

**SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE
(AUTONOMOUS)**



BOARD OF STUDIES: Information Technology and Data Science

Programme: B.Sc. (Cyber Security & Digital Forensics)

Semester: II

Nomenclature of the Course: Operating Systems Fundamentals

NEP Vertical: Major

Credit: 02

Total Marks: 50

Academic Year: 2026–27

(As per Choice Based Credit System under NEP 2020)



Unit-wise Detailed Syllabus

Unit	Detailed Contents	Andragogy	Hours
Unit I: Operating System Concepts & Process Management	1. Introduction to Operating Systems 2. Functions of an Operating System 3. Types of Operating Systems (Batch, Time-sharing, Distributed) 4. Process Concept and Process States 5. Process Scheduling (FCFS, SJF – Conceptual) 6. Threads – Basic Concept 7. Deadlock – Conditions and Prevention (Conceptual)	Process state diagrams, Scheduling examples, Conceptual problem solving	15
Unit II: Memory, File & System Management	1. Memory Management Basics 2. Paging and Segmentation (Conceptual) 3. Virtual Memory Concept 4. File System Structure 5. File Allocation Methods 6. Disk Scheduling (Conceptual Overview) 7. Introduction to Linux and Windows OS Architecture (High-Level) 8. OS Role in Security & Access Control (Conceptual Link Only)	Diagram explanation, File system mapping exercises, Memory concept illustrations	15

Learning Objectives

1. To understand core operating system concepts.
2. To analyze process scheduling mechanisms.
3. To understand memory management techniques.
4. To learn file system structures and management.

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level
CO1	Explain functions and types of operating systems	Understand (L2)
CO2	Analyze process scheduling concepts	Analyze (L4)
CO3	Describe memory management techniques	Understand (L2), Analyze (L4)
CO4	Explain file system and disk management concepts	Understand (L2)

Suggested Readings

Sr. No.	Title	Author
1	Operating System Concepts	Silberschatz, Galvin & Gagne
2	Modern Operating Systems	Andrew S. Tanenbaum
3	Operating Systems	William Stallings

QUESTION PAPER PATTERN

(A) Continuous Evaluation – 20 Marks

Particulars	Marks
Class Test	10
Assignment	10
Total	20

(B) Semester End Examination – 30 Marks

Duration: 1 Hour

Question No.	Description	Total Marks
Q1	Attempt Unit I	15
	A – Remembering	
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	
Q2	Attempt Unit II	15
	A – Remembering	
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	