FUNDAMENTALS OF DATABASE SYSTEMS

IV Semester: CE / EEE / ME / ECE / AE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACSC18	SKILL	-	-	-	-	-	-	-
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes: Nil		

I. COURSE OVERVIEW

The fundamentals of Database systems are vital components of modern information systems. Database applications all pervasive and range in size from small in-memory databases to terabytes or even larger in various applications domains. The course focuses and the fundamentals of knowledgebase and relational database management systems, and the current developments in database theory and their practices.

II. COURSE OBJECTIVES:

The students will try to learn:

I. The role of database management system in an organization and learn the database concepts.
II. The design databases using data modeling and data normalization techniques.
III. Construct database queries using relational algebra and calculus.
IV. The concept of a database transaction and related database facilities.

III. COURSE SYLLABUS:

MODULE: I CONCEPTUAL MODELING (10)

Introduction to file and database systems: Database system structure, data models: entity relationship model, relational model.

MODULE: II RELATIONAL APPROACH (08)

Relational algebra and calculus: Relational algebra, selection and projection, set operations, renaming, joins, division, examples of algebra queries, relational calculus, tuple relational calculus.

MODULE : III BASIC SQL QUERY AND NORMALIZATION (10)

SQL data definition; Queries in SQL: updates, views, integrity and security, relational database design.

Normal Forms: 1NF, 2NF, 3NF and BCNF.

MODULE : IV TRANSACTION MANAGEMENT (09)

Transaction processing: Introduction, need for concurrency control, desirable properties of transaction, schedule and recoverability, Serializability and schedules

MODULE : V CONCURRENCY CONTROL (08)

Concurrency control; Types of locks: Two phases locking, deadlock, timestamp based concurrency control, recovery techniques, concepts, immediate update, deferred update, shadow paging.

IV. TEXT BOOKS:

Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", McGraw-Hill, 4th Edition, 2002.

V. REFERENCE BOOKS:

1. Ramez Elmasri, Shamkant B. Navathe, "Fundamental Database Systems", Pearson Education, 3rd Edition, 2003.

2. Raghu Ramakrishnan, "Database Management System", Tata McGraw-Hill Publishing Company, 3rd Edition, 2003.
3. Hector Garcia Molina, Jeffrey D. Ullman, Jennifer Widom, "Database System Implementation", Pearson Education, United States, 1st Edition, 2000.
4. Peter Rob, Corlos Coronel, "Database System, Design, Implementation and Management", Thompson Learning Course Technology, 5th Edition, 2003.

VI. WEB REFERENCES:

1. https://www.youtube.com/results?search_query=DBMS+onluine+classes
2. http://www.w3schools.in/dbms/
3. http://beginnersbook.com/2015/04/dbms-tutorial/

VII. E-TEXT BOOKS

1. http://www.e-booksdirectory.com/details.php?ebook=10166
2. http://www.e-booksdirectory.com/details.php?ebook=7400re