

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

Course Learning Rationale (CLR):		The purpose of learning this course is to:			Learning		
CLR-1 :	Understand the fundamentals of Database Management Systems, Architecture and Languages				1	2	3
CLR-2 :	Conceive the database design process through ER Model and Relational Model				Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLR-3 :	Design Logical Database Schema and mapping it to implementation level schema through Database Language Features						
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
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
CLO-3 :	Apply the method to convert the ER model to a database schemas based on the conceptual relational model				3	75	70
CLO-4 :	Apply the knowledge to create, store and retrieve data using Structure Query Language (SQL) and PL/SQL				3	85	80
CLO-5 :	Apply the knowledge to improve database design using various normalization criteria and optimize queries				3	85	75
CLO-6 :	Appreciate the fundamental concepts of transaction processing- concurrency control techniques and recovery procedures.				3	85	75

Program Learning Outcomes (PLO)														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt & Finance	Lifelong Learning	PSO-1	PSO-2	PSO-3
H	M	L	L	L	-	-	-	L	H	H	H	-	-	-
H	H	H	H	H	-	-	-	H	H	H	H	-	-	-
H	H	H	H	H	-	-	-	H	H	H	H	-	-	-
H	H	L	M	L	-	-	-	M	M	M	L	-	-	-
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		serializability of transactions,
	SLO-2	Purpose of database system				testing for serializability, 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,		
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		
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, Savepoint	preservation,	related problems
S 9-10	SLO-1	Lab 2: SQL Data Manipulation Language Commands	Lab 5: Construct a ER Model for the application to be constructed to a Database	Lab 8: Set Operators & Views. * Frame and execute the appropriate In-Built functions for the project	Lab 11: PL/SQL Functions * Frame and execute the appropriate Set Operators & Views for the project	Lab 14: PL/SQL Trigger * Frame and execute the appropriate PL/SQL Cursors and Exceptional Handling for the project
	SLO-2	* Identification of project Modules and functionality				
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 * Frame and execute the appropriate PL/SQL Conditional and Iterative Statements for the project	Lab 15 : * Frame and execute the appropriate PL/SQL Cursors and Exceptional Handling for the project * Demo of 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		

Learning Resources	1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Database System ConceptsII, Sixth Edition, Tata McGraw Hill,2011.	4. Martin Gruber, Understanding SQL, Sybex,1990 5. SharadMaheshwari,IntroductiontoSQLandPL/SQL,2 ^d ed.,LaxmiPublications,2016. 6. RaghuramaKrishnan,JohannesGehrke,DatabaseManagementSystems,3rdEdition,McGrawHill Education,2003.
	2. Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database SystemsII, 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, 2 nd ed., PHI Learning Private Limited,2011.	

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 Understand	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
Level 2	Apply Analyze	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Level 3	Evaluate Create	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	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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