

IT553 – Database Design, Management and Administration

Course Instructor

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Course Schedule

Saturday 13:00 - 16:00

Thursday 19:00 - 22:00

Course Objective

This course is designed to provide an overview of concepts and theories as well as hands-on practice. In this course, you will learn and practice data modelling techniques, including: three phases of modelling, normalization, SQL, and management of database systems.

At the end of the course, a successful student should be able to:

- Model a database based on business requirements
- Implement a relational database from scratch using SQL code
- Perform data processing tasks with SQL, and understand the limitations/possibilities available with different SQL systems
- Understand multi user environment and transactions
- Install and configure Oracle database
- Administer Oracle database at the fundamental level

Course Prerequisites

None.

Course Materials

There are no required textbooks. Students may find the following books/resources useful:

- Fundamentals of Database Management (Elmasri & Navathe)
- Modern Database Management (Jeffrey A. Hoffer)
- Oracle Online Documentation Library

<https://docs.oracle.com/en/database/oracle/oracle-database/19/admin/index.html>

- MySQL Online Documentation
<https://dev.mysql.com/doc/refman/8.0/en>
- PostgreSQL Online Documentation
<https://www.postgresql.org/docs/13>

Course Outline

- Introduction to Data, and Data Modelling Concepts
- Conceptual Modelling
 - E-R Model
 - How to convert business requirements to E-R Diagrams
 - Entities, Relationships, Identifiers
- Logical Modelling
 - Converting a conceptual model to logical model
 - Integrity constraints
 - Normalization
- Physical Modelling
- Data Processing
 - SQL practices
- Transactions, ACID
- Oracle Database Administration
 - Architecture
 - Installation
 - Instance Management
 - User Administration
 - Security

Grading

4 Homework (60%)

1 Final (40%)