Community College of Skill Development

Lesson Plan: Basics of Operating System (WDD-101-V)

Program: B.Voc. Web Development **Semester: I** **Credits: 03**

Course Objectives:

To provide students with a foundational understanding of operating systems, their types, structures, and functions, emphasizing process, memory, file, and disk management, along with various OS architectures and case studies.

Course Outcomes: After the successful completion of the course, students will be able to:

CO1: Demonstrate a thorough understanding of operating system concepts, including the need, types, and services, by explaining their significance and functionality in computing environments.

CO2: Analyze different process states, scheduling techniques, and criteria, evaluating scheduling algorithms' efficiency based on CPU utilization and response time metrics.

CO3: Interpret memory and file management principles, applying techniques such as swapping, paging, and segmentation to optimize resource allocation and access efficiency.

CO4: Evaluate disk management strategies and various operating system architectures through case studies, comparing their features and performance to make informed decisions in system design and implementation.

Equipment required in Classroom

i. LCD/Projector
ii. Whiteboard/ Black Marker

Assessment Scheme

S.No.	Criteria	Marks
1	End Term Examination	75
2	Internal Evaluation Scheme	25
2a	Class Tests	15
2a (i)	Class Test-I	7.5
2a (ii)	Class Test-II	7.5
2(b)	Teacher Assessment (Continuous Evaluation)	10

2b (i)	Attendance	5
2b (ii)	Assignment / Presentation	5

Lesson Plan

Lecture No.	Content to be Covered	Pedagogy	Date of Implementation	Course Outcomes Covered	Faculty Sign
05 Aug 2025					
1	Concept and Definition of Operating System	Lecture	05 Aug 2025	CO1	
2	Need and Importance of Operating Systems	Lecture	08 Aug 2025	CO1	
3	Types of Operating Systems – Batch, Time-sharing, Real-time	Lecture	12 Aug 2025	CO1	
4	Services of Operating Systems	Lecture	19 Aug 2025	CO1	
5	Structure of Operating System	Lecture	22 Aug 2025	CO1	
6	Functions of Operating System	Lecture	26 Aug 2025	CO1	
7	System Calls and Operating System Interface	Lecture	29 Aug 2025	CO1	
8	Operating System Components	Lecture	02 Sep 2025	CO1	
9	Summary and Case Study	Lecture	05 Sep 2025	CO1	
10	Concept of Process and Process States	Lecture	09 Sep 2025	CO2	
11	Process Control Block (PCB) and Process Lifecycle	Lecture	12 Sep 2025	CO2	
12	Process Scheduling Overview	Lecture	16 Sep 2025	CO2	
13	Types of Schedulers – Long-term, Short-term, Medium-term	Lecture	19 Sep 2025	CO2	
14	Scheduling Criteria: CPU Utilization, Throughput, Turnaround Time, Waiting Time, Response Time	Lecture	23 Sep 2025	CO2	
15	Scheduling Algorithms: FCFS, SJF	Lecture and numerical examples	26 Sep 2025	CO2	

16	Scheduling Algorithms: Priority and Round Robin	Lecture and numerical examples	30 Sep 2025	CO2	
17	Multiprocessor Scheduling	Lecture	03 Oct 2025	CO2	
18	Comparative Study of Scheduling Algorithms	Lecture	07 Oct 2025	CO2	
19	Numerical Problems on Scheduling Algorithms	Numerical Problems	10 Oct 2025	CO2	
20	Memory Management: Logical vs Physical Address Space	Lecture	14 Oct 2025	CO3	
21	Swapping and Contiguous Memory Allocation	Lecture	17 Oct 2025	CO3	
22	Virtual Memory Concepts	Lecture	21 Oct 2025	CO3	
23	Paging and Segmentation	Lecture	24 Oct 2025	CO3	
24	Demand Paging and Page Replacement Algorithms	Lecture and examples		CO3	
25	Thrashing and Performance Issues	Lecture		CO3	
26	Concept of File and Access Methods	Lecture		CO3	
27	Directory Structure and File System Structure	Lecture		CO3	
28	File Allocation Methods	Lecture		CO3	
29	File Protection and Access Control	Lecture		CO3	
30	Summary and Discussion on File Management	Lecture		CO3	
Unit – 4: Disk Management and Case Studies (10 Lectures)					
31	Disk Structure and Disk Scheduling	Lecture		CO4	
32	Disk Scheduling Algorithms – FCFS, SSTF, SCAN, C-SCAN	Lecture and examples		CO4	
33	Comparison of Disk Scheduling Techniques	Lecture		CO4	
34	Network Operating Systems	Lecture		CO4	
35	Real Time Operating Systems	Lecture		CO4	
36	Distributed Operating Systems	Lecture		CO4	
37	Mobile and Embedded Operating Systems	Lecture		CO4	

38	Case Study: Windows Operating System	case study		CO4	
39	Case Study: Linux Operating System	case study		CO4	
40	Comparative Study: DOS, Windows, and Linux	Discussion		CO4	

Text Books

1. Silberschatz, Abraham, Galvin, Peter B., and Gagne, Greg. Operating System Concepts. Wiley, 10th Edition, 2021.
2. Stallings, William. Operating Systems: Internals and Design Principles. Pearson Education, 9th Edition, 2018.

Reference Books

1. Dhamdhere, D.M. Operating Systems: A Concept-Based Approach. McGraw Hill Education, 3rd Edition, 2017.
2. Tanenbaum, Andrew S. Modern Operating Systems. Pearson Education, 4th Edition, 2015.