

Liverpool John Moores University

Title: DATABASE DESIGN AND MANAGEMENT
Status: Definitive
Code: **5060COMP** (117397)
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Computing and Mathematical Sciences

Team	Leader
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Academic Level: FHEQ5 **Credit Value:** 24.00 **Total Delivered Hours:** 72.00
Total Learning Hours: 240 **Private Study:** 168

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Practical	24.000
Tutorial	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Create a conceptual and logical model of a relational database.	25.0	
Practice	AS2	Design and implementation of a simple relational database.	25.0	
Report	AS3	Report on the creation, administration, and maintenance of a database system (through Database Management Systems) for supporting enterprise and commerce.	50.0	

Aims

To develop an ability to model data and implement it in a database (relational database systems).

To cover the basic database administration tasks and key concepts of data quality and data security.

Learning Outcomes

After completing the module the student should be able to:

- 1 Produce a conceptual data model by applying various data modelling techniques.
- 2 Demonstrate the ability to implement a given logical model using relational database and query it using SQL.
- 3 Perform database administration tasks.
- 4 Explain the role of databases and database management systems in the context of enterprise systems.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Database model	1	
Relational database	2	
Database management	3	4

Outline Syllabus

Database concepts and terminology:

Introduction to Databases

DBMS architecture, Data independence

Entities, attributes, identifiers and relationships.

Conceptual data model:

Entity-relationship model

Normalisation, functional dependency, 3NF

Logical data model:

Relational data model

Mapping conceptual schema to a relational schema

Relations, relational structures and relational algebra

Physical data model:

Data types

Database languages:

SQL: DDL, DML, and DCL

SQL to create, manipulate, and query a database

*Data and database administration:
Data / information architecture
Backup and Recovery*

Using a database management system from an application development environment

Use of database management systems in an enterprise system context

Learning Activities

Application problems are analysed and appropriate structures for database solutions are designed and implemented. Learning activities will be through lectures and tutorials where students will be encouraged to ask questions and discuss case studies and supported labs where students will be encouraged to put theory gained in lectures and tutorials into practice.

References

Course Material	Book
Author	Jeffrey A. Hoffer, Ramesh Venkataraman and Heikki Topi,
Publishing Year	2010
Title	Modern Database Management: International Version
Subtitle	
Edition	10th Edition
Publisher	Prentice Hall
ISBN	9780136088394

Course Material	Book
Author	Connolly, T. and Begg, C.
Publishing Year	2009
Title	Database Systems
Subtitle	A Practical Approach to Design, Implementation and Management
Edition	5th Edition
Publisher	Addison Wesley
ISBN	0321523067

Course Material	Book
Author	Carlos Coronel, Steven Morris and Peter Rob
Publishing Year	2010
Title	Database Systems
Subtitle	Design, Implementation, and Management
Edition	10th Edition
Publisher	Cengage Learning

Notes

In this module will learn the fundamental principles for the design and implementation of appropriate database structures for information systems, using ER modeling as the primary technique. Logical data modeling using the relational data model (including ER – relational conversion and normalization) will also be covered. The physical database skills are developed through practical applications (using SQL-implementation and manipulation) with relational databases.

Information requirements specification processes must be firmly linked to the organizational systems analysis and design processes and students will understand the role of conceptual data modeling as an integral part of the process of understanding a domain.

The role of databases in the enterprise application context and various business intelligence topics, including enterprise search. Students should understand the basic nature of the DBA tasks and be able to make intelligent decisions regarding DBMS choice and the acquisition of DBA resources.

It is critically important that students understand how dependent various large- scale packaged systems (including ERP systems) are on relational databases and how maintaining them and in supporting their use in organizations depends on understanding data structures and data manipulation with SQL.