



**Relational Database
Relational Database
[CORE COURSE]**

Semester: II	Credits: 3	Subject Code: BC22004	Lectures: 48
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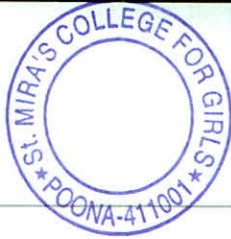
Course Outcomes:

At the end of this course the learner will be able to,

- Gain knowledge about PL/SQL scripts.
- Recognize relational database management concepts.
- Apply their mind to various concurrency control techniques.
- Analyze their mind in recovering the data from database.

Unit 1: Introduction to RDBMS and PL/SQL	14
<ul style="list-style-type: none">• Introduction to RDBMS• Difference Between DBMS and RDBMS• Relationship among application programs and RDBMS• Overview of PL/SQL• Data types: %type, %rowtype, numeric, character, date• Operators and Control Statements• Exception Handling: Predefined, User-defined• Functions, Procedures• Cursor: Definition, types (Implicit, Explicit, Parameterized)• Trigger• Package	
Unit 2: Transaction Management	6
<ul style="list-style-type: none">• Transaction Concept• Transaction Properties• Transaction States• Concurrent Execution• Serializability: Types: Conflict and View Serializability• Recoverability• Recoverable Schedule• Cascadeless Schedule	
Unit 3: Concurrency Control	12
<ul style="list-style-type: none">• Lock Based Protocol : Locks, Granting of Locks, Two Phase locking Protocol• Timestamp Based Protocol : Timestamp, Timestamp Ordering Protocol ,	

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Thoma's Write Rule	
<ul style="list-style-type: none">• Graph based protocol• Validation Based Protocol• Deadlock Handling:<ul style="list-style-type: none">○ Deadlock Prevention○ Deadlock Detection○ Deadlock Recovery	

Unit 4: Recovery System	8
<ul style="list-style-type: none">• Failure Classification : Transaction Failure, System Crash, Disk Failure• Storage Structures: Storage Types, Data Access• Recovery and Atomicity<ul style="list-style-type: none">○ Log based Recovery○ Deferred Database Modification○ Immediate Database Modification○ Checkpoints• Recovery with Concurrent Transaction :Transaction Rollback, Restart Recovery• Remote Backup System	

Unit 5: Database Security and Authorization	8
<ul style="list-style-type: none">• Introduction to Database Security and Issues : Types of Security, Database Security and the DBA, Access Protection, User accounts and Database Audit• Discretionary Access Control Based on Granting and Revoking Privileges: Types of Discretionary Privileges, Specifying Privileges using views, Revoking Privileges, Propagation of Privileges using GRANT option, Specifying limits on Propagation of Privileges• Mandatory Access Control and Role-Based Access Control for Multilevel security: Comparing Discretionary Access Control and Mandatory Access Control, Role-Based Access Control, Access Control Policies for E-commerce and the Web	

#12 hours for Library work, assignments, practical or field work

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Recommended Text Books:

- Henry korth, A Silberschatz, *Database System Concepts*, Tata McGraw-Hill publication fifth edition 2006.
- Ivan Bayross, *SQL, PL/SQL The Programming Language*, BPB Publication.

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- Ivan Bayross, *SQL, PL/SQL The Programming Language*, BPB Publication
- RamezElmasri, ShamkantNavathe, *Fundamentals of Database system*, 5th edition; 2008

Websites:

- www.w3cschools.com

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Head of the Department	Ms Smita Borkar		
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Industry Expert	Mr Sumit Palsingh:		
One Alumni***	Ms. Vidhi Thakkar		

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