SCHEDULING**	1
5.1	Scheduling objective - Basic Concepts	
5.2	Scheduling criteria	
5.3	Scheduling Algorithms	2
5.4	Demand scheduling	

Academic Plan for 6th Semester

Operating System Subject Code:- ETCS-304

Credits: 4

Objective: *The goal of this course is to provide an introduction to the internal operation of modern operating systems. The course will cover processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, and file systems.*

Topic		Lecture /Tutorials
5.5	Real-Time Scheduling	
6	**PROCESS SYNCHRONIZATION**	
6.1	Mutual exclusion	
6.2	Software solution to Mutual exclusion problem	2
6.3	Hardware solution to Mutual exclusion problem	
6.4	Semaphores	
6.5	Critical section problems	
6.6	Case study on Dining philosopher problem	2
6.7	Barber shop problem etc	
2nd Term		
7	**DEADLOCKS**	
7.1	Deadlock Introduction, Examples of Deadlock	
7.2	Resource Concepts	3
7.3	Necessary Conditions for deadlock	
7.4	Deadlock Solution	
7.5	Deadlock Prevention	1
7.6	Deadlock Avoidance with Bankers algorithms	
7.7	Deadlock Detection	3
7.8	Recovery from Deadlock	
8	**DEVICE MANAGEMENT**	
8.1	Disk Scheduling Strategies	
8.2	Rotational Optimization	2
8.3	System Consideration	
8.4	Caching and Buffering	1
9	**FILE SYSTEM**	
9.1	Introduction	
9.2	File Organization	4
9.3	Logical File System	
9.4	Physical File System	
9.5	File Allocation strategy	
9.6	Free Space Management	3
9.7	File Access Control	
9.8	Data Access Techniques	
9.9	Data Integrity Protection	3
9.10	Case study on file system viz FAT32, NTFS, Ext2/Ext3 etc	

erence Books

1. Deitel & Dietel, "Operating System", Pearson, 3rd Ed., 2011
2. Silbersachatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001
3. E. Madnick, J. Donovan, "Operating Systems", Tata McGraw Hill, 2001
4. Dr. R. C. Joshi, "Operating Systems", Wiley Dreamtech, 2005.
5. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000