

# DBA 120 Database Programming I

## COURSE DESCRIPTION:

Prerequisites: None

Corequisites: None

This course is designed to develop SQL programming proficiency. Emphasis is placed on data definition, data manipulation, and data control statements as well as on report generation. Upon completion, students should be able to write programs which create, update, and produce reports.

Course Hours Per Week: Class, 2. Lab, 2. Semester Hours Credit, 3.

## LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

1. Create a database table using Structured Query Language (SQL).
2. Query a database table using Structured Query Language (SQL).
3. Update a database table using Structured Query Language (SQL).

## OUTLINE OF INSTRUCTION:

- I. Introduction
  - A. Introduction to Oracle Academy
  - B. Introduction to Oracle Application Express
  - C. Relational Database Terminology
  - D. Anatomy of a SQL Statement
  - E. Major Transformations in Computing
- II. SELECT and WHERE
  - A. Columns, Characters, and Rows
  - B. Limit Rows Selected
  - C. Comparison Operators
- III. WHERE, ORDER BY, and Intro to Functions
  - A. Logical Comparisons and Precedence Rules
  - B. Sorting Rows
  - C. Introduction to Functions
- IV. Single Row Functions Part 1
  - A. Case and Character Manipulation
  - B. Number Functions
  - C. Date Functions
- V. Single Row Functions Part II
  - A. Conversion Functions
  - B. NULL Functions
  - C. Conditional Expressions

- VI. JOINS Part I
  - A. Cross Joins and Natural Joins
  - B. Join Clauses
  - C. Inner versus Outer Joins
  - D. Self-Joins and Hierarchical Queries
  
- VII. JOINS Part II
  - A. Oracle Equijoin and Cartesian Product
  - B. Oracle Nonequijoins and Outer Joins
  
- VIII. Group Functions Part I
  - A. Group Functions
  - B. COUNT, DISTINCT, NVL
  
- IX. Group Functions Part II
  - C. Using Group By and Having Clauses
  - D. Using Rollup and Cube Operations, and Grouping Sets
  - E. Using Set Operators
  
- X. Subqueries
  - A. Fundamentals of Subqueries
  - B. Single-Row Subqueries
  - C. Multiple-Row Subqueries
  - D. Correlated Subqueries
  
- XI. Ensuring Quality Queries Part I
  - A. Ensuring Quality Query Results
  
- XII. DML
  - A. INSERT Statements
  - B. Updating Column Values and Deleting Rows
  - C. DEFAULT Values, MERGE, and Multi-Table Inserts
  
- XIII. DDL
  - A. Creating Tables
  - B. Using Data Types
  - C. Modifying a Table
  
- XIV. Constraints
  - A. Intro to Constraints; NOT NULL and UNIQUE Constraints
  - B. PRIMARY KEY, FOREIGN KEY, and CHECK Constraints
  - C. Managing Constraints

- XV. Views
  - A. Creating Views
  - B. DML Operations and Views
  - C. Managing Views
  
- XVI. Sequences and Synonyms
  - A. Working with Sequences
  - B. Indexes and Synonyms
  
- XVII. Privileges and Regular Expressions
  - A. Controlling User Access
  - B. Creating and Revoking Object Privileges
  - C. Regular Expressions
  
- XVIII. TCL
  - A. Database Transactions
  
- XIX. Final Project and Exam Review
  - A. Testing
  - B. Final Project Database Creation
  - C. Final Exam Review
  
- XX. Ensuring Quality Queries Part II
  - A. Ensuring Quality Queries Part II
  - B. Ensuring Quality Query Results – Advanced Techniques

**REQUIRED TEXTBOOK AND MATERIAL:**

Oracle Academy and Oracle Application Express (APEX) – FREE resources