

## Liverpool John Moores University

Title: DATABASE DESIGN AND TECHNOLOGY  
Status: Definitive  
Code: **7503DCOM** (103694)  
Version Start Date: 01-08-2012

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

Team	Leader
Dhiya Al-Jumeily	Y

**Academic Level:** FHEQ7  
**Credit Value:** 15.00  
**Total Delivered Hours:** 38.00  
**Total Learning Hours:** 150  
**Private Study:** 112

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	12.000
Practical	12.000
Tutorial	12.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	50.0	2.00
Portfolio	AS2	Coursework - A theoretical/practical piece of work involving research, design, and practical implementation of database technologies.	50.0	

### Aims

*To critically examine selected techniques for modelling the data requirements of database applications at the conceptual level.*

*To develop and nurture a deep understanding of crucial, advanced issues of relational database design.  
Have detailed knowledge of significant, current issues and trends in database architecture.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Identify and 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.
- 2 Synthesise an advanced understanding of the principles of the relational database model, data integrity and functional dependency to logical data design problems. Use an implemented relational language to create manage and protect DBMS data.
- 3 Develop and apply in-depth knowledge of the principles of query and view processing to data retrieval problems.
- 4 Synthesise all these skills and this knowledge in the development of a database application.
- 5 Critically analyse with understanding the principles, problems and contributions of distributed database systems and object-oriented databases.

## **Learning Outcomes of Assessments**

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

EXAM	1	2	3	4	5
PORT	1	2	3	4	

## **Outline Syllabus**

*Advanced conceptual data modelling: entity-relationship model. Enhanced modelling techniques.*

*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.*

*Current issues and trends - distributed database management: distributed databases, locking, commitment and concurrency. 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.*

## Learning Activities

Lectures and tutorial exercises

Laboratory exercises using relational and object related databases

## References

<b>Course Material</b>	Book
<b>Author</b>	Connelly, T. & Begg, C.
<b>Publishing Year</b>	2009
<b>Title</b>	Database Systems: A Practical Approach to Design, Implementation and Management
<b>Subtitle</b>	
<b>Edition</b>	5th
<b>Publisher</b>	Addison-Wesley
<b>ISBN</b>	0321210255

<b>Course Material</b>	Book
<b>Author</b>	Rob, P.
<b>Publishing Year</b>	2006
<b>Title</b>	Database Systems: Design, Implementation And Management
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	
<b>ISBN</b>	

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## Notes

This module examines recent developments and current trends in databases both from the application and the technology view points.