Module: Database Concept 161

Module name:	Database Concept 161
Code:	DBC161
NQF level:	5
Type:	Core – Diploma in Information Technology (all stream)
Contact Time:	34 hours
Structured time:	6 hours
Self-directed time:	40 hours
Notional hours:	80 hours
Credits:	8
Prerequisites:	None

Purpose

This module serves as an introduction to database design and development. Database normalization, data integrity, concurrent updates, and data security will also be discussed and practiced. The emphasis will be on understanding the basic concept of database management systems required to build and maintain relational databases.

Outcomes

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

- An informed understanding of the basic principles of database systems, including the meaning and definition, functions and types of databases.
- The ability to gather information from a range of sources, including oral, written, with regard to user requirements, to select information appropriate to the development of a database system.
- An informed understanding of the core areas of database design, and an informed understanding of the key terms, concepts rules, and theories thereof.
- The ability to identify the need for a database based on business description, relevant evidence and procedures - or other forms of explanation appropriate to necessitate the implementation of database objects – and demonstrating an understanding of the consequences.
- Demonstrate the understanding of the basic information required to identify database management systems suitable for solving problems in a given enterprise domain.

Assessment

- Continuous evaluation of theoretical work through two written assignments, one formative test, and one summative test.
- Continuous evaluation through tracking of progress, offering support, guidance and provision of constant stream of opportunities to prove mastery of subject material and pursuing more challenging work as they master the basics.
- Final assessment through a written examination.
- The assignments or projects collectively will count 20% of your class mark.
- All tests will collectively account for 80% 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 Book

- 🕮 ***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)***
- 🕮 ***Beginning Database Design Solutions Rod Stephens. Series: Wrox Beginning Guides. Indianapolis, IN : Wrox. 2009. eBook., Database: eBook Collection (EBSCOhost)***

Additional Material

- 🕮 ***Database Systems: Design, Implementation, and Management Authors: Peter Rob, Carol Coronel, Keeley Crocket***
- 🕮 ***Teorey, TJ., Lightstone, SS., Tom Nadeau, T., & Jagadish, HV. (2011). Database Modeling and Design : Logical Design***
- 🕮 ***Harrington, J.L. (2016).* Relational Database Desing and Implementation. *Morgan Kaufmann. (ISBN: 9780128499023-003)***

Learning activities

The teaching approach is a combination of the presentation of theoretical concepts, exercises, and discussions. This will be achieved through a combination between presentation of theoretical concepts, guided exercises, group work and discussions together with two mandatory assignments to be completed during the module.

Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		27.0		19.0
Formative feedback		7.0		
Project				
Assignment	2			6.0
Test	2		4.0	8.0
Exam	1		2.0	7.0
		34.0	**6.0**	**40.0**

Syllabus

- Introduction to Database
  - Meaning and Definition of Database
  - Functions of Database
  - Types of Databases (Bibliographic, Knowledge, and Graphic-Oriented and Decision-making Databases)
  - Concept of Data Structure: Introduction
- Introduction to DBMS

- Database Models
- Database Design
    - Phases in Database Design
    - Goals of Database Design
    - Introduction to data modelling
        - Normalization
    - ERD