Operating System Lesson Plan

SCHOOL OF COMPUTER ENGINEERING
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
DEEMED TO BE UNIVERSITY
BHUBANESWAR

Program	:	B.TECH. (CSE, IT, CSSE, CSCE)
Subject Code	:	CS 2002
Subject name	:	Operating Systems (Credits 3) (L-T-P) (3-0-0)
Semester	:	4th Semester (Spring 2020-21)
Faculty	:	Dr. **Subhasis Dash**

Course Outcomes for the Course:
At the end of the Course students will be able to:

	Course Outcomes	Module No.
CO1	Able to understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.	Module No. # 1
CO2	Able to understand the difference between process & thread, issues in the scheduling of user-level processes/threads.	Module No. # 2
CO3	Able to understand and analyze the use of locks, semaphores, monitors for synchronizing multiprogramming / multithreaded systems and design solutions for multithreaded programs.	Module No. # 3
CO4	Able to understand the concepts of deadlock in operating systems and how they can be managed/avoided.	Module No. # 4
CO5	Able to understand the design and management concepts along with issues and challenges of main memory, virtual memory, and file system.	Module No. # 5 & 6
CO6	Able to understand the types of I/O management; disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.	Module No. # 7

Module No.	Module Name	Topic/Coverage	No. of Lectures	Activity
1	Introduction	What do Operating Systems do? Types of Operating Systems. Operating Systems components and structure.	3	

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	Activity		1	Understanding/ Remembering
2	Process	Process concepts. Process scheduling Scheduling criteria Scheduling algorithms Thread concepts Algorithm evaluation.	5	
	Activity		1	Problem Solving/Critical Thinking/Quiz
3	Processes Synchronization	Critical Section Problem. Solution for the critical section problem. Semaphores Classic problems of synchronization Monitors	8	
	Activity		2	Problem Solving/Critical Thinking/Quiz
4	Deadlock	System Model Deadlock Characterization Methods for Handling Deadlocks Deadlock Prevention Deadlock Avoidance Deadlock Detection Recovery from Deadlock	6	
	Activity		1	Problem Solving/Quiz
5	Memory Management	Memory Management in Multiprogramming by creating partitions. Paging Segmentation. Virtual memory implementation through demand paging. Page replacement algorithms Allocation of frames Thrashing	7	
	Activity		2	Problem Solving/Critical Thinking/Quiz/ Creation
6	File System	File concept Access Methods Directory structure. File system mounting File System structure File system Implementation. Allocation methods Free space management	3	
	Activity		1	Problem Solving/Critical Thinking/ Creation
7	Input / Output Management	I/O Devices Device controller Device Drivers. Application I/O Interface.	3	

		Disk Structure Disk Scheduling		
	Operating System Protection & Security	Domain of Protection Access matrix Implementation of Access matrix System security	3	
	Activity		1	Problem Solving/Critical Thinking

* The Total number of classes is 47, which includes lectures and activities.

Test Book   :   Operating System Concepts - by. A. Silberschatz, P. B. Galvin and G. Gagne, John Wiley & Sons, Inc., ISBN 978-1-118-06333-0

Reference   :   Operating Systems – by M. Deitel, P.J. Deitel and D.R. Choffnes, Pearson, ISBN: 9780131453159.

Operating Systems Concepts and Design by Milan Milenkovic, Tata McGraw-Hill Education India, ISBN: 9780074632727.

Operating Systems Design and Implementation by Andrew S. Tanenbaum, Albert S. Woodhull, Prentice-Hall,ISBN: 9780131429383.

Teaching Pedagogy   :   Whiteboard/Marker, PowerPoint Presentations, Web Resources

Assessment Methodology: Mid Term: *20*; End Term: *50*

Distribution of Internal Marks:- Total 50 Marks

        Mid Semester Examination = *20 Marks*

        Activity-based assessment=30 Marks

        Activity-based assessment includes Problem Solving, Critical Thinking, Creation along with Quiz.

        Course Teacher
        Spring, 2020-21