

Course Code	MCAO20103	Course Name	DATABASE TECHNOLOGY	Course Category	C	Professional Core Course	Theory	Virtual Lab	Purely Internal	C
							✓	✓		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			Program Learning Outcomes (PLO)																			
CLR-1 :	To understand the basic concepts and terminology related to DBMS and Relational Database Design	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
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:																								
CLO-1 :	Acquire the knowledge of providing a reliable, consistent, secure, and available corporate-wide data	2	85	80	L	H	H	H	-	H	H	L	H	L	H	M	H	H	H					
CLO-2 :	Acquire the capabilities of distinguish database administration and data administration	3	85	80	M	H	H	L	L	H	M	L	L	L	-	L	H	L	H					
CLO-3 :	Acquire the skills of several database operation and maintenance issues	3	85	80	M	L	H	L	M	H	H	M	M	L	L	H	L	L	H					
CLO-4 :	Obtain the knowledge of enabling the learner to become a Data Base technology Expert	3	85	80	M	M	H	M	M	H	H	M	M	L	L	M	-	M	H					
CLO-5 :	Exposure for students to write complex queries including full outer joins, self-join, sub queries, and set theoretic queries	3	85	80	H	M	H	M	M	H	H	L	L	L	M	M	-	H	L					
CLO-6 :	Know-how of the file organization, Query Optimization, Transaction management, and database administration techniques	3	85	80	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-4to 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.
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Course Designers		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
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