

# INT306:DATABASE MANAGEMENT SYSTEMS

L:0 T:0 P:5 Credits:3

**Course Outcomes:** Through this course students should be able to

- develop skills and understanding in the database design and make use of database management systems for applications
- develop understanding about relational algebra, relational model and SQL for implementing and maintaining databases
- develop understanding about the different issues involved in the design and implementation of a database system
- develop skills and understanding about the real time transaction management systems and the concurrency control techniques
- compose programming constructs such as functions, stored procedures and triggers that can be shared by multiple forms, reports and data management applications

## Unit I

**Introduction to Databases** : purpose of database systems, components of dbms, applications of dbms, three tier dbms architecture, data independence, database schema, instance, data modeling, entity relationship model, relational model

## Unit II

**Relational Query Languages** : relational algebra, introduction to data definition language, data manipulation, data control and transaction control language, integrity constraints, database keys, sql basic operations, aggregate functions, sql joins, set operators, views, subqueries

## Unit III

**Relational Database Design** : data integrity rules, functional dependency, need of normalization, first normal form, second normal form, third normal form, boyce codd normal form, multivalued dependencies, fourth normal form, join dependencies, fifth normal form and pitfalls in relational database design

## Unit IV

**Database Transaction Processing** : transaction system concepts, desirable properties of transactions, schedules, serializability of schedules, concurrency control, recoverability

## Unit V

**Programming Constructs in Databases** : flow control statements, functions, stored procedures, cursors, triggers, exception handling

## Unit VI

**File Organization and Trends in Databases** : file organizations and its types, indexing, types of indexing, hashing, hashing techniques, introduction to big data, nosql systems

## Text Books:

1. DATABASE SYSTEM CONCEPTS by HENRY F. KORTH, ABRAHAM SILBERSCHATZ, S. SUDARSHAN, MCGRAW HILL EDUCATION

## References:

1. DATABASE SYSTEMS: MODELS, LANGUAGES, DESIGN AND APPLICATION PROGRAMMING by RAMEZ ELMASRI, SHAMKANT B. NAVATHE, PEARSON
2. AN INTRODUCTION TO DATABASE SYSTEMS by C. J. DATE, S. SWAMYNATHAN, A. KANNAN, PEARSON
3. SQL, PL/SQL: THE PROGRAMMING LANGUAGE OF ORACLE by IVAN BAYROSS, BPB PUBLICATIONS
4. SIMPLIFIED APPROACH TO DBMS by PRATEEK BHATIA AND GURVINDER SINGH, KALYANI PUBLISHERS