

A8DM: Data Management

Module Code:	A8DM
Long Title	Data Management APPROVED
Title	Data Management
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle
Credits:	5
Module Coordinator:	EAMON NOLAN
Module Author:	Madita Feldberger
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Capture requirements for appropriate data storage technologies
LO2	Design and Implement effective data models
LO3	Investigate and implement dataset pre-processing techniques
LO4	Investigate and utilise relational and non-relational databases for optimised storage, retrieval, and organisation of data
LO5	Use data warehousing and online analytical processing techniques to create Dashboards for Data Visualisation
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	

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Module Content & Assessment			
Indicative Content			
Module Introduction Databases & Storage Overview of a Database, Functions of a DBMS, Advantages & Disadvantages of DBMS's			
Databases & Storage The Relational Model, Properties of database relations, How to identify CK, PK, and FKs, Purpose and advantages of views			
Database Design ERD Relationship (ER) modelling in the database design, Basic concepts associated with ER model, Diagrammatic technique for displaying ER model using Chen or Crows Foot (Barker), ERD Modelling Cont'd			
Database Design NF How normalisation can be used when designing a relational database. The potential problems associated with redundant data in the base relations. The concept of functional dependency, which describes the relationship between attributes.			
SQL for Data Retrieval DDL & DML 1. Data Types 2. DDL Commands 3. SQL Exercises, How to retrieve data from database using SELECT, WHERE & ORDER BY. Use AGGREGATE functions. Group data using GROUP BY and HAVING. Subqueries / Table Joins Perform set operations (UNION, INTERSECT, EXCEPT). Stored Procedures/Triggers			
Indexing/Performance Tuning Single-level Ordered Indexes, Multi-level Indexes, B-Trees and B+Trees			
Data Warehousing The main concepts and benefits associated with data warehousing. The problems associated with data warehousing. The tools associated with data warehousing. The concept of a data mart and the main reasons for implementing a data mart. Two main methodologies for the development of a data warehouse Kimball's Business Dimensional Lifecycle Inmon's Corporate Information Factory (CIF). The step-by-step creation of a dimensional model (DM) using their previously created Database and some other case studies. Dashboards – Graphical Visualisation of Data			
Non-Relational Databases Types of non-relational databases, Storing and retrieving information, Algorithmic based queries, Distributed data storage			
Distributed Databases Distributed data storage Advantages & Disadvantages, Types of DDBMSs, Distributed Relational Database Design, Transparencies in a DDBMS, DDBMS Functions & Architecture			
Assessment Breakdown			%
Coursework			50.00%
End of Module Assessment			50.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	CA 1 (0380)	% of total:	25
Assessment Date:	n/a	Outcome addressed:	1,2,3
Non-Marked:	No		
Assessment Description: Apprentices will be asked to Design, implement and populate a real life Corporate Database of their choice that fulfils a real business need			
Assessment Type:	CA 2 (0390)	% of total:	25
Assessment Date:	n/a	Outcome addressed:	3,4,5
Non-Marked:	No		
Assessment Description: Using the Database that was created earlier, apprentices are now requested to design, implement and populate a real life Data Warehouse to support the reporting requirements of the company. The data warehouse should support at least 1 Financial Data Mart. The results of this Ca should be displayed on an online dashboard.			
Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4,5
Non-Marked:	Yes		
Assessment Description: Weekly tutorials will provide opportunities for both one to one feedback from the lecturer as well as peer review and feedback.			
End of Module Assessment			
Assessment Type:	Terminal Exam	% of total:	50
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4,5
Non-Marked:	No		
Assessment Description: The examination will be in the region of two hours in duration and may include a mix of: short answer questions, essay based questions and case study based questions. Marks will be awarded based on clarity, appropriate structure, relevant examples, depth of topic knowledge, and evidence of outside core text reading.			
No Workplace Assessment			
Reassessment Requirement			
Repeat examination Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.			

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Module Workload

Module Target Workload Hours 0 Hours

Module Resources	
<i>Recommended Book Resources</i>	
Thomas Connolly, Carolyn Begg. (2014), Database Systems: A Practical Approach to Design, Implementation, and Management, 6th Edition. Pearson Education. Baron Schwartz, Peter Zaitsev, Vadim Tkachenko. High Performance MySQL, O'Reilly Media.	
<i>Supplementary Book Resources</i>	
Gordon S. Linoff. Data Analysis Using SQL and Excel, Wiley. Redmond E., Wilson J.R.. (2009), Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement, O'Reilly Media.	
<i>This module does not have any article/paper resources</i>	
<i>Other Resources</i>	
[Website], http://www.oracle.com [Website], http://www.microsoft.com/sql [Website], http://www.microsoft.com/access [Website], http://www.ibm.com/db2 [Website], http://www.mysql.com [Website], http://www.theartling.com [Website], http://www.mongodb.org [Website], http://www.mysql.com	
Discussion Note:	