Course Code	**21CSC205P**	Course Name	**Database Management Systems**		Course Category	C	**Engineering Sciences**		L	T	P	C
									3	1	0	4
Pre-requisite Courses	*Nil*		Co-requisite Courses	*Nil*			Progressive Courses	*Nil*				
Course Offering Department		Computer Science and Engineering		Data Book / Codes/Standards		*Nil*						

Course Learning Rationale (CLR): *The purpose of learning this course is to:*

CLR-1 : Understand the fundamentals and need of Database systems, Architecture,Languages
CLR-2 : Conceive database design through Relational model, Relational Algebra
CLR-3 : Design Logical schema with constraints, Familiarize SQL Queries
CLR-4 : Standardization of Database through Normalization
CLR-5 : Understand Storage Management, the practical problems of Concurrency control, Failures and recovery,NoSQL database

Course Learning Outcomes (CLO): *At the end of this course, learners will be able to:*

CLO-1 : Acquire knowledge on DBMS architecture and languages
CLO-2 : Acquire knowledge on Relational languages and design a database
CLO-3 : Implement the Database structure with SQL
CLO-4 : Removal of anomalies using Normalization concepts
CLO-5 : Visualizing storage structure, handling concurrency , Failure and recovery principles,NoSQL concept

Program Learning Outcomes (PLO)

	1 Engineering Knowledge	2 Problem Analysis	3 Design & Development	4 Analysis, Design, Research	5 Modern Tool Usage	6 Society & Culture	7 Environment & Sustainability	8 Ethics	9 Individual &Team Work	10 Communication	11 Project Mgt. & Finance	12 Life Long Learning	13 PSO - 1	14 PSO - 2	15 PSO – 3
CLO-1		2	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-5	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-

Unit-1
Issues in File Processing System, Need for DBMS, Basic terminologies of Database, Database system Architecture, Various Data models, ER diagram basics and extensions, **Case study :** Construction of Database design using Entity Relationship diagram for an application such as University Database, Banking System, Information System

Unit-2
Conversion of ER model to Relational Table, **Case study :** Apply conversion concept. Discussion of various design issues. Pitfalls in Relational Database systems, Understanding various Relational languages such as Tuple Relational calculus, Domain relational calculus, Calculus Vs Algebra, Computational capabilities . **Case Study :** Applying Relational Algebra for all the queries of application Designed.

Unit-3
SQL commands, Constraints, Joins, Set operations, Sub queries, Views, PL – SQL, Triggers, Cursors. **Case Study :** Implement all the queries using SQL, PL-SQL, Cursor and Triggers

Unit-4
Normalization, Need for Normalization, NF1,NF2,NF3, NF4, NF5. **Case study :** Apply Conversion rules and normalize the Database

Unit-5
Storage Structure, Transaction control , Concurrency control algorithms, Issues in Concurrent execution, Failures and Recovery algorithms **Case study :** Demonstration of Entire project by applying all the concepts learnt with minimum Front end requirements, NoSQL Databses-Document Oriented, Key value pairs, Column Oriented and Graph

		Continuous Learning Assessment (CLA) - By the CourseFaculty						By The CoE	
	Bloom's Level of Thinking	CLA-1 Average ofunit test (20%)		CLA-2 ProjectBased Learning(60%)		Report and VivaVoce (20% Weightage)		Final Examination (0% weightage)	
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	-	%	-	%	-	-
Level 2	Understand	40%	-	-	%	-	%	-	-
Level 3	Apply	40%	-	-	30%	-	%	-	-
Level 4	Analyze	%	-	-	30%	-	%	-	-
Level 5	Evaluate	%	-	-	%	-	50%	-	-
Level 6	Create	%	-	-	40%	-	50%	-	-
Total		100 %		100 %		100%			

Assessment Procedure

CLA-1 (20)

Written Test For UNIT 1 for a weightage of **15 marks**

Project Selection **(5 marks)**

CLA – 2 (60)

Internal Reviews

First Review   - Database design using Entity Relationship diagram **(15 marks)**

Second Review   – Applying Relational Algebra **(10 marks)**

Third Review   - Implementation of SQL Queries **(20 Marks)**

Fourth Review   - Standardization of Database using Normalization , Application on NoSQL concept to some portion of the application **(15 marks)**

Report and Viva   - Report Documentation and Viva (**20 marks)**

Course Designers		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts

Learning Resources
1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Database System Concepts‖, Seventh Edition, Tata McGraw Hill,2019.
2. Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems‖, Sixth Edition, Pearson Education,2011.
3. CJ Date,A Kannan,S Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education,2006.
4. RaghuramaKrishnan,Johannes Gehrke,Database Management Systems,3rdEdition,McGrawHill Education,2003.
5. Principles of Database Systems, J.D.Ullman, Galgoti,1982
6. NoSQL Distilled, A brief guide to the emerging world of Polygot persistence,First Edition,Promod J,Sadalage Martin Fowler,2012

1. Ms.Sangeetha Jayaprakash, Database Architect, BOSCH India	1. Dr.J.Sheeba Rani, Indian Institute of Space Science and Technology, Trivandrum	1. Dr.M.Thenmozhi,NWC
2. Dr.Manipoonchelvi, Senior Technical Manager, HCL Technologies	2. Dr.K.Nandhini, Central University of Thiruvarur	2. Ms.K.Srividya, DSBS