Database Foundations – Course Description

Overview

This course of 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 date 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, Japanese, Brazilian Portuguese, 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 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
- Introduction to Databases
- Types of Database Models
- Relational Databases and Normalization
- Database Storage Structures
- Business Requirements

Databases and Data Modeling
- What Is a Table?
- Relational Databases
- Conceptual Data Modeling
- Data Modeling Terminology
- Unique Identifiers and Primary Keys
- Relationships and Foreign Keys

Creating a Physical Model
- Conceptual and Physical Data Models
- Business Rules
- Entities
- Attributes
- Unique Identifiers
- Relationships
- Relationships
- Validating Relationships
- Tracking Data Changes over Time
- Validate Data Using Normalization

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

Mapping 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

Final Project
- Final Project

To search and register for events scheduled in your area, visit the Academy events calendar.