

<b>Branch: BCA</b>	<b>Semester-III</b>
<b>Subject Code: 3104</b>	<b>Lecture: 04 Credit: 04</b>
<b>Subject Title</b>	<b>FILE STRUCTURE AND DATABASE MANAGEMENT SYSTEM</b>

<b>Modules</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No of Lectures Assigned</b>	<b>Marks Weight age %</b>
UNIT-I	1	<b>Introduction to file system and Indexing and Hashing</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Meaning of file, types of file, organization of records in file</li> <li><input type="checkbox"/> Concepts of Index, Types of indexes</li> <li><input type="checkbox"/> Ordered (SAM), HASHED</li> <li><input type="checkbox"/> Types of ISAM</li> <li><input type="checkbox"/> Primary, Cluster, Secondary</li> <li><input type="checkbox"/> Concept of Multilevel indexes</li> </ul>	10	20

		<ul style="list-style-type: none"> <li><input type="checkbox"/> B+ tree &amp; B tree</li> <li><input type="checkbox"/> Concept of HASHING</li> <li><input type="checkbox"/> Types of Hashing (Static, Dynamic)</li> </ul>		
UNIT-II	2	<b>Query Processing and query optimization</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Meaning of Query,</li> <li><input type="checkbox"/> Steps in Processing Query,</li> <li><input type="checkbox"/> Translating SQL query into Relational Algebra,</li> <li><input type="checkbox"/> Query tree and its notations, Initial tree,</li> <li><input type="checkbox"/> Query equivalence,</li> <li><input type="checkbox"/> Query expression –Materialization and Pipelining</li> <li><input type="checkbox"/> Cost estimation / Measures of Query cost.</li> <li><input type="checkbox"/> Query optimization,</li> <li><input type="checkbox"/> Heuristics Algebraic optimization</li> </ul>	12	24
UNIT-III	3	<b>Transaction Processing</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Definition of Transaction,</li> <li><input type="checkbox"/> Transaction states – Diagram and explanation</li> <li><input type="checkbox"/> Partially committed,</li> <li><input type="checkbox"/> Committed, Failed, Aborted</li> <li><input type="checkbox"/> Properties of transaction (ACID)</li> <li><input type="checkbox"/> Atomicity, Consistency, Isolation, Durability</li> <li><input type="checkbox"/> Basic transaction operations - Read, Write</li> <li><input type="checkbox"/> Why Concurrency Control is needed?</li> <li><input type="checkbox"/> Schedule, types of schedule ( Serial, Non-Serial, concurrent, recoverable, cascadeless, strict)</li> <li><input type="checkbox"/> Serializability and conflict serializability</li> <li><input type="checkbox"/> System log, Lost update problem,</li> <li><input type="checkbox"/> Temporary update problem,</li> </ul>	12	24

		<input type="checkbox"/> Incorrect summary problem, Unrepeatable read Active		
UNIT-IV	4	<b>Concurrency control</b> <b>Introduction</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Locks and types of locks</li> <li><input type="checkbox"/> Compatibility matrix</li> <li><input type="checkbox"/> Conversion of locks – upgrading and downgrading</li> <li><input type="checkbox"/> Starvation of lock</li> <li><input type="checkbox"/> Deadlock handling- Deadlock detection methods, problems of deadlock, wait-die and wound-wait protocols, methods used for prevent deadlock , recovery of deadlock</li> <li><input type="checkbox"/> Multiple granularity locking protocol</li> <li><input type="checkbox"/> 2-phase locking protocol (2PL)</li> <li><input type="checkbox"/> Timestamps- W-timestamp and R-timestamps,</li> <li><input type="checkbox"/> Thomas’s Write rule</li> </ul>	16	32
Total			50	100

Text Books:

- 1) Korth, Siberschatz, “Database System Concepts”, McGraw-Hill, 27-Jan-2010

References:

- 1) Elmarsi and Navathe., ”Fundamentals of Database Systems”, McGraw-Hill, 2010
- 2) Bayross , “Oracle – the complete reference”, Ivan: BPB Publications
- 3) “Upgrade to oracle 8”, DataproInfoworld Ltd.
- 4) GioWiderhold. “Database Design”, McGraw-Hill 1995