Liverpool John Moores University

Title: DATABASE DESIGN AND TECHNOLOGY
Status: Definitive
Code: **7004COMP** (103264)
Version Start Date: 01-08-2011

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

Team	emplid	Leader
Dhiya Al-Jumeily		Y

Academic Level:	FHEQ7	**Credit Value:**	15.00	**Total Delivered Hours:**	36.00
Total Learning Hours:	150	**Private Study:**	114		

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
Technology	AS1	Relational database design and evaluation.	50.0	
Report	AS2	Survey paper of selected research topics.	50.0	

Aims

To examine critically selected techniques for modelling the data requirements of database applications at the conceptual level.
To develop an understanding of crucial, advanced issues of database design
To develop an informed appreciation of significant, current issues and trends in database systems.

Learning Outcomes

After completing the module the student should be able to:

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.
2	Apply advanced 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	Apply an understanding of the principles of query and view processing to data retrieval problems.
4	Critically evaluate the principles, problems and contributions of distributed database systems, object-oriented databases and further research topics in database systems.

Learning Outcomes of Assessments

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

Design and evaluation	1	2	3

Survey paper	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. Object-relational model.
Research issues – data warehousing - data mining and business intelligence – Web searches – Semantic Web.

Learning Activities

Lectures and tutorial exercises.
Laboratory exercises using relational and object related databases.

References

Course Material	Book
Author	Date, C.J.
Publishing Year	2004
Title	Introduction to Database Systems
Subtitle	
Edition	8th
Publisher	Addison-Wesley
ISBN	0321189566

Course Material	Book
Author	Connelly, T. and Begg, C.
Publishing Year	2005
Title	Database Systems
Subtitle	A Practical Approach to Design, Implementation and Management
Edition	4th
Publisher	Addison-Wesley
ISBN	0201708574

Notes

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