Lesson Plan

Program: BCA   **Semester:** IV   **Course Code**: BCA-402 **Course Name:** Operating System

Course Objectives

(CO1): To study types of Operating System and Virtual Memory.

(CO2): To understand the concept of Scheduling and Process Synchronization.

(CO3): To study the Deadlock and safe sequence of a system.

(CO4): To learn Disc Management.

(CO5): To study the File Management.

Session Duration: 60 minutes
Participants: BCA Fourth Semester Students

Entry level knowledge and skills of students

      i. Basic Knowledge of Deco and Computer Architecture

Equipment required in Classroom/ Laboratory/ Workshop

      i. Projector
      ii. White Board

Assessment Schemes

S. No.	Criteria	Marks (100)
1	**CCSU End Term Examination**	75
2	**Internal Evaluation Scheme**	25
2(a)	**Teacher Assessment (Continuous Evaluation) (Assignment & Attendance)**	25
2(a)(i)	**Assignment -1**	10
2(a)(ii)	**Assignment -2**	10
2(a)(iii)	**Attendance (compulsory)**	5

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Course Outcomes (starting with action-oriented observable and measurable verb)

(CO1): Able to understand the types of operating system, paging and segmentation methods suitable for virtual memory. **Understand (K2), Applying (K3)**

(CO2): Understand CPU scheduling and able to understand the problem of process synchronization. **Understand K(2), Applying K(3)**

(CO3): Understand the concepts of deadlock. **Understand (K2), Applying (K3)**

(CO4): Understand the concept of directory structure and how to manage disk spaces. **Understand K(2), Applying K(3)**

(CO5): Able to understand I/O management and file system, concepts of protection and security. **Understand K(2)**

L. No.	Topics	Sub Topics	Date of implementation	Pedagogy	CO-Covered	Faculty Sign	HoD's Remark with Date
			Unit - 1				
1.	**Introduction of OS,**	What is an operating system		• Lecture • Brainstorming	CO-1		
2.	**Simple Batch Systems,**	Multi-programmed		• Lecture • Brainstorming	CO-1		
3.		Batch systems,		• Lecture • Brainstorming	CO-1		
4.		Time- Sharing Systems		• Lecture • Brainstorming	CO-1		
5.		Personal – Computer Systems		• Lecture • Brainstorming	CO-1		
6.		Parallel systems,		• Lecture • Brainstorming	CO-1		
7.		Real- Time Systems		• Lecture • Brainstorming	CO-1		
8.		Distributed systems		• Lecture • Brainstorming	CO-1		
9.	**Memory Management :**	Introduction of **Memory Management,** Background		• Lecture • Brainstorming	CO-1		
10.		Logical versus physical Address space		• Lecture • Brainstorming	CO-1		

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11.		swapping		• Lecture • Brainstorming	**CO-1**		
12.		Contiguous allocation		• Lecture • Brainstorming	**CO-1**		
13.		Paging		• Lecture • Brainstorming	**CO-1**		
14.		Segmentation		• Lecture • Brainstorming	**CO-1**		
15.	**Virtual Memory**	Demand Paging		• Lecture • Brainstorming	**CO-1**		
16.		Page Replacement		• Lecture • Brainstorming	**CO-1**		
17.	**Page-replacement Algorithms**	FIF0		• Lecture • Brainstorming • Demonstration	**CO-1**		
18.		SRTF		• Lecture • Brainstorming • Demonstration	**CO-1**		
19.		Optimal Algorithm		• Lecture • Brainstorming • Demonstration	**CO-1**		
20.		Performance of Demand Paging		• Lecture • Brainstorming	**CO-1**		
21.		Allocation of Frames		• Lecture • Brainstorming	**CO-1**		
22.		Thrashing		• Lecture • Brainstorming	**CO-1**		
23.		Other Considerations		• Lecture • Brainstorming	**CO-1**		
24.		Revision of Unit-1		• Discussion • Buzz Grouping	**CO-1**		
Unit - 2							
25.	**Processes**	Process Concept		• Lecture • Brainstorming	**CO-2**		
26.		Process Scheduling		• Lecture • Brainstorming	**CO-2**		
27.		Operation on Processes		• Lecture • Brainstorming	**CO-2**		
28.	**CPU Scheduling**	Basic Concepts		• Lecture • Brainstorming	**CO-2**		
29.		Scheduling Criteria		• Lecture • Brainstorming	**CO-2**		
30.		Scheduling Algorithms		• Lecture • Brainstorming	**CO-2**		

31.		Multiple – Processor Scheduling		• Lecture • Brainstorming	CO-2		
32.	**Process Synchronizati on**	Background		• Lecture • Brainstorming	CO-2		
33.		The Critical – Section Problem		• Lecture • Brainstorming	CO-2		
34.		Synchronization Hardware		• Lecture • Brainstorming	CO-2		
35.		Semaphores		• Lecture • Brainstorming	CO-2		
36.		Classical Problems of Synchronization		• Lecture • Brainstorming	CO-2		
37.		Revision of Unit-II		• Discussion • Buzz Grouping			
Unit - 3							
38.	**Deadlock**	Introduction of Deadlock, **:** System Model, Deadlock Characterization		• Lecture • Brainstorming	CO-3		
39.		Resource Allocation Graph		• Lecture • Brainstorming	CO-3		
40.		Deadlock prevention, Recovery from Deadlock		• Lecture • Brainstorming	CO-3		
41.		Deadlock Avoidance, Banker's Algorithm,		• Lecture • Brainstorming • Demonstration	CO-3		
42.		Methods for Handling Deadlocks		• Lecture • Brainstorming	CO-3		
43.		Discussion and Revision of Unit III		• Lecture • Buzz Grouping	CO-3		
Unit - 4							
44.	**Device Management**	Techniques for Device Management, Dedicated Devices, Shared		• Lecture • Brainstorming	CO-4		

		Devices,					
45.	**Disk Scheduling**	FCFS & SSTF		• Lecture • Brainstorming • Demonstration	**CO-4**		
46.		LOOK, SCAN, CSCAN		• Lecture • Brainstorming • Demonstration	**CO-4**		
47.	**Disk Structure**	Secondary Storage Structure		• Lecture • Brainstorming	**CO-4**		
48.	**Disk Reliability**	Swap- Space Management		• Lecture • Brainstorming	**CO-4**		
Unit - 5							
49.	**Information Management**	Introduction, A Simple File system, GeneralModel of a File System		• Lecture • Brainstorming	**CO-5**		
50.		Symbolic File System, Basic File System, Access Control Verification		• Lecture • Brainstorming	**CO-5**		
51.		Logical File System, Physical File system File – System Interface; File Concept, Access Methods		• Lecture • Brainstorming	**CO-5**		
52.		Directory Structure, Protection, Consistency Semantics File – System Implementation		• Lecture • Brainstorming	**CO-5**		
53.		File – System Structure, Allocation Methods, Free- Space Management		• Lecture • Brainstorming	**CO-5**		

Text Books:

1. Silbersachatz and Galvin, "Operating System Concepts", Person, 5th Ed. 2001

Reference Books:

1. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000
2. Madnick E., Donovan J., "Operating Systems: Tata McGraw Hill, 2001.