C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: Computer Science
DEPARTMENT OF: Bachelor of Computer Application
SEMESTER : II
CODE:4CS02BOR1
NAME: Database Systems with ORACLE

Teaching and Evaluation Scheme

Sr. No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester							
								Theory				Practical			Total Marks
								Sessional Exam		University Exam		Internal		Uni.	
			Th	Tu	Pr	Total		Mark	Hrs	Mark	Hrs	Pr	TW	Pr	
3	4CS02BOR1	Database Systems with ORACLE	4	-	-	4	4	30	1.5	70	3	-	-	-	100

Objectives:

The aim of this subject is to make student how to use these concepts in database applications. The students would be able to decide where and how to store and retrieve the information effectively using advanced concept of database, recognize the elements of Database for real life applications and familiar with the advanced database concepts such as distributed database, business intelligence and data warehouse.

Prerequisites:

Elementary knowledge about computers, computer programming & utilization, knowledge about data structures and algorithms, corresponding to the basic course on data structures and algorithms.

Course outline:

Ch. No	Chapter Name	Course Contents	Lect. Hours
1	Introduction to Database Concepts	**1.1** Introductionof Database System **1.2** Basic Concept and Definition – Data, Information, Data Item or Fields, Records, Database **1.3** Introduction of RDBMS **1.4** Dr. E. F. Codd Rules **1.5** Normalization	5
2	Introduction to SQL	**2.1** Introduction to SQL **2.2** Data Types **2.3** Data Definition Commands • Creating Table Structures • Different types of SQL Constraints **2.4** Data Manipulation Commands • Adding Table Rows	14

		• Saving Table Changes • Listing Table Rows • Updating Table Rows • Restoring Table Contents • Deleting Table Row **2.5** Select Statement • with WHERE, DISTINCT, ORDER BY, GROUP BY AND HAVING clause • Arithmetic Operators • Logical Operators • Special Operator – IN, NOT IN, ANY, BETWEEN, EXISTS, ALL and LIKE **2.6** Advanced Data Definition Commands • Changing Column's Data Type • Changing Column's Data Characteristics • Adding a new column • Dropping an existing column • Advanced Data Update • Copying Parts of Table • Adding Primary and Foreign Key Designations • Deleting Table from the Database **2.7** Aggregate Functions **2.8** View	
3	Advanced SQL	**3.1** Set Operators • Union • Union All • Intersect • Minus **3.2** Introduction and types of Joins • Natural Join or Equi Join • Outer Join o Right Outer Join o Left Outer Join o Full Outer Join • Self-Join • Cross Join **3.3** Built – in SQL Function • Data and Time • Numeric • String • Conversion **3.4** Sub queries • Single Row Sub queries • Multiple Value Sub queries • Multiple Column Sub queries • Multiple Row Sub queries • Correlated Sub queries **3.5** Sequence	12
4	Business	**4.1** The need for data analysis **4.2** Business Intelligence	12

	Intelligence, Data Warehouse and Data Mining	• Business Intelligence Architecture
		• Decision Support Data
		  ○ Operational Data Vs. Decision Support Data
		  ○ Decision Support Database Requirements
		4.3 The Data Warehouse
		4.4 Online Analytical Processing
		• Multidimensional Data Analysis Techniques
		• Advanced Database Support
		• Easy-To-Use End-User Interface
		• Client / Server Architecture
		4.5 Introduction to Data Mining	

5	Distributed Database Management System (DDBMS)	**5.1** Distributed Database Management System • Evolution of DDBMS • Distributed Processing and Distributed Database • DDBMS Advantages and Disadvantages • Characteristics of DDBMS • Components of DDBMS **5.2** Levels of Data and Process Distribution • Single-Site Processing, Single-Site Data(SPSD) • Multiple-Site Processing, Single-Site Data(MPSD) • Multiple-Site Processing, Multiple-Site Data(MPMD) **5.3** Distributed Database Transparency Features **5.4** Distributed Transparency **5.5** Transaction Transparency • Distributed Requests and Distributed Transaction • Distributed Concurrency Control • Two-Phase Commit Protocol **5.6** Performance Transparency and Query Optimization	12
		TOTAL	**55**

Teaching Methodology:

The course activities include Lectures, Supervised Tutorials, Practical Exercises, Seminar, MCQ Quiz and Programming Test as per teaching scheme. The programs would be prepared during tutorials and would be executed during practical's sessions

Learning Outcomes:

At the end of the course, student will have basic understanding of the Database Development and able to create and analyze database for any applications.

Books Recommended:

1. Database System Concepts (First Edition: 2008) – Peter Rob and Carlos Coronel – Cengage Learning
2. An Introduction to Database Systems – C. J. Date – Addision Wesley
3. Database System Concepts - Abraham Silberschatz, Henry F. Korth& S. Sudershan – McGraw Hill
4. Database Systems Concepts, Design and Application 2/e – S. K. Singh – Pearson
5. Understanding SQL – Marting Gruber – BPB

Reference Books:

1. Introduction to Database Management Systems – ISRD Group – Tata McGraw-Hill
2. SQL – PL / SQL – Ivan Bayross – BPB
3. Oracle - The Complete Reference – TMH / Oracle Press
4. Introduction to Database Systems – ITL Education Solution Limited - Pearson

Suggested List of Practical:

Sr. No	Practical / Experiments
1	Implement SQL queries to perform various DDL Commands. (Create minimum 5 tables with different data types, constraints and operate upon them)
2	Implement SQL queries to perform various DML Commands. (Insert minimum 10 rows using different insert methods, edit and remove data using update and delete commands)
3	Retrieve data using SELECT command and various SQL operators.
4	Implement SQL queries using Date functions like addmonths, months-between, round, nextdayetc.
5	Implement SQL queries using Numeric functions like abs, ceil, cos, cosh, exp, floor, power, mod, round, trunc, sqrt etc.
6	Implement SQL queries using Character Functionslikeinitcap, lower, upper, ltrim, rtrim, translate, replace, substring etc.
7	Implement SQL queries using Conversion Functions like to-char, todate, to-number.
8	Implement SQL queries using Group functions like Avg, Min,Max,Sum,Count etc.
9	Implement SQL queries using Group by, Having, Order by and Distinct clause.
10	Implement SQL queries using Set operators like Union, union all, Intersect, Minus etc
11	Retrieve data spread across various tables or same table using various Joins.
12	Retrieve data from multiple tables using Sub queries.