

**EXCEL ENGINEERING COLLEGE**  
**PALLAKAPALAYAM - 637 303**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**13CSID - INTRODUCTION TO DATABASES**

**Course Objectives:**

1. To understand the different issues involved in the design and implementation of a database system.
2. To study the physical and logical database designs, database modeling, relational, hierarchical, and network models
3. To understand and use data manipulation language to query, update, and manage a database
4. To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency,
5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS

**UNIT 1- Introduction to Database Concepts and Architecture**

Characteristics, advantages and implications of the database approach to information systems as contrasted with traditional integrated file systems. DBMS architecture. History of database systems. Roles involved with database systems.

**UNIT II - Database Concepts and Architecture**

The database system environment including data models, schemas, database languages and interfaces. Three-schema architecture and data independence. Classifications of database systems.

**UNIT III-Data Modeling using Entity Relationship Diagrams**

Information analysis to identify query keys, candidate keys, entities, attributes relationships and integrity constraints. ER modeling as a means of representing information concepts. Extended entity relationship modeling as it relates to specialization, generalization and inheritance.

**UNIT IV -The Relational Data Model**

Relational model concepts. Referential integrity, entity integrity, and other constraints. Defining a relational schema from an ER diagram. The Relational Algebra. Definition and use of relational algebra operations to query a relational database.

## **UNIT V - Normalization as a Process for Verification of Data Model Design**

Definition of functional dependency, fully functional dependency, transitive dependency and multi-valued dependency. Definition of the normal forms from un-normalized through 4th normal form and how to apply the normalization process to recognize normal forms. How to move a data model to a higher normal form and the issues of de-normalization as it applies to retrieval performance

**DURATION: 30 Hours**

### **References:**

1. Nilesh Shah, Database Systems Using Oracle, 2nd Edition.