

First Lecture Course Handout

School Name	:	School of Computer Science
Department Name	:	Department of Computer Science and Applications
Program Name	:	BCA
Academic Year	:	2024-25
Semester	:	I
Course Title	:	Database Management System
Course Code	:	BCA20010
Course Category	:	PF
Credits	:	4

Instructor Information –

Name – Madhuri P. Joshi

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Course Rationale –

Course Objectives:

1. To introduce data processing using computers.
2. To explain data models used for database design
3. To explain the normalization of database schema
4. To understand creations, manipulation and querying of data in databases

Course Outcomes –

After completion of this course students will be able to do

1. To store data in the database by understanding its necessity

2. To do analysis of system, create ER Model, Relational model and normalized database schema for the given system.
3. To use DDL and DML commands of SQL for the creation, manipulation of data in databases

To write SQL statements for querying data from database

Textbooks/Reference books/Reference materials required –

Reference Books:

- Database System Concepts, Henry korth and A. Silberschatz
- An Introduction to Database System, Bipin Desai
- File Structure by Michael, J. Folk, Greg, Riccardi
- Teach Yourself SQL in 14 days, Jeff Parkins and Bryan Morgan

Web Resources

Weblinks:

<https://www.geeksforgeeks.org/dbms/>

<https://www.w3schools.com/sql/default.asp>

Pedagogy employed –

- Participative Learning,
- Discussion
- Demonstrations
- Practical
- Assignment
- Tutorials
- Lab assignments

Learning Content beyond syllabus –

In Practical

Internal Grading Policy –

Sr. No	Name of internal component	Planned date/week	% of weightage of internal marks
1	Database Management System	Week 1,2	
2	Entity-Relationship Model	Week 3,4	
3	Relational Model	Week 5,6,7	
4	Relational Database Design	Week 8,9,10	
5	SQL (Structured Query Language)	Week 11,12,13	
6	Advanced Queries using SQL	Week 14,15,16	

Prepared by –

Ms. Madhuri P. Joshi

(Course Faculty Name)

COURSE STRUCTURE

Course Code	BCA20010				
Course Category	Program Foundation				
Course Title	Database Management System				
Teaching Scheme	Lectures	Tutorials	Laboratory/Practical	Project	Total
Weekly Load Hrs.	3	-	2-		5
Credits	3	-	1-	-	4
Assessment Schema Code	TL3				
<u>Course Objectives:</u> 1. To introduce data processing using computers. 2. To explain data models used for database design 3. To explain the normalization of database schema 4. To understand creations, manipulation and querying of data in databases					
<u>Course Outcomes:</u> After completion of this course students will be able to do 1. To understand necessity of database to store data 2. To do analysis of system create ER Model, Relational model and normalized database schema forthe given system. 3. To use DDL and DML commands of SQL for the creation, manipulation of data in databases 4. To write SQL statements for querying data from database					

Course Contents:

Unit 1: Database Management System[7]

Drawbacks of using files to store data
Purpose of database systems
Definition of DBMS
Comparison of File processing system & DBMS
Limitation of file processing system
Advantages and Disadvantages of DBMS
Users of DBMS
Overall system structure

Unit 2: Entity-Relationship Model[7]

Entities and Entity Sets
Relationships and Relationships Sets
Attributes
Mapping cardinalities
Entity Relationship Diagram
Case Studies on ER model

Unit 3: Relational Model[7]

Structure of relational database
Terms - Relation, Tuple,
Terms - Attribute, Cardinality
Keys - Super Key , Candidate Key, Primary Key, Foreign Key
Conversion of ER Diagram to Relational Model
Conversion of relational schema to 3NF
Case Studies on Relational Model

Unit 4: Relational Database Design [10]

Pitfalls in Relational-Database
Functional dependencies
Closure of Functional dependencies (F+)
Closure of an Attribute set
Algorithm to derive a Primary Key for a relation and examples

Concept of Decomposition
Desirable Properties of Decomposition
Concept of Normalization
Normal forms : 1NF, 2NF, 3NF

Unit 5: SQL (Structured Query Language) [7]

Introduction, history Of SQL [Definition
basics structure of SQL
Classification of SQL statements
DDL Commands: CREATE, DROP, ALTER
Data types Constraints: Primary Key, not null, Unique, General Constraint/check,
Foreign Key , Default

DML Command: INSERT,UPDATE,DELETE,SELECT

Simple queries

Distinct keyword

Operators : IN,NOT IN,BETWEEN,LIKE

SQL built in Function : String Functions, Numeric Functions ,Date and Time Functions

Unit 6: Advanced Queries using SQL [7]

Aggregate function

Set operations

Order by, Group by, Having clauses

SQL mechanisms for joining relations (inner joins, outer joins and their types)

Nested queries(Case studies)

Learning Resources:

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<https://www.w3schools.com/sql/default.asp>

MOOCs: Online courses for self-learning

Courses by NPTEL and MIT Open Courseware etc

Pedagogy:

- Participative Learning,
- Discussion
- Demonstrations
- Practical
- Assignment
- Tutorials
- Lab assignments

Laboratory Experiments / Software based Practical:

Sr No.	Contents
1	Use of Structured Query Language to implement DDL, Data Schemas
2	Use of Structured Query Language to implement DML
3	Use of Structured Query Language to implement different Clauses
4	Use of Structured Query Language to implement DCL
5	Use of Structured Query Language to implement Database Joins
6	Use of Structured Query Language to implement Generalization and Aggregation