CLUSTER UNIVERSITY SRINAGAR
SYLLABUS (FYUP UNDER NEP 2020)
Offered By Department of Information Technology
Semester 4th (Major Course)

Course Title: Database Management Systems

Course Code: UGICT22J401	**Max. Marks 100**
Credits: 4 (Theory: 3, Practical: 1)	**Theory External: 60; Min Marks: 24**
Contact Hrs: 75 (Theory: 45, Practical: 30)	**Theory Internal (Continuous Assessment): 15 Marks, Min Marks: 06**
	Practical Experimental Basis= 15, Min. Marks: 06
	Practical Experimental (Continuous assessment) = 10, Min. Marks: 04

Objectives

To understand the basic and advanced concepts of database management systems along with the practical implementation of SQL queries in database.

Learning Outcomes

After successful completion of the course, the students should be able to:
1. Understand the basic concepts and the applications of database systems.
2. Understand the relational database design principles.
3. Master the basics and advanced SQL and construct queries using SQL.
4. Understand and apply Normalization to relations.
5. Understand the basic issues of transaction processing and concurrency control.
6. Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.

UNIT 1:   15 Hrs
Introduction to Database: Traditional file processing systems, evolution of database systems, purpose of database systems, characteristics of database, DBMS, components of DBMS, applications of DBMS, DBMS architecture, classification of DBMS users.
Introduction Database design: Database Design and ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Features of ER Model, Conceptual Design with the ER Model.

UNIT 2:   15 Hrs
Relational Algebra and Calculus: Preliminaries, Relational Algebra, Relational calculus – Tuple relational Calculus, Domain relational calculus, Introduction to Data definition language, Data manipulation Language, Data control language.
Relational model concepts: Relational database, Benefits of RDBMS, Data integrity rules, Functional dependency.

UNIT 3:   15 Hrs
Normalization: Introduction, Need for normalization, Normal forms (1NF, 2NF, 3NF, 4NF, BCNF).
Database Transaction Processing: Transaction system concepts, desirable properties of transactions, schedules, serializability of schedules, concurrency control, recoverability.

File organization and indexing concepts in database.

UNIT 4 (Practical/Lab Course)   30 Hrs
Relational database manipulation: SQL-A relational database language, data definition in SQL, data manipulation in SQL, views and queries in SQL, specifying constraints and indexes in SQL, SQL functions, SQL Joins, Sub Queries in SQL, Introduction to PL/SQL.

SUGGESTED READING:
1. Date, C.J." An Introduction to Database System", Narosa publications house, Delhi
2. Elmasri and Navathe," Fundamentals of Database System", Addison Wesley, N.Y.
3. Bipin Desai,"An Introduction to Database Concepts", Galgotia publications, N. Delhi
4. SQL The Complete Reference, 3rd Edition James R Groff, Paul N. Weinberg, Andy Oppel(Mcgraw Hill)