



SYLLABUS

Course Title	Relational Database Management System
Course Code	BCA315
Course Credit	Theory(Hrs) : 4
	Practical(Hrs) : 2
	Tutorial(Hrs) : 0
	Credits : 5

Course Objectives

The objectives of the course are:

- To understand the database concepts and database management system
- To learn about various elements of E-R Model and E-R Diagrams
- To acquire the knowledge of relational database and formulate SQL queries on the data
- To understand the roles of transaction processing and concurrency control in a modern DBMS
- To learn about advance SQL and PL/SQL blocks

Detailed Syllabus

Sr. No.	Name of chapter & details	Hours Allotted
Section – I		
1	Database Concepts Basic Concepts: Data, Database, Database systems, Database Management System, Purpose of Database System, Advantages and Disadvantages of DBMS, Three Level Architecture, Various Components of a DBMS, Roles of DBA	03
2	Relational Model Structure of Relational Database: Basic Structure, Database Schema, Keys: Super Key, Candidate Key, Primary Key, Foreign Key,	10

	ER Model: Entities, Types of Entities, Relationship and Types of Relationships, Attributes, Types of Attributes, Entity Integrity Constraint and Referential Integrity Constraint, E-R Notations and E-R Diagram Fundamental Relational Algebra Operations: Selection, Projection, Union, Set - Difference, Intersection, Cartesian Product, Natural Join and Rename	
3	Database Design Introduction to Functional Dependencies, Normalization: 1NF, 2NF, 3NF, BCNF	06
4	Transaction Processing and Concurrency Control Introduction to Transaction Concepts, Transaction States, ACID Properties, Transaction Logs, View Serializability, Conflict Serializability, Concurrency Control, Deadlock handling: Detection and Resolution	09

Section – II

5	Structured Query Language SQL Statements : DDL,DML,DCL,TCL Basic Data Types, Types of Constraints, Creating Database and Table, Inserting Data, Select Command, Sorting Data, Computations on data: Types of Operators, Aggregate Functions, Single Row Functions, Group By Clause, Having Clause, Sub Queries, Joins, Set Operators	15
6	Advance SQL Database Objects: Indexes, Views , Sequences , Data Control Commands: Create User, Grant, Revoke, Role, Transaction Commands: Commit, Rollback, Savepoint	05
7	PL/SQL Introduction, Advantages of PL/SQL, PL/SQL Block Structure, Data Types, Control Structure, Cursor, Procedure and Trigger	08

Instructional Method and Pedagogy:

- Lectures will be conducted on the basis of Classroom Response Systems with the use of multimedia projector and black board.
- Assignments based on course contents will be given at the end of each unit/topic and will be evaluated at regular interval.
- Experiments will be based on the practical curriculum and will be evaluated at regular interval.

Course Learning Outcomes:

On the completion of the course, students will be able to:

- **Describe** the fundamentals of data design and relation database concepts
- **Develop** relational database and be able to normalize the tables
- **Design** entity-relationship diagrams to represent database application scenarios
- **Describe** the knowledge of transaction processing and various concurrency problems
- **Formulate** SQL queries to perform various database related operations
- **Develop** PL/SQL programs to access database

Text books:

- Title: Database System Concepts, 5th Edition, Tata McGraw-Hill
Author(s): Silberschatz, Korth, Sudarshan
- Title: Database Systems, Concepts, Design and Applications, Pearson Education
Author(s): S.K. Singh
- Title: SQL, PL/SQL – The programming Language Oracle, BPB Publication
Author(s): Ivan Bayross

Reference Books:

- Title: Database Management Systems, Third Edition, Tata McGraw Hill
Author(s): Ramakrishnan, Gehrke
- Title: Fundamentals of Database Systems, Fifth Edition, Pearson Education
Author(s): Navathe
- Title: An Introduction to Database Systems, Eighth Edition, Pearson Education
Author(s): C.J.Date, a Kannan, S Swaminathan

Additional Resources

- <http://www.w3schools.com/sql>
- <http://www.roseindia.net>
- <http://docs.oracle.com/dbms/tutorial>
- <http://Spoken-tutorials.org>
- <http://tutorialspoint.com/sql>