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Title: DATABASE SYSTEMS
 Status: Definitive
 Code: **7003ONLINE** (103110)
 Version Start Date: 01-08-2012

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

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: Runs Twice - S1 & S2

Component	Contact Hours
Lecture	12.000
Seminar	12.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	AS1	A practical application of database design.	50.0	
Exam	AS2	Examination	50.0	2.00

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 relational database design

To develop an informed appreciation of significant, current issues and trends in

database architecture.

Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate a range of conceptual data modelling techniques for specifying data requirements, and apply the most appropriate to given application problems.
- 2 Demonstrate 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 Interpret the principles of Query and View Processing in the context of data retrieval problems.
- 4 Synthesize all these skills and this knowledge in the development of a database application
- 5 Evaluate 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:

Database design	1	2	4
Examination	3	5	

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

Includes accessing online lectures, online tutorials and online seminars, as well as reading books and handouts.

Lectures and tutorial exercises.

Database exercises using relational and object related databases.

References

Course Material	Book
Author	Date, C.J.
Publishing Year	2003
Title	Introduction to Database Systems
Subtitle	
Edition	8th
Publisher	Addison Wesley
ISBN	0321189566

Course Material	Book
Author	Connelly, T. & Begg, C.
Publishing Year	2009
Title	Database Systems
Subtitle	A Practical Approach to Design, Implementation and Management'
Edition	5th
Publisher	Addison Wesley
ISBN	0321523067

Course Material	Book
Author	Date, C. J. and Hugh Darwen, H.
Publishing Year	2006
Title	Databases, Types and the Relational Model
Subtitle	
Edition	3rd
Publisher	Addison Wesley
ISBN	0321399420

Notes

This module examines recent developments and current trends in databases both from the application and the technology view points. All online activities are scheduled.