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| **Course Code** | CSE202 |
| **Course Name** | Fiundamentals of Database Management System |
| **Credits** | 4 |
| **Course Offered to** | UG |
| **Course Description** | A course on fundamentals of database systems. Database Management Systems (DBMS) are an integral component of modern computing environment and applications. This is a first course in databases at the undergraduate level covering fundamentals concepts, aspects of database design, database languages and database system implementation. Students are taught concepts and algorithms in a general setting that is not tied to one particular database system.<br>The course emphasizes both theory and application of database systems. Topics covered in the course are: introduction to the relational model, introduction to SQL, intermediate and advanced SQL, database design using entity relationship approach, data storage and querying, indexing and hashing and transaction management. |

**Pre-requisites**

| Pre-requisite (Mandatory) | Pre-requisite (Desirable) | Pre-requisite(other) |
|---|---|---|
| CSE102 Data Structures & Algorithms | | Working knowledge of Programming in C,C++ or Java and experience with Unix |

*Please insert more rows if required

**Post Conditions*(For suggestions on verbs please refer the second sheet)**

| CO1 | CO2 | CO3 | CO4 | CO5 |
|---|---|---|---|---|
| Ability to design and develop an efficient solution for an application using RDBMS concepts | Ability to write intermediate and advanced SQL queries | Understanding of internal working of a DBMS including indexing, transaction processing, concurrency control and recovery | | |

**Weekly Lecture Plan**

| Week Number | Lecture Topic | COs Met | Assignment/Labs/Tutorial |
|---|---|---|---|
| 1 | Introduction to Database and Relational Model (1.5) | CO3 | Reading Material for Hierarchical and Network Database Syster |
| 2 | Design Theory of Relational Databases (2 weeks): Normal Forms | CO1 | Written Assignment on Normal Forms |
| 4 | Database Design: ER Model (1.5 week) | CO1 | Written Assignment on ER modelling |
| 6 | Database Language(SQL) (2 weeks) | CO1, CO2 | Written assignment on SQL Queries |
| 8 | Constraints and Triggers (1 week) | CO1 | |
| 10 | Indexing and Hashing (2 weeks) | CO3, CO1 | Written assignment on Hashing and Indexing |
| 11 | Query Processing (1 week) | CO3, CO1 | |
| 13 | Transaction Management (2 weeks) | CO3 | Written Assignment on Concurrency and Recovery Protocols |
| 14 | Review of Topics | CO1, CO3 | |
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| | | | |

*Please insert more rows if required

**Weekly Lab Plan**

| Week Number | Laboratory Exercise | COs Met | Platform (Hardware/Software) |
|---|---|---|---|
| 4,5,6,7 | Create a database given a schema & design and run a set of queries | CO2 | Postgres/MySQL |
| 9,10,11,12,13 | Project (Design a database schema, normalize schema, implement schema, write sql queries, design and implement application interface) | CO1, CO2 | Postgres/MySQL/Java |
| | | | |

*Please insert more rows if required

**Assessment Plan**

| Type of Evaluation | % Contribution in Grade |
|---|---|
| Mid-sem | 25 |
| End-sem | 25 |
| Quiz | 10 |
| Homework | 10 |
| Laboratory and Project | 30 |

*Please insert more row for other type of Evaluation

**Resource Material**

| Type | Title |
|---|---|
| Textbook | Database Systems: The Complete Book- Hector Garcia Molina, Jeffery D Ullman, Jennifer Widom |
| Textbook | Database System Concepts: Abraham Silberscatz, Henry F Korth, S. Sudarshan |
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