Indraprastha College for Women
University of Delhi

Course Name:	**B.Sc. (H) CS**
Paper Title:	**Operating Systems**
Unique Paper Code:	**2342012302**
Semester:	**III**
Faculty(s):	**Dr. Manoj Kumar**
Year:	**2025**

Work Plan			
Unit No.	**Learning Objective**	**Lecture No.**	**Topics to be Covered**
1.	**Operating System Introduction**	**1**	**1.1 What operating Systems**
		2	**1.4 OS Structure** **1.5 OS Operations**
		3	**1.6 Process Management**
		4	**1.7 Memory Management** **1.8 Storage Management**
2.	**Learning about Operating System Structures**	**5**	**2.1 OS Services**
		6	**2.3 System Calls**
		7	**4 2.4 Types of system Calls**
		8	**2.5 System Programs**
		9	**2.7-2.7.4 OS Structure**
3.	**Process Management**	**10**	**Chapter 3: Processes** **3.1 Process Concept**
		11	**3.2 Process Scheduling** **3.3 Operations in process (excluding process creation using Windows API figure 3.11)**
		12	**Threads 4.1 Overview 4.2 Multicore Programming 4.3 Multithreading Models**
		13	**4.4-4.4.1 Thread Libraries**
		14	**Chapter 5: CPU Scheduling** **5.1 Basic Concepts**
		15	**5.2 Scheduling Criteria** **5.3-5.3.4 Scheduling**

			Algorithms
		16	**5.3-5.3.4 Scheduling Algorithms**
		17	**5.3-5.3.4 Scheduling Algorithms**
		18	**Chapter 6: Process Synchronization 6.1 Background**
		19	**6.2 The Critical Section Problem**
		20	**6.3 Peterson's Solution**
		21	**Chapter 7: Deadlocks 7.1 System Model 7.2 Deadlock Characterization**
		22	**7.3 (Excluding Deadlocks with Mutex Locks) Methods of Handling Deadlocks**
4.	**Memory Management**	**23**	**Chapter 8: Main Memory 8.1 Background**
		24	**8.2 Swapping**
		25	**8.3 Contiguous Memory Allocation**
		26	**8.4 Segmentation**
		27	**8.5 Paging**
		28	**Chapter 9: Virtual**
		29	**Memory 9.2 Demand Paging**
		30	**9.4-9.4.3 Page Replacement**
		31	**9.4-9.4.3 Page Replacement**
5.	**Storage Management**	**32**	**Chapter 12: Mass Storage Structure 12.1 Overview of Mass Storage Structure**
		33	**12.4 Disk Scheduling**
		34	**Chapter 10: File System Interface 10.1 File Concepts 10.2 Access Methods**
		35	**10.3 Disk and Directory Structure (10.1 –10.1.2, 10.2, 10.3 –10.3.6)**
		36	**10.3 Disk and Directory Structure (10.1 –10.1.2, 10.2, 10.3 –10.3.6)**

Unit	Contents/ Syllabus
I.	**Chapter1: Operating System Introduction 1.1 What operating Systems Do, 1.4 OS Structure 1.5 OS Operations 1.6 Process Management 1.7 Memory Management 1.8 Storage Management**
II.	**Chapter 2: Operating System Structures 2.1 OS Services 2.3 System Calls 4 2.4 Types of system Calls 2.5 System Programs 2.7-2.7.4 OS Structure**
III.	**Chapter 3: Processes 3.1 Process Concept 3.2 Process Scheduling 3.3 (Excluding Fig. 3.11) Operations in Process** **Chapter 4: Threads 4.1 Overview 4.2 Multicore Programming 4.3 Multithreading Models 4.4-4.4.1 Thread Libraries** **Chapter 5: CPU Scheduling 5.1 Basic Concepts 5.2 Scheduling Criteria 5.3-5.3.4 Scheduling Algorithms** **Chapter 6: Process Synchronization 6.1 Background 6.2 The Critical Section Problem 6.3 Peterson's Solution** **Chapter 7: Deadlocks 7.1 System Model 7.2 Deadlock Characterization 7.3 (Excluding Deadlocks with Mutex Locks) Methods of Handling Deadlocks**
IV.	**Chapter 8: Main Memory 8.1 Background 8.2 Swapping 8.3 Contiguous Memory Allocation 8.4 Segmentation 8.5 Paging** **Chapter 9: Virtual Memory 9.2 Demand Paging 9.4-9.4.3 Page Replacement**
V.	**Chapter 12: Mass Storage Structure 12.1 Overview of Mass Storage Structure 12.4 Disk Scheduling** **Chapter 10: File System Interface 10.1 File Concepts 10.2 Access Methods 10.3 Disk and Directory Structure** **(10.1 –10.1.2, 10.2, 10.3 –10.3.6)**
S. No.	**Name of Authors/Books/Publishers**
1..	**Silberschatz, A., Galvin, P. B., Gagne G. Operating System Concepts, 9th edition, John Wiley Publications, 2016.**
2.	**Dhamdhere, D. M., Operating Systems: A Concept-based Approach, 2 nd edition, Tata McGraw-Hill Education, 2017.**
3.	**Kernighan, B. W., Rob Pike, R. The Unix Programming Environment, Englewood Cliffs, NJ: Prentice-Hall, 1984.**
4.	**Stallings, W. Operating Systems: Internals and Design Principles, 9 th edition, Pearson Education, 2018.**
5.	**Tanenbaum, A. S. Modern Operating Systems, 3 rd edition, Pearson Education, 2007**

	Paper Components		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**
4	**3**	**0**	**1**
Assessment Scheme			
S.No.	**Component**	**Marking Scheme**	**Total Marks**
1	**Internal Assessment**		**30**
	• **Assignment/Quiz/Project/ Presentation**	**12**	
	• **Class Test**	**12**	
	• **Attendance**	**6**	
2.	**Continuous Assessment (Tutorial)**		**NA**
	• **Activity 1**		
	• **Activity 2**		
	• **Attendance**		
3.	**Practical**		**40**
	• **Continuous Assessment**	**10**	
	• **End Term Written/Practical Exam**	**20**	
	• **Viva**	**10**	
4.	**End Semester Examination**		**90**