

Database Foundations – Course Description

Overview

This course introduces students to basic relational database concepts. The course teaches students relational database terminology, as well as data modeling concepts, building Entity Relationship Diagrams (ERDs), and mapping ERDs. [Oracle SQL Developer Data Modeler](#) is utilized to build ERDs and The Structured Query Language (SQL) is used to interact with a relational database and manipulate data within the database. [Oracle Application Express](#) is utilized to provide practical, hands-on, engaging activities. Leveraging project-based learning techniques, students will create and work with projects which challenge them to design, implement, and demonstrate a database solution for a business or organization.

Available Curriculum Languages:

- Arabic, Simplified Chinese, English, French, Indonesian, Japanese, Brazilian Portuguese, Russian, Spanish

Duration

- Recommended total course time: 90 hours*
- Professional education credit hours for educators who complete Oracle Academy training: 30

**Course time includes instruction, self-study/homework, practices, projects and assessment*

Target Audiences

Educators

- Technical, vocational and 2- and 4- year college and university faculty members who teach computer science, information communications technology (ICT), data science, business or a related subject
- Secondary and vocational school teachers who teach computer science, ICT, or a related subject.

Students

- Students who wish to learn the techniques and tools to design, build and extract information from a database.
- Students who possess basic mathematical, logical, and analytical problem-solving skills.
- Novice programmers, as well as those at advanced levels, who prefer to start learning the basis for the SQL programming language at an introductory level.
- This foundational course is suitable for computer science majors and non-majors alike.

Prerequisites

Required

- General knowledge of the purpose of a database

Suggested

- Previous experience with a database application

Suggested Next Courses

- Database Design and Programming with SQL

Lesson-by-Lesson Topics

Introduction

- Introduction to the Course
- Introduction to Databases
- Types of Database Models
- Business Requirements

Databases and Data Modeling

- Relational Databases
- Conceptual and Physical Data Models
- Entities and Attributes
- Unique Identifiers
- Relationships
- Entity Relationship Modeling (ERDs)

Refining the Data Model

- More with Relationships
- Tracking Data Changes
- Normalization and Business Rules
- Data Modeling Terminology and Mapping

Oracle SQL Developer Data Modeler

- Oracle SQL Developer Data Modeler
- Convert a Logical Model to a Relational Model

Mapping to the Physical Model

- Mapping Entities and Attributes
- Mapping Primary and Foreign Keys

Introduction to SQL

- Introduction to Oracle Application Express
- Structured Query Language (SQL)
- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Transaction Control Language (TCL)
- Retrieving Data Using SELECT
- Restricting Data Using WHERE
- Sorting Data Using ORDER BY
- Joining Tables Using JOIN