ITM(SLS) Baroda University - Faculty of Engineering

Department of Computer Science & Engineering

SYLLABUS FOR 3 Semester BTech PROGRAMME

Database Management System (C2310C4)

Type of Course: BTech

Prerequisite:

Rationale: -

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lecture Hrs/ Week	Tutorial Hrs/ Week	Practical Hrs/ Week		T	P	T	CE	P	
3	-	4	5	100	-	60	-	50	210

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Database system architecture**: Introduction to DBMS- Historical perspective, File Versus a DBMS, Advantages of DBMS, Describing and storing data in DBMS, Architecture of a DBMS Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML).	10%	5
2	**Data models**: Entity-relationship model, Features of ER Model, network model, relational and object oriented data models, integrity constraints, data manipulation operations.	15%	6
3	**Relational query languages**: Relational algebra, Tuple and domain relational calculus and SQL – Queries, Constraints, Form of SQL Query , UNION, INERSECT and EXCEPT, Nested Queries, Aggregate Operators, Null values, Complex Integrity constraints in SQL, triggers and Embedded SQL	10%	4
4	**Relational database design**: Domain and data dependency, Armstrong's axioms, Normal forms-1NF, 2NF, 3NF and BCN. Dependency preservation, Lossless design.	15%	5
5	**Query Processing & Query Optimization**: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.	10%	6

6	**Transaction processing**: Concurrency control, ACID property, Serializability of scheduling, Locking and time stamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery. Security and Authorization- Access control, Direct access control and Mandatory access control, Role of DBA, Application development.	15%	6
7	**PL/SQL Concepts**: Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, aggregate functions, Built-in functions –numeric, date, string functions, Set operations, sub-queries, correlated sub-queries, join, Exist, Any, All , view and its types., transaction control commands. PL/SQL Concepts : Cursors, Stored Procedures, Stored Function, Database Triggers	25%	13
8	**-**:	%	
9	**--**:	%	

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. An introduction to Database Systems
   By C J Date | Pearson
2. Database System Concepts
   By Abraham Silberschatz, Henry F. Korth, S. Sudarshan | McGraw-Hill
3. SQL- PL/SQL
   By Ivan bayross

List of Practical:

1. To study DDL-create and DML-insert commands.
2. Create the below-given table below and insert the data accordingly. Perform the following queries.
3. To perform various data manipulation commands, aggregate functions and sorting concept on all created tables.
4. To study Single-row functions.
5. Displaying data from Multiple Tables (join)
6. To apply the concept of Aggregating Data using Group functions.
7. To solve queries using the concept of sub query.
8. Manipulating Data
9. To apply the concept of security and privileges.
10. To study transaction control commands.
11. Write cursors and triggers.

List of Tutorial:

1. ONLINE RETAIL APPLICATION DATABASE PROJECT
2. COLLEGE DATABASE
3. HOSPITAL MANAGEMENT SYSTEM
4. LIBRARY MANAGEMENT SYSTEM

5. RESTAURANT MANAGEMENT