Course Code	PCA20C03J	Course Name	DATABASE TECHNOLOGY	Course Category	C	Professional Core Course	L	T	P	C
							3	0	2	4

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

Course Learning Rationale (CLR):	The purpose of learning this course is to,	Learning		
CLR-1 :	To understand the basic concepts and terminology related to DBMS and Relational Database Design	1	2	3
CLR-2 :	To the design and implement Relational Algebra			
CLR-3 :	To understand advanced DBMS techniques to construct tables and write effective queries, forms, and reports			
CLR-4 :	To understand advanced Database Application Development			
CLR-5 :	To understand Internet Applications & Database Tuning			
CLR-6 :	To understand Database Administration & Database Recovery			

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Acquire the knowledge of providing a reliable, consistent, secure, and available corporate-wide data	2	85	80
CLO-2 :	Acquire the capabilities of distinguish database administration and data administration	3	85	80
CLO-3 :	Acquire the skills of several database operation and maintenance issues	3	85	80
CLO-4 :	Obtain the knowledge of enabling the learner to become a Data Base technology Expert	3	85	80
CLO-5 :	Exposure for students to write complex queries including full outer joins, self-join, sub queries, and set theoretic queries	3	85	80
CLO-6 :	Know-how of the file organization, Query Optimization, Transaction management, and database administration techniques	3	85	80

Program Learning Outcomes (PLO)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Disciplinary Knowledge	Critical Thinking	Problem Solving	Analytical Reasoning	Research Skills	Team Work	Scientific Reasoning	Reflective Thinking	Self-Directed Learning	Multicultural Competence	Ethical Reasoning	Community Engagement	ICT Skills	Leadership Skills	Life Long Learning
CLO-1 :	L	H	H	H	-	H	H	L	H	L	H	M	H	H	H
CLO-2 :	M	H	H	L	L	H	M	L	L	L	-	L	H	L	H
CLO-3 :	M	L	H	L	M	H	H	M	M	L	L	H	L	L	H
CLO-4 :	M	M	H	M	M	H	H	M	M	L	L	M	-	M	H
CLO-5 :	H	M	H	M	M	H	H	L	L	L	M	M	-	H	L
CLO-6 :	L	H	H	H	-	M	H	H	H	L	H	L	M	H	H

Duration (hour)		15	15	15	15	15
S-1	SLO-1	Introduction to Database systems –Overview- File systems Vs DBMS- Advantages of DBMS	Selection And Projection	Accessing Databases From Applications	XML Documents	Oracle Server Architecture
	SLO-2	Database Design And ER Diagrams -Entities, Attributes, And Entity Sets	Set Operations	Embedded SQL	Introduction to XML	Connect Users to Servers

S-2	SLO-1	Describing and storing data in a DBMS-	Renaming	Declaring Variables and Exceptions	XML DTDs	Processing queries, changes and commits
	SLO-2	Relationships And Relationship Sets	Joins	Embedding SQL Statements	Domain-Specific DTDs	Oracle Universal Installer
S-3	SLO-1	Key Constraints -Participation Constraints, Weak Entities	Condition Joins	Cursors- Basic Cursor Definition and Usage	The Three-Tier Application Architecture	Setting up OS and Password File Authentication
	SLO-2	Aggregation- Case Study: The Internet Shop- Introduction To The Relational Model-	Equijoin- Natural Join- Division	Properties of Cursors- Dynamic SQL	Single-Tier and Client-Server Architectures-	Starting and Shutting an Instance
S-4 to S-5	**SLO-1**	**Lab 1:Case study submission for ER Diagrams**	**Lab 4: Execution of join operations**	**Lab 7: Sample programs for cursors**	**Lab 10:Create an XML document for employee information**	**Lab 13: Case study submission for database administration**
	SLO-2					
S-6	SLO-1	Creating And Modifying Relations Using SQL	The Form of A Basic SQL Query	An Introduction To JDBC	Advantages of the Three-Tier Architecture	Logical Structure of the Database
S-7	SLO-1	Example: create the Students relation	Examples of Basic SQL Queries	Architecture	Normal Forms	Managing Database Use- Creating Database Users
	SLO-2	Integrity Constraints Over Relations-	Nested Queries	JDBC Classes And Interfaces	Third Normal Form	Altering and Monitoring Existing Users
S-8	SLO-1	Key Constraints- Foreign Key Constraints	Triggers And Active Databases	JDBC Driver Management	Properties of Decompositions	Backup Considerations
	SLO-2	Specifying Foreign Key Constraints in SQL	Triggers And Active Databases- Examples of Triggers in SQL	Connections	Lossless-Join Decomposition- Dependency	Recovery Considerations
S-9to S-10	**SLO-1**	**Lab 2: SQL queries for students database**	**Lab 5: Practice of triggers-SQL Trigger | Student Database**	**Lab 8: Case study for JDBC**	**Lab 11: Simple program for joins**	**Lab 14: Case study submission for recovery**
	SLO-2					
S-11	SLO-1	General Constraints	Constraints versus Triggers	SQLJ	Preserving Decomposition	Components for Backup and Recovery
	SLO-2	Example table	Constraints versus Triggers	Executing SQL Statements	Normalization	Types of Failures
S-12	SLO-1	Simple examples Querying Relational Data	Other Uses of Triggers	Writing SQLJ Code	Decomposition into BCNF	Performing Offline backups
	SLO-2					
S-13	SLO-1	Querying Relational Data	Other Uses of Triggers	SQLJ example	Decomposition into 3NF	Performing Online Backups
	SLO-2					
S-14 to S-15	**SLO-3**	**Lab 3: SQL queries for employee database**	**Lab 6: Practice of triggers-SQL Trigger | Employee Database**	**Lab 9: Creating a Student database**	**Lab 12 :Study of normalization techniques**	**Lab 15:Case study submission for database backups**

Learning Resources	1. R. Ramakrishnan, J. Gehrke, Database Management Systems, McGraw Hill, 2004 2. A. Silberschatz, H. Korth, S. Sudarshan, Database system concepts, 5/e, McGraw Hill, 2008. 3. Kevin Loney (Fifth RePrint-2007), Oracle Database 10G: The Complete Reference, McGraw Hill, New Delhi.

Learning Assessment

Level	Bloom's Level of Thinking	Continuous Learning Assessment (50% weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4 (10%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	20%	20%
	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%	10%	10%
	Create										
	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, MOOCs, Certifications, Conf. Paper etc.,

Course Designers

Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
Mr.G.Muruganandam, Group Project Manager, HCL Technologies, Chennai	*Dr.S.Gopinathan, Professor, University of Madras, Chennai*	*1. Mr.N.KRISHNAMOORTHY, SRMIST*
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