

Summary Information

Module Code	7127COMP
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
Computer Science and Mathematics

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	11
Tutorial	11

Module Offering(s)

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

Aims and Outcomes

Aims	To examine critically selected techniques for modelling the data requirements of database applications at the conceptual level. To develop and understand contemporary advanced issues of database design, with specific interest in the context of business intelligence. For example how core concepts in databases may be applied and developed to solve research problems such as handling Big Data and Temporal Data. To develop an informed appreciation of significant, current issues and trends in database systems.
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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	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, Business Intelligence Alternate DBMS / Big Data, 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 – Big Data- Semantic Web.
Module Overview	<p>This module examines recent developments and current trends in databases both from the application and the technology view points. It aims to:</p> <p>examine critically selected techniques for modelling the data requirements of database applications at the conceptual level</p> <p>develop and understand contemporary advanced issues of database design</p> <p>develop an informed appreciation of significant, current issues and trends in database systems</p>
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
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Report	Design and evaluation	50	0	MLO1, MLO2
Essay	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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