PES

Computer Science And Engineering

(Aug '17 – Dec '17)

UE15CS302: Introduction to Operating Systems (4-0-0-0-4)

of Hrs: 52

Class #	Chapter Title / Reference Literature	Topics to be covered	% of Portions Covered	
			% of syllabus	Cumulative %
1	UNIT #1 Introduction to OS, Introduction to Processes T1: Ch.1,2,3	Computer System Architecture	19.2	19.2
2		Protection and Security,Kernel Data Structure		
3		Open Source Operating System.		
4		Operating System Services		
5		System Programs		
		Operating System Structure,System calls		
6		Introduction to Processes:Process and its address space,Simple two state model		
7		Process life cycle		
8		Process Management: Advanced state model for processes		
9		Context switching, Examples of IPC		
10	UNIT #2 Processes and Threads, Process Synchronization, Deadlocks T1: Ch.4, 6,7	Introduction to Thread: Overview-Multithreaded Models	19.2	38.4
11		Implicit-Operating System Examples		
12		Process Synchronization: The Critical-Section Problem,Synchronization Hardware		
13		Semaphores		
14		Monitors		
15		Synchronization examples		
16		Deadlocks: Deadlock Characterization		
17		Methods for Handling Deadlocks, Deadlock Avoidance		
18		Deadlock Detection		
19		Recovery from Deadlock		
20	UNIT #3 CPU Scheduling, Memory T1: Ch. 5, 8,9	CPU Scheduling:Basic Concepts – Scheduling Algorithms	19.2	57.6
21		Multiple Processor Scheduling		
22		Memory: Background, Swapping		
23		Contiguous Memory Allocation		
24		Segmentation, Paging		
25		Paging		
26		Virtual Memory: Background, Demand Paging		
27		Copy-on-Write, Page Replacement		
28		Allocation of Frames,Thrashing,TLB		
29		Thrashing, TLB		

30	UNIT #4 File System Interface,File-System Implementation T1: Ch. 10,11	File System Interface: File Concept	19.2	76.8
31		Access Methods, Directory and Disk Structure		
32		File-System Mounting		
33		File-System Structure		
34		File-System Implementation		
35		Directory Implementation, Allocation Methods		
36		Allocation Methods		
37		Free-Space Management		
38		Efficiency and Performance		
39		Review of File System		
40	UNIT #5 Mass Storage-Structure, I/O Systems T1: Ch. 12,13	Mass Storage-Structure: Overview of Mass-Storage Structure	23.2	100
41		Disk Structure, Disk Attachment		
42		Disk Scheduling		
43		Disk Management, Swap-Space Management.		
44		I/O Systems:Overview, I/O Hardware		
45		I/O Hardware		
46		Application I/O Interface		
47		Kernel I/O Subsystem		
48		Transforming I/O Requests to Hardware Operations, Performance.		
49		Dynamic operations: booting an operating system		
50		Review of mass storage		
51		Review of I/O systems		

Literature:

Book Type	Code	Title & Author	Publication Information		
			Edition	Publisher	Year
Text Book	T1	Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne	9th	John Wiley&Sons	2013
Text Book	T2	Operating Systems, Internals and Design Principles, William Stallings	7th	Prentice Hall	2012
Text Book	T3	Operating Systems, Harvey Deitel, Paul Deitel, David Choffnes	3rd	Prentice Hall	2009
Text Book	T4	Modern Operating Systems, Andrew S Tannenbaum	3rd	Pearson	2013

Note: Pre-requisite for "Introduction to Operating Systems"(UE15CS302) is that students should have cleared "Data Structures" (UE15CS202)