Course Code	18CSC303J	Course Name	DATABASE MANAGEMENT SYSTEMS	Course Category	C	Professional Core	L	T	P	C
							3	0	2	4

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Science and Engineering	Data Book / Codes/Standards	Nil		

		Learning			Program Learning Outcomes (PLO)														
Course Learning Rationale (CLR):	*The purpose of learning this course is to:*	1	2	3	1	2	3	4	5	6	7	8	9	100	11	12	13	14	15
		Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
CLR-1 :	*Understand the fundamentals of Database Management Systems, Architecture and Languages*																		
CLR-2 :	*Conceive the database design process through ER Model and Relational Model*																		
CLR-3 :	*Design Logical Database Schema and mapping it to implementation level schema through Database Language*																		
CLR-4 :	*Familiarize queries using Structure Query Language (SQL) and PL/SQL*																		
CLR-5 :	*Familiarize the Improvement of the database design using normalization criteria and optimize queries*																		
CLR-6 :	*Understand the practical problems of concurrency control and gain knowledge about failures and recovery*																		
Course Learning Outcomes (CLO):	*At the end of this course, learners will be able to:*																		
CLO-1 :	*Acquire the knowledge on DBMS Architecture and Languages*	*3*	*80*	*70*	*H*	*M*	*L*	*L*	*-*	*-*	*-*	*-*	*L*	*L*	*L*	*H*	*-*	*-*	*-*
CLO-2 :	*Apply the fundamentals of data models to model an application's data requirements using conceptual modeling tools like ER diagrams*	*3*	*85*	*75*	*H*	*H*	*H*	*H*	*H*	*-*	*-*	*-*	*H*	*H*	*H*	*H*	*-*	*-*	*-*
CLO-3 :	*Apply the method to convert the ER model to a database schemas based on the conceptual relational model*	*3*	*75*	*70*	*H*	*H*	*H*	*H*	*H*	*-*	*-*	*-*	*H*	*H*	*H*	*H*	*-*	*-*	*-*
CLO-4 :	*Apply the knowledge to create, store and retrieve data using Structure Query Language (SQL) and PL/SQL*	*3*	*85*	*80*	*H*	*H*	*H*	*H*	*H*	*-*	*-*	*-*	*H*	*H*	*H*	*H*	*-*	*-*	*-*
CLO-5 :	*Apply the knowledge to improve database design using various normalization criteria and optimize queries*	*3*	*85*	*75*	*H*	*H*	*L*	*M*	*L*	*-*	*-*	*-*	*M*	*M*	*M*	*L*	*-*	*-*	*-*
CLO-6 :	*Appreciate the fundamental concepts of transaction processing- concurrency control techniques and recovery procedures.*	*3*	*85*	*75*	*H*	*L*	*L*	*L*	*L*	*-*	*-*	*-*	*H*	*L*	*L*	*L*			

