Concurrent Processes: Process Interaction, Shared Data and Critical Section, Mutual Exclusion, Busy form of waiting, Lock and unlock primitives, Synchronization, Classical Problems of Synchronization, Semaphores, Monitors, Conditional Critical Regions, System Deadlock, Wait for Graph, Deadlock Handling Techniques: Prevention, Avoidance, Detection and Recovery.

File and Secondary Storage Management: File Attributes, File Types, File Access Methods, Directory Structure, Allocation Methods, Free Space management; Disk Structure, Logical and Physical View, Disk Head Scheduling.

Suggested Readings:

1. A. Silberschatz, P. B. Galvin, G. Gagne, Operating System Concepts, Addison Wesley.
2. W. Stalling, Operating Systems: Internals and Design Principles, PHI.
3. A. S. Tanenbaum, Modern operating Systems, PHI.

CS107	Database Management Systems	L	T	P
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Introduction: Database Systems, View of Data Models, Database Languages, DBMS Architecture, Database Users and Data Independence.

ER Modeling: relation types, role and Structural Constraints, Extended ER Modeling Features, Design of an ER Database Schema, Reduction of ER Schema to Tables.

Relational Model: Relational Model Concepts, Relational Algebra.

Introduction to SQL: SQL data types and literals, Types of SQL commands, SQL operators, Tables, views and indexes, Queries and sub queries, Aggregate functions.

Relational Database Design: Functional and multi-valued Dependencies, Desirable Properties of Decomposition, Normalization up to 3 NF and BCNF.

Selected Database Issues: Security, Transaction Management, Introduction to Query Processing and Query Optimization, Concurrency Control, and Recovery Techniques.

Suggested Readings:

1. C. J. Date, An Introduction to Database Systems, Vol I & II, Addison Wesley.
2. A. Silberschatz, H. F. Korth, S. Sudarshan, Data Base System Concepts, McGraw Hill.
3. J. D. Ullman, Principles of Database Systems, Galgotia.
4. R. Elmasri, S. B. Navathe, Fundamentals of Database Systems, Pearson Education Asia.
5. R. Ramakrishnan, Database Management Systems, McGraw-Hill Education.