

## Liverpool John Moores University

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Title: Database Systems  
Status: Definitive  
Code: **5001SEQR** (129308)  
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics  
Teaching School/Faculty: Oryx Universal College WLL

Team	Leader
Glyn Hughes	Y

**Academic Level:** FHEQ5      **Credit Value:** 20      **Total Delivered Hours:** 44  
**Total Learning Hours:** 200      **Private Study:** 156

### Delivery Options

Course typically offered: S1 & S2 & Summer

Component	Contact Hours
Lecture	22
Practical	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	AS1	SQL Database Development	60	
Report	AS2	NoSQL Database Development	40	

### Aims

*To implement relational database designs using a Relational Database Management System (RDBMS)*

*To employ database connectivity technologies in developing data driven applications.*

*To investigate the administration of a RDBMS.*

*To critically evaluate and implement alternative / non-relational database designs using NoSQL.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Design and implement a relational database to support a given computing problem
- 2 Develop a data driven application using a database
- 3 Critically evaluate the advantages & disadvantages of NoSQL.
- 4 Design and implement an appropriate non-relational database

## **Learning Outcomes of Assessments**

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

SQL Database Development	1	2
NoSQL Database Development	3	4

## **Outline Syllabus**

### *Introducing RDBMS*

#### *SQL*

- Components & DDL (for Tables)
- DML (for SELECT)
- DML (for JOINS & INSERT - UPDATE - DELETE)
- Views & Indices (DDL & DML)
- SPROCs & Triggers (DDL & DML)

#### *Connectivity*

- Client Server vs Embedded DBs
- Connectivity APIs

#### *Administration of RDBMS*

- Security & Permissions
- Replicating Data
- Optimizing Queries

#### *NoSQL*

- Key-Value & Document Store

## **Learning Activities**

Learning activities include hybrid lectures / tutorials where students are encouraged to ask questions / discuss scenarios and supported labs where students are encouraged to put theory gained through lectures / tutorials into practice. Directed

reading against appropriate industry and research sources further reinforces learning.

## **Notes**

The module begins by exploring the operation of database systems through a scrutiny of modern RDBMS (Relational DataBase Management Systems), the SQL (Structured Query Language) and database connectivity APIs (Application Programming Interfaces). The module continues by exploring some of the managerial considerations of large-scale RDBMS. The module concludes by exploring the operation of emerging NoSQL (Not Only SQL) database systems. This module thusly represents the logical follow-on to NQF4's Data Modelling module.