Duration (hour)		15	15	15	15	15
S-1	SLO-1	*What is Database Management System*	*Database Design*	*Basics of SQL-DDL,DML,DCL,TCL*	*Relational Algebra – Fundamental Operators and syntax, relational algebra queries, Tuple relational calculus*	*Transaction concepts, properties of transactions,*
	SLO-2	*Advantage of DBMS over File Processing System*	*Design process*	*Structure Creation, alternation*		
S-2	SLO-1	*Introduction and applications of DBMS*	*Entity Relation Model*	*Defining Constraints-Primary Key, Foreign Key, Unique, not null, check, IN operator*		*Serial izability of transactions,*
	SLO-2	*Purpose of database system*				*testing for serial inability, System recovery,*
S-3	SLO-1	*Views of data*	*ER diagram*	*Functions-aggregation functions*	*Pitfalls in Relational database, Decomposing bad schema*	*Concurrency Control*
	SLO-2			*Built-in Functions-numeric, date, string functions, string functions, Set operations,*	*Functional Dependency – definition, trivial and non-trivial FD*	
S 4-5	SLO-1	*Lab 1: SQL Data Definition Language Commands on sample exercise*	*Lab4 Inbuilt functions in SQL on sample Exercise.*	*Lab 7 : Join Queries on sample exercise.*	*Lab10: PL/SQL Procedures on sample exercise.*	*Lab 13: PL/SQL Exception Handling*
	SLO-2	** The abstract of the project to construct database must be framed*		** Frame and execute the appropriate DDL,DML,DCL,TCL for the project*	** Frame and execute the appropriate Join Queries for the project*	** Frame and execute the appropriate PL/SQL Procedures and Functions for the project*
S-6	SLO-1	*Database system Architecture*	*Keys , Attributes and Constraints*	*Sub Queries, correlated sub queries*	*closure of FD set , closure of attributes*	*Two- Phase Commit protocol, Recovery and Atomicity*
	SLO-2				*irreducible set of FD*	
S-7	SLO-1	*Data Independence*	*Mapping Cardinality*	*Nested Queries, Views and its Types*	*Normalization – 1Nf, 2NF, 3NF,*	*Log-based recovery*
	SLO-2					
S-8	SLO-1	*The evolution of Data Models*	*Extended ER - Generalization,*	*Transaction Control Commands*	*Decomposition using FD- dependency*	*concurrent executions of transactions and*
	SLO-2		*Specialization and Aggregation*	*Commit, Rollback, Save point*	*preservation,*	*related problems*
S 9-10	SLO-1	*Lab 2: SQL Data Manipulation*	*Lab 5: Construct a ER Model for the*	*Lab 8: Set Operators & Views.*	*Lab 11: PL/SQL Functions*	*Lab 14: PL/SQL Trigger*

	SLO-2	*Language Commands * Identification of project Modules and functionality*	*application to be constructed to a Database*	** Frame and execute the appropriate In- Built functions for the project*	** Frame and execute the appropriate Set Operators & Views for the project*	** Frame and execute the appropriate PL/SQL Cursors and Exceptional Handling for the project*
S-11	SLO-1	*Degrees of Data Abstraction*	*ER Diagram Issues*	*PL/SQL Concepts- Cursors*	*BCNF*	*Locking mechanism, solution to concurrency related problems*
	SLO-2		*Weak Entity*			
S-12	SLO-1	*Database Users and DBA*	*Relational Model*	*Stored Procedure, Functions Triggers and Exceptional Handling*	*Multi- valued dependency,*	*Deadlock*
	SLO-2				*4NF*	
S-13	SLO-1	*Database Languages*	*Conversion of ER to Relational Table*	*Query Processing*	*Join dependency and 5NF*	*two-phase locking protocol, Isolation, Intent locking*
	SLO-2					
S 14-15	SLO-1	*Lab 3: SQL Data Control Language Commands and Transaction control commands to the sample exercises*	*Lab 6: Nested Queries on sample exercise*	*Lab9: PL/SQL Conditional and Iterative Statements*	*Lab 12: PL/SQL Cursors*	*Lab 15 : * Frame and execute the appropriate PL/SQL Cursors and Exceptional Handling for the project*
	SLO-2	** Identify the issues that can arise in a business perspective for the application*	** Construction of Relational Table from the ER Diagram*	** Frame and execute the appropriate Nested Queries for the project*	** Frame and execute the appropriate PL/SQL Conditional and Iterative Statements for the project*	** Demo of the project*

Learning Resources	1. *Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Database System Conceptsll, Sixth Edition, Tata McGraw Hill,2011.* 2. *Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systemsll, Sixth Edition, Pearson Education,2011.* 3. *CJ Date,A Kannan,S Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education,2006.* 4. *Rajesh Narang, Database Management Systems, 2nd ed., PHI Learning Private Limited,2011.*	4. *Martin Gruber, Understanding SQL, Sybex,1990* 5. *Sharad Maheshwari,Introduction to SQLandPL/SQL,2ed.,LaxmiPublications,2016.* 6. *RaghuramaKrishnan,Johannes Gehrke,Database Management Systems,3rdEdition,McGrawHill Education,2003.*

Learning Assessment											
	Bloom's Level of Thinking	Continuous Learning Assessment (50%weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (15%)		CLA – 3 (15%)		CLA – 4 (10%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	*20%*	*20%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
	Understand										
Level 2	Apply	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*
	Analyze										
Level 3	Evaluate	*10%*	*10%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
	Create										
	Total	100 %		100 %		100 %		100 %		-	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, Conf. Paper etc.,

Course Designers		
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