Course Code	18CSC209J	Course Name	DATABASE MANAGEMENT SYSTEMS AND CLOUD INTEGRATION SERVICES	Course Category	C	Professional Core	L	T	P	C
							3	0	2	4

Pre-requisiteCourses	Nil	Co-requisiteCourses	Nil	ProgressiveCourses	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 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 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 basic concepts of Cloud based Databases

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Learning			Program Learning Outcomes (PLO)													
		1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		LevelofThinking (Bloom	ExpectedProficiency (%)	ExpectedAttainment(%)	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
CLO-1 :	Acquire the knowledge on DBMS Architecture and Languages	3	80	70	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-2 :	Apply the fundamentals of data models to model an application's data requirements using conceptual modeling tools likeER diagrams	3	85	75	H	H	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO-3 :	Apply the method to convert the ER model to a database schema based on the conceptual relational model	3	75	70	H	M	-	-	-	--	-	-	-	-	-	-	-	-	-
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	M	-	-	-	-	-	-	-	-	-	-	-
CLO-5 :	Apply the knowledge to improve database design using various normalization criteria and optimize queries	3	85	75	H	M	H	M	H	-	-	-	M	-	-	H	-	-	-
CLO-6 :	Appreciate the fundamental concepts of DynamoDB	3	85	75	H	M	H	H	H	-	-	-	H	-	-	H	-	-	-

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	Introduction to cloud-based Databases
	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		Cloud Databases on AWS
	SLO-2	Purpose of database system				Introduction to DynamoDB
S-3	SLO-1	Views of data	ER diagram	Functions-aggregation functions	Pitfalls in Relational database, Decomposing bad schema	How DynamoDB works?
	SLO-2			Built-in Functions-numeric, date, string functions, string functions, Set operations,	Functional Dependency – definition, trivial and non-trivial FD	Service Oriented Architecture-Design Features
S 4-5	SLO-1	Lab 1: SQL Data Definition Language Commands on sample exercise	Lab4 :Inbuilt functions in SQL on sampleexercise.	Lab 7 :Join Queries on sample exercise.	Lab10: PL/SQL Procedures on sample exercise.	Lab:13Creating and querying DynamoDB Table
S 4-5	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	Architecture-Functional Components
S-6	SLO-1	Database system Architecture	Keys , Attributes and Constraints	Sub Queries, correlated sub queries	closure of FD set , closure of attributes	Data Types-Multi Valued Datatypes
	SLO-2				irreducible set of FD	
S-7	SLO-1	Data Independence	Mapping Cardinality	Nested Queries, Views and its Types	Normalization – 1Nf, 2NF, 3NF,	Data Model
	SLO-2					
S-8	SLO-1	The evolution of Data Models	Extended ER - Generalization,	Transaction Control Commands	Decomposition using FD- dependency	Dynamo DB Features
	SLO-2		Specialization and Aggregation	Commit, Rollback, Savepoint	preservation,	Key Indexes-Primary-Secondary

S 9-10	**SLO-1** **SLO-2**	*Lab 2: SQL Data Manipulation Language Commands* ** Identification of project Modules and functionality*	*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 Example for Scan Operation in DynamoDB*
S-11	**SLO-1** **SLO-2**	*Degrees of Data Abstraction*	*ER Diagram Issues* *Weak Entity*	*PL/SQL Concepts- Cursors*	*BCNF*	*Working with Tables*
S-12	**SLO-1** **SLO-2**	*Database Users and DBA*	*Relational Model*	*Stored Procedure, Functions Triggers and Exceptional Handling*	*Multi- valued dependency,* *4NF*	*Working with Query and Scan operations*
S-13	**SLO-1** **SLO-2**	*Database Languages*	*Conversion of ER to Relational Table*	*Query Processing*	*Join dependency and 5NF*	*DynamoDB-Error Handling*
S 14-15	**SLO-1** **SLO-2**	*Lab 3: SQL Data Control Language Commands and Transaction control commands to the sample exercises* ** Identify the issues that can arise in a business perspective for the application*	*Lab 6: Nested Queries on sample exercise* ** Construction of Relational Table from the ER Diagram*	*Lab9: PL/SQL Conditional and Iterative Statements* ** Frame and execute the appropriate Nested Queries for the project*	*Lab 12: PL/SQL Cursors* ** Frame and execute the appropriate PL/SQL Conditional and Iterative Statements for the project*	*Lab 15: * Simple DynamoDB API*

Learning Resources

1. *Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Database System Concepts‖, Sixth Edition, Tata McGraw Hill,2011.*
2. *Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems‖, Sixth Edition,*
3. *Pearson Education,2011.*
4. *CJ Date,A Kannan,S Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education,2006.*
5. *Rajesh Narang, Database Management Systems, 2nd ed., PHI Learning Private Limited,2011.*
6. *Martin Gruber, Understanding SQL, Sybex,1990*
7. *SharadMaheshwari,IntroductiontoSQLandPL/SQL,2ded.,LaxmiPublications,2016.*
8. *RaghuramaKrishnan,JohannesGehrke,DatabaseManagementSystems,3rdEdition,McGrawHill Education,2003.*
9. *Mastering DynamoDB By Tanmay Deshpande · 2014*

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 %		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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