# Module: Database Development 281

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| **Module name:** | Database Development 281 |
| **Code:** | DBD281 |
| **NQF level:** | 6 |
| **Type:** | Core – Bachelor of Computing (all streams) |
| **Contact Time:** | 68 hours |
| **Structured time:** | 10 hours |
| **Self-directed time:** | 72 hours |
| **Notional hours:** | 150 hours |
| **Credits:** | 15 |
| **Prerequisites:** | DBD181 |

## Purpose

The student will learn to use the different tools and techniques available for the administration and maintenance of a relational database system. The course covers all aspects from the creation of a database to the full working implementation thereof.

## Outcomes

Upon successful completion of this module, the student will be able to:

- Demonstrate detailed knowledge of the main areas of relational database model system, including and understanding of and the ability to apply the key terms, concepts, principles, rules, and theories thereof to unfamiliar but relevant contexts; and knowledge of distributed database systems with a focus on data replication.
- Evaluate, select and apply appropriate procedures or techniques in the processes of using data modification language structures and data definition language structures.
- Identify, analyse and solve problems in unfamiliar contexts, gathering evidence and applying solutions based on evidence and procedures appropriate to techniques to solve or pose queries required for creating and maintaining procedures using programmability concepts.
- Present and communicate complex information reliably and coherently using appropriate, professional conventions, formats, and technologies for the implementation of a selected database model.
- Evaluate performance of a database system against given criteria, and accurately identify and address the task-specific learning needs.
- Make decisions and act appropriately in familiar and new contexts, demonstrating an understanding of how the changes made to the logical and/or physical database model will affect other areas of a system.

## Assessment

- Continuous evaluation of theoretical work through written assignments, formative, and a summative test.
- Continuous evaluation of practical work a project.
- Final assessment through a written examination.

- The assignments or projects collectively will count 30% of your class mark.
- All tests will collectively account for 70% of your class mark.
- Your class mark contributes 30% towards your final mark for the subject, while the final assessment accounts for 70% of your final mark.

## Teaching and Learning

### Learning materials

*Prescribed books (EBSCO)*

- 🕮 Database Modeling and Design : Logical Design Toby J. Teorey; Sam S. Lightstone; Tom Nadeau; H.V. Jagadish. Edition: 5th ed. Amsterdam : Morgan Kaufmann. 2011. eBook., Database: eBook Collection (EBSCOhost)
- 🕮 Title: Beginning Microsoft SQL Server 2008 Programming: Author: Robert Vieira

*Additional Reference Material:*

- 🕮 Database Systems: Design, Implementation, and Management
- 🕮 Authors: Peter Rob, Carol Coronel, Keeley Crocket
- 🕮 SQL QuickStart Guide : The Simplified Beginner's Guide to Managing, Analyzing, and Manipulating Data With SQL Author: Walter Shields
- 🕮 Taylor, A.G. (2011). SQL All-In-One for Dummies. John Wiley & Sons Ltd. (ISBN:9780470929964)

### Learning activities

The teaching style is a mixture of the presentation of theoretical concepts, exercises, and discussions. It is a collaborative model with a practical approach, with four mandatory assignments and one project, which must be completed during the module.

### Notional learning hours

| Activity | Units | Contact Time | Structured Time | Self-Directed Time |
|---|---|---|---|---|
| Lecture | | 52.0 | | 23.0 |
| Formative feedback | | 13.0 | | |
| Project | 1 | 3.0 | | 6.0 |
| Assignment | 4 | | | 12.0 |
| Test | 4 | | 8.0 | 16.0 |
| Exam | 1 | | 2.0 | 15.0 |
| | | **68.0** | **10.0** | **72.0** |

### Syllabus

- Database Design
- Implementation of physical database design with SQL
- Data manipulation with SQL
- Data management
- DDL and DML Statements
- Stored Procedure, Triggers, Views and Cursors

- Security system of Database engine
- Concurrency Control
- Planning & Implementing Backup & Restore strategy with SQL
- Data Replication.