VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM

(AUTONOMOUS)

Approved by AICTE, Accredited by NAAC-A++, NBA & Affiliated to JNTUK, Kakinada

Year/Semester	II B. Tech/ I Sem	L	T	P	C
Regulation Year	2020-21	3	0	-	3
Subject	DATABASE MANAGEMENT SYSTEMS				
Branch	CSE, IT, AI & DS				

Course Objective:

To learn the principles of systematically designing and using large scale Database Management Systems for various applications.

UNIT-I: Introduction to Database Management System, Data Independence- Relation Systems and Others, Database system architecture, Introduction- The Three Levels of Architecture-The External Level- the Conceptual Level- the Internal Level- Mapping- the Database Administrator, Various Data Models

The ER Model - The Relational Model, Relational Calculus, Introduction to Database Design, Database Design and ER Diagrams-Entities Attributes, and Entity Sets-Relationship and Relationship Sets - Conceptual Design with ER Model

UNIT-II:

The Relational Model – Basic Concepts, Integrity Constraints Over Relations- Key Constraints –Foreign Key Constraints-Relational Algebra Operations - Selection and Projection- Set Operations, Renaming – Joins- Division

SQL – Various parts of SQL, Basic form of SQL Query, Union, Intersect, and Except, Nested Queries, Aggregate Operators, Null Values, Complex Integrity Constraints in SQL, Triggers

UNIT-III:

Schema Refinement (Normalization) : Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency(1NF, 2NF and 3 NF), concept of surrogate key, Boyce-codd normal form(BCNF), Lossless join and dependency preserving decomposition, Fourth normal form(4NF).

UNIT-IV:

Transaction Management and Concurrency Control:

Transaction, properties of transactions, Various concurrency control techniques – lock based, timestamp based, lock granularity, lock types, 2PL for ensuring serializability, deadlocks – dealing with deadlocks, Database Recovery management :Log based recovery

UNIT-V:

Overview of Storages and Indexing, Data on External Storage- File Organization and Indexing –Clustered Indexing – Primary and Secondary Indexes, Index Data Structures, Tree-Based Indexing – B Trees, B+ Trees, Hash-Based Indexing – Basic idea, Comparison of File Organization

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition
2. Database System Concepts, Abraham Silberschatz, Henry F. Korth

REFERENCES BOOKS:

1. Fundamentals of Database Systems, ElmasriNavate Pearson Education
2. Introduction to Database Systems, C.J.Date Pearson Education
3. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel

Course Outcomes:

1. Understand database concepts and the use of data models in describing database
2. Create, maintain and manipulate a relational database using SQL
3. Understand the importance of schema refinement & be able to refine the schema
4. Understand how the DBMS manages the execution of transactions
5. Understand and differentiate various file organizations for the representation of data