

# Database Design and Technology

## Module Information

2022.01, Approved

### Summary Information

Module Code	7503COMP
Formal Module Title	Database Design and Technology
Owning School	Computer Science and Mathematics
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

### Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

### Partner Teaching Institution

Institution Name
Unicaf

### Learning Methods

Learning Method Type	Hours
Online	33

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks

### Aims and Outcomes

Aims	<p>To examine critically selected techniques for modelling the data requirements of database applications at the conceptual level.</p> <p>To develop and understand contemporary advanced issues of database design, with specific interest in the context of business intelligence.</p> <p>For example how core concepts in databases may be applied and developed to solve research problems such as handling Big Data and Temporal Data.</p> <p>To develop an informed appreciation of significant, current issues and trends in database systems.</p>
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**After completing the module the student should be able to:**

**Learning Outcomes**

Code	Number	Description
MLO1	1	Apply a range of conceptual data modelling techniques for the specification of data requirements and be able to select from among them those which are most appropriate to given application problems.
MLO2	2	Apply advanced principles of the relational database model, data integrity and functional dependency to logical data design problems.
MLO3	3	Explain and evaluate in detail how advanced large-scale database systems support business intelligence.
MLO4	4	Critically evaluate the principles, problems and contributions of distributed database systems, object-oriented databases and further research topics in database systems.

**Module Content**

Outline Syllabus	<p>Relational design and relational technology - DBMS architecture functional dependency and normalisation (review) - approaches to lossless join, dependency preserving decomposition, normalization to BCNF - multivalued and join dependencies - 4NF, 5NF. - SQL standards. - Security, integrity, transaction management and recovery - file organisations - query processing - view processing - host and embedded languages.</p> <p>Current issues and trends - distributed database management: distributed databases, locking, Business Intelligence Alternate DBMS / Big Data, commitment and concurrency.</p> <p>Object-oriented databases: the object-oriented model - origins of object-oriented database languages - persistence - example OODB implementations and implementation considerations - modelling and design for OODBs. Object database standards. Object-relational model.</p> <p>Research issues data warehousing - data mining and business intelligence Web searches Big Data- Semantic Web.</p>
Module Overview	
Additional Information	This module examines recent developments and current trends in databases both from the application and the technology view points.

**Assessments**

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Relational database	50	0	MLO1, MLO2
Report	Survey paper	50	0	MLO3, MLO4

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
Dhiya Al-Jumeily	Yes	N/A

### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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