Semester-IV

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Internal	Final Exam	Total
BCAMJ-401	Relational Database Management System	Major	4	4	0	0	40	60	100

Course Outcomes

At the end of the course the student will be able to	
CO1	Describe the key concepts of database systems.
CO2	Evaluate data model concepts, database architecture, and roles with in database Management.
CO3	Explain relational database principles and E-R models to design and optimize database systems.
CO4	Demonstrate relational model concepts and SQL to manage databases.
CO5	Apply normalization techniques and functional dependencies to design efficient database schemas.

Detailed Syllabus

Section-A

Unit 1: **Introduction to DBMS**: Introduction, Database Systems Characteristics of DB Approach, Advantages of DBMS, Database Users, DB Languages, Applications of Database, Database Administrator.

(08 Hrs)

Unit 2: Data Model Concepts: Data model concepts, Data Independence Three levels of Architecture, Database Administrator, Client-Server Architecture, Data Models, Database interfaces, Schemas, and Instances.

(08 Hrs)

Unit 3: Relational Database and E-R Model: Relational System, Codd's Rule, Relational Model, Optimization, Tables and Views, Entity, Types of Entity, Weak Entity Attributes , Entity sets , Entity – Relationship Diagrams.

(12 Hrs)

Section-B

Unit 4: **Relational Model Objects**: Domains and Relations, Relations and predicates, Relational Data Integrity ; Primary Key, Candidate Key , Foreign Key and their rules; Relational operators, Relational Algebra, Relational Calculus, SQL Language, Data definition, Data retrieval and update operations.

(12 Hrs)

Unit 5: **Database Design**: Definition Of Functional Dependencies, Process Of Normalization, First Normal Form, Second Normal Form, Third Normal Form. Boycee Codd Normal Form, Fourth Normal Form, Fifth Normal Form.

(08 Hrs)

Textbooks

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	An introduction to Database Systems	C.J Date	Pearson	7th(2000)
2.	Database System Concepts	Korth, Silberchatz	Mcgraw Hill Education	7th (2019)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Fundamentals of Database System	ElmasriRame, Navathe Shamkant	Pearson Education	7th (2015)