COURSE CODE: **GIE-321**

COURSE NAME: **DATABASE MANAGEMENT SYSTEMS**

CREDIT HOURS:
Theory = 02
Practical = 01
Total = 03

CONTACT HOURS:
Theory = 32
Practical = 48
Total = 80

PREREQUISITE: None **(It is a Pre-requisite course for GIE-409 Spatial DBs)**

MODE OF TEACHING:

Instruction:	Two hours of lecture per week	67%
Practical:	Three hours of Lab work per week	33%

COURSE DESCRIPTION:

Students are expected to have an in depth understanding of database concepts. The students will be able to design and implement a database management system using any relational database management system

COURSE OBJECTIVES:

This course is aimed at providing the students with the background to design, implement, and use database management systems. Course gives both theoretical and practical knowledge of relational databases.

RELEVANT PROGRAM LEARNING OUTCOMES (PLOs):

The course is designed so that students will achieve the PLOs:

1	Engineering Knowledge:	☐	7	Ethics:	☐
2	Problem Analysis:	☑	8	Individual and Collaborative Team Work:	☐
3	Design/Development of Solutions:	☑	9	Communication:	☐
4	Investigation:	☑	10	Project Management:	☐
5	Tool Usage:	☐	11	Lifelong Learning:	☐
6	The Engineer and Society:	☐			

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, students will be able to:

No.	CLO	Domain	Taxonomy Level	PLO
1	Model relational schema using the entity relationship diagram.	Cognitive	3	2
2	Develop a database schema that incorporates keys and constraints	Cognitive	3	3
4	Formulate SQL queries to retrieve information from a relational database.	Cognitive	5	4

TOPICS COVERED:

Theory:

Week	Topics
1	Introduction to Database Management Systems / File Processing Systems Database System Concepts and Architecture
2-3	Database Modeling using Entity-Relationship, Normalization
4-6	Relational Model, Relational Algebra, Relational Calculus.
7-8	Query Languages: SQL, ,
9-10	Design of Relational databases
11-12	Database design and implement
13	Indexing and sorting, Query process
14	Distributed Database / Database Security, Object Oriented DBMS, Document Oriented DBMS, Spatial and Spatio-Temporal DBMS
15	Data using and data warehousing, Web application using PHP and XML, Emerging Applications
16	No SQL
17	Integration of Artificial Intelligence (AI) and Database Management System (DBMS) technologies Hadoop and Spark as data processing frameworks for Big Data Analytics
18	**ESE**

Labs:

1.	ER modelling
2.	Introduction to MySQL workbench
3.	Relational algebra relational calculus
4.	Logics operators single row functions
5.	DDL and constraints
6.	DML and Aggregate functions
7.	Subqueries
8.	Join operators
9.	Views
10.	Indexing and sorting
11.	Advanced topics

TEXT AND MATERIAL:

Textbooks:

a. Fundamentals of Database Systems, (7th Edition), by Elmaeri & Navathe, 2016, Addison-Wesley.

References Material:

c. Data base management systems, (3rdEdition) by Raghu Ramakrishna, McGraw Hill, ISBN Number 0-07-246563-8.

d. Database System Concepts (7thEdition) by Avi Silberschatz, Henry F. Korth, S. Sudarshan, 2019

ASSESMENT SYSTEM:

1. **CLOs Assessment**

Cognitive	**Psychomotor**	**Affective**
Spreadsheet	-	-

2. **Relative Grading**

Theoretical/Instruction			67%
	Assignments10%		
	Quizzes10%		
	Mid Semester Exam30%		
	End Semester Exam50%		
Practical Work			33%
Laboratory Work		*70%*	
	Laboratory Attendance20%		
	Laboratory Report20%		
	Laboratory Quiz30%		
Viva/Quiz		*30%*	
Total			**100%**