COURSE FILE

RELATIONAL DATABASE MANAGEMENT SYSTEM

(COM-402) CSE- 4th SEMESTER

ACADEMIC YEAR (2025-26)

Ms. Parul Sharma

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-402	Relational Database Management System (RDBMS)	PCC	4	3	1	0	50	100	150
Faculty Details	parul.cse@mietjammu.in								

Section-A

Unit 1: Basic Concepts: Introduction, characteristics, history and applications, Components of DBMS, Advantages and Disadvantages of DBMS. Language and Architecture: Data Modeling, Records and Files, Abstraction and data Integration, Views, Data Independence, Data Associations, Data Models Classification.

(8 Hrs)

Unit 2: Entity Relationship Model: Basic concepts, constraints, design issues, Entity Relationship diagram, Weak Entity sets, Extended ER features, Design of ER database schema, Reduction of ER schema to tables. Relational Model: Attributes and domains, Tuples, Relations and Schemas, Relation representation, keys, Integrity Rules, Relational algebra, Relational Calculus, Data Manipulation using SQL.

(12 Hrs)

Unit 3: Relational Database Design: Normalization using Functional Dependency, Normalization using Join dependencies, Domain key normal form.

(8 Hrs)

Section-B

Unit 4: Transactions: Introduction to transaction and system concept, transaction state, desirable properties of transactions (ACID properties), Concurrent executions, Serializability, Recoverability, implementation of isolation, transaction definition in SQL. Concurrency Control: Lock based protocols, Timestamp-based protocols, Validation based protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling, Insert and Delete operations.

(12 Hrs)

Unit 5: Recovery Systems: Failure classification, Storage Structure, Recovery and Atomicity, Log based recovery, Shadow Paging, Recovery with Concurrent Transitions, Buffer Management.

(8 Hrs)

Text Books

S.No.	Name of the Books	Author	Publisher Name	Edition (Pub. yr.)
1	Database System Concepts Edition (Pub. Yr.)	Korth, Silberchatz	McGraw-Hill Education	6th (2013)

Reference Books

S.No.	Name of the Books	Author	Publisher Name	Edition (Pub. Yr.)
1	Fundamentals of Database System	Elmasri Rame, Navathe Shamkant	Pearson Education	7th (2015)

COURSE PLAN		
Unit-I Basic Concepts		
S.No	**Topics**	**Recommended Books**
1	Characteristic, History and applications, Components of DBMS	Book 1, Ch.1
2	Advantages and Disadvantages of DBMS	Book 2, Ch.1
3	Data Modeling, Record and Files	Book 2, Ch.2
4	Data Independence, Components of RDBMS	Book 2, Ch.2
5	Data Abstraction,Integrations and Data Models Classifications	Book 2, Ch.2
Unit-II Entity Relationship Model		
6	Basic ER concepts, constraints, design issues	Book 1, Ch.7
7	Entity Relationship diagram	Book 1, Ch.7
8	Relational, Hierarchical, Network Model	Book 2, Ch.3
9	Weak Entity sets, Extended ER feature	Book 2, Ch.3
10	Reduction of ER schema to table	Book 1, Ch.7
11	Keys, Integrity Rules	Book 2, Ch.3
12	Relational algebra, Relational Calculus	Book 2, Ch.8
13	Data Manipulation using SQL	Book 1, Ch.7
Unit- III Relational Model		
14	Normalization using Functional Dependency	Book 1, Ch.8
15	Normalization using Join dependencies	Book 1, Ch.8
16	Domain key normal form	Book 2, Ch.14
Unit-IV Transactions		
17	Transaction state, desirable properties of transactions (ACID properties)	Book 2, Ch.20
18	Serializability	Book 1, Ch.14
19	Recoverability	Book 2, Ch.20
20	Concurrency Control Protocols	Book 1, Ch.15
21	Multiple Granularity, Multiversion Schema	Book 1, Ch.15
22	Deadlock Handling, Insert and Delete operations	Book 2, Ch.21
Unit-V Recovery Systems		
23	Failure classification, Storage Structure	Book 1, Ch.16
24	Log based recovery, Shadow Paging, Recovery with Concurrent Transition	Book 2, Ch.22
25	Buffer Management	Book 1, Ch.16

ADDITIONAL WEB RESOURCES

1.	**MOOC:** Introduction to Relational Databases(RDBMS) https://www.coursera.org/programs/b-e-faculty-learning-path-julcd/learn/introduction-to-relational-databases?source=search
2.	**NPTEL:** Video lectures on Database Management System Lecture series by Prof. Partha Pratim Das, Department of Computer Science and Engineering, IIT Kharagpur https://archive.nptel.ac.in/courses/106/105/106105175/

GRADING AND ASSESSMENT

- **Sessional Test**: 20 marks
- **Assignment**: 20 marks
- **Attendance**: 10 marks
- **Final Examination**: 100 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (1:45 PM - 2:35 PM)
  Thursday (11:15 AM - 12:05 PM)

- **Contact Information**
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