

Course Code	21CSC205P	Course Name	DATABASE MANAGEMENT SYSTEMS	Course Category	C	PROFESSIONAL CORE	L	T	P	C
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Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	School of Computing	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 Outcomes (CO):		At the end of this course, learners will be able to:											
CO-1:	acquire knowledge on DBMS architecture and languages												
CO-2:	acquire knowledge on Relational languages and design a database												
CO-3:	implement the Database structure with SQL												
CO-4:	removal of anomalies using Normalization concepts												
CO-5:	visualizing storage structure, handling concurrency, Failure and recovery principles, NoSQL concept												

<b>Unit-1 - Introduction</b>	<b>12 Hour</b>
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	
<b>Unit-2 - Relational DBMS</b>	<b>12 Hour</b>
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.	
<b>Unit-3 - SQL</b>	<b>12 Hour</b>
SQL commands, Constraints, Joins, set operations, Sub queries, Views, PL – SQL, Triggers, and Cursors. Case Study: Implement all the queries using SQL, PL-SQL, Cursor and Triggers	
<b>Unit-4 - Normalization</b>	<b>12 Hour</b>
Normalization, Need for Normalization, NF1, NF2, NF3, NF4, NF5. Case study: Apply Conversion rules and normalize the Database	
<b>Unit-5 – Concurrency Control</b>	<b>12 Hour</b>
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 Databases-Documents Oriented, Key value pairs, Column Oriented and Graph	

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

Learning Assessment									
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)						Final Examination (0% weightage)	
		Formative CLA-1 Average of unit test (20%)		Project Based Learning CLA-2 (60%)		Report and Viva Voce (20% 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%		-	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
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, SRMIST
2. Dr.Manipoonchelvi, Senior Technical Manager, HCL Technologies	2. Dr.K.Nandhini, Central University of Thiruvallur	2. Ms.K.Srividya, SRMIST