# Oracle Database 11g: SQL Fundamentals I

**Duration:** 3 Days

## What you will learn

This course introduces students to the fundamentals of SQL using Oracle Database 11g database technology. In this course students learn the concepts of relational databases and the powerful SQL programming language. This course provides the essential SQL skills that allow developers to write queries against single and multiple tables, manipulate data in tables, and create database objects.

The students also learn to use single row functions to customize output, use conversion functions and conditional expressions and use group functions to report aggregated data. Demonstrations and hands-on practice reinforce the fundamental concepts.

In this course, students use Oracle SQL Developer as the main tool and SQL*Plus is introduced as an optional tool.

This course counts towards the Hands-on course requirement for the Oracle Database 11g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses DO NOT meet the Hands-on Requirement.

Learn to:

Retrieve row and column data from tables with the SELECT statement
Create reports of sorted and restricted data
Display data from multiple tables.
Use DML statements to manage data.
Use DDL statements to manage database objects

Application Developers
End Users
Forms Developer
Functional Implementer
PL/SQL Developer
Portal Developer
Reports Developer
Technical Consultant

## Prerequisites

*Suggested Prerequisites*
Familiarity with data processing concepts and techniques

## Course Objectives

Retrieve row and column data from tables with the SELECT statement
Create reports of sorted and restricted data
Employ SQL functions to generate and retrieve customized data
Display data from multiple tables using the ANSI SQL 99 JOIN syntax
Create reports of aggregated data

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Use the SET operators to create subsets of data
Run data manipulation statements (DML) to update data in the Oracle Database 11g
Run data definition language (DDL) statements to create and manage schema objects
Identify the major structural components of the Oracle Database 11g

## Course Topics

**Introduction**
Listing the features of Oracle Database 11g
Discussing the basic design, theoretical and physical aspects of a relational database
Describing the development environments for SQL
Describing Oracle SQL Developer
Describing the data set used by the course

**Retrieving Data Using the SQL SELECT Statement**
Listing the capabilities of SQL SELECT statements.
Generating a report of data from the output of a basic SELECT statement
Using arithmetic expressions and NULL values in the SELECT statement
Using Column aliases
Using concatenation operator, literal character strings, alternative quote operator, and the DISTINCT keyword
Displaying the table structure using the DESCRIBE command

**Restricting and Sorting Data**
Writing queries with a WHERE clause to limit the output retrieved
Using the comparison operators and logical operators
Describing the rules of precedence for comparison and logical operators
Using character string literals in the WHERE clause
Writing queries with an ORDER BY clause to sort the output
Sorting output in descending and ascending order
Using the Substitution Variables

**Using Single-Row Functions to Customize Output**
Differentiating between single row and multiple row functions
Manipulating strings using character functions
Manipulating numbers with the ROUND, TRUNC and MOD functions
Performing arithmetic with date data
Manipulating dates with the date functions

**Using Conversion Functions and Conditional Expressions**
Describing implicit and explicit data type conversion
Using the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
Nesting multiple functions
Applying the NVL, NULLIF, and COALESCE functions to data
Using conditional IF THEN ELSE logic in a SELECT statement

**Reporting Aggregated Data Using the Group Functions**
Using the aggregation functions in SELECT statements to produce meaningful reports
Using AVG, SUM, MIN, and MAX function
Handling Null Values in a group function
Creating queries that divide the data in groups by using the GROUP BY clause
Creating queries that exclude groups of date by using the HAVING clause

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**Displaying Data From Multiple Tables**
Writing SELECT statements to access data from more than one table
Joining Tables Using SQL:1999 Syntax
Viewing data that does not meet a join condition by using outer joins
Joining a table by using a self join
Creating Cross Joins

**Using Sub-queries to Solve Queries**
Using a Subquery to Solve a Problem
Executing Single-Row Sub-queries
Using Group Functions in a Sub-query
Using Multiple-Row Subqueries
Using the ANY and ALL Operator in Multiple-Row Sub-queries

**Using the SET Operators**
Describing the SET operators
Using a SET operator to combine multiple queries into a single query
Using UNION, UNION ALL, INTERSECT, and MINUS Operator
Using the ORDER BY Clause in Set Operations

**Manipulating Data**
Adding New Rows to a Table Using the INSERT statement
Changing Data in a Table Using the UPDATE Statement
Using DELETE and TRUNCATE Statements
Saving and discarding changes with the COMMIT and ROLLBACK statements
Implementing Read Consistency
Using the FOR UPDATE Clause

**Using DDL Statements to Create and Manage Tables**
Categorizing Database Objects
Creating Tables using the CREATE TABLE Statement
Describing the data types
Describing Constraints
Creating a table using a subquery
Altering and Dropping a table

**Creating Other Schema Objects**
Creating, modifying, and retrieving data from a view
Performing Data manipulation language (DML) operations on a view
Dropping a view
Creating, using, and modifying a sequence
Creating and dropping indexes
Creating and dropping synonyms

## Related Courses

Oracle Database 11g: SQL Fundamentals I - Self-Study CD Course

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