H8INDB: Introduction to Databases

Module Code:	H8INDB
Long Title	Introduction to Databases APPROVED
Title	Introduction to Databases
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle
Credits:	5
Module Coordinator:	PAUL HAYES
Module Author:	Paul Stynes
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Lecturer preferably with Master's degree or PHD in a computing or cognate discipline. May have industry experience also. Proposed Lecturer: Mr. David Hamill, Dr. Paul Hayes

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	**Learning Outcome Description**
LO1	Analyse and evaluate current and future trends in database technologies
LO2	Construct and evalaute data models based on analysis of data requirements
LO3	Comprehend and describe the relational database model
LO4	Design, implement and evaluate a relational database system with an appropriate database package
LO5	Formulate and assess advanced SQL queries to manipulate databases and provide value-added reporting

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

Introduction to Databases
Databases Database approach History of Databases Advantages of DBMSs Career Opportunities Introduction to SQL

Database Environment
Logical data independence Physical data independence Types of Data Models Functions of a DBMS Client-Server Architectures

The Relational Model
Terminology Relations & data Properties of Relations Identifying keys Entity & Referential Integrity

Conceptual Data Modelling
Importance of Conceptual Model Object-based data models Entity-Relationship modelling Enhanced ER Modelling Identifying Entities and Attributes Types of Relationships Structural Constraints

Logical and Physical Data Modelling
Logical Relational Data Model Logical Database Design Process of Conversion of Conceptual Model Identifying Parent and Child Entities Implementation of base tables Implementation of constraints

Normalisation
Introduction Functional Dependencies Data Redundancy Update Anomalies Process of Normalisation Normal Forms Denormalisation

Advanced SQL
Complex DML statements with Multiple Commands Update of Views (Vertical and Horizontal)Integrity Enhancement Features

Non-Related Databases
Types of non-relational databases Integrity Enhancement Features Storing and retrieving information Algorithmic based queries Distributed data storage Cloud-based data storage

Data Warehousing
Data Warehouse Concepts Types of data warehouse Designing a Data Warehouse Building a Data Warehouse Online Analytical Processing Administering a data WarehouseChallenges facing a data 211Warehouse

Security and Other Considerations
Security and Administration Threats and Countermeasures Web security RAID technology Legal, Ethical and Intellectual Properties Rights issues

Assessment Breakdown	%
Coursework	40.00%
End of Module Assessment	60.00%

Assessments

Full Time

Coursework

Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4,5
Non-Marked:	Yes		

Assessment Description:
Ongoing independent and group class activities and feedback.

Assessment Type:	Project	% of total:	40
Assessment Date:	n/a	Outcome addressed:	4,5
Non-Marked:	No		

Assessment Description:
Students to collaborate in teams to design, build, administer and operate a relational database management system based on user requirements. Including proctored tests on Database theory and SQL to access intermediary progress on learning outcomes.

End of Module Assessment

Assessment Type:	Terminal Exam	% of total:	60
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4,5
Non-Marked:	No		

Assessment Description:
End-of-Semester Proctored Final Examination

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

Workload: Full Time

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Per Semester	2.00
Tutorial	No Description	12	Per Semester	1.00
Independent Learning	No Description	89	Per Semester	7.42
			Total Weekly Contact Hours	3.00

Workload: Online

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	12	Per Semester	1.00
Tutorial	No Description	12	Per Semester	1.00
Directed Learning	No Description	12	Per Semester	1.00
Independent Learning	No Description	89	Per Semester	7.42
			Total Weekly Contact Hours	3.00

Workload: Part Time

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Every Week	24.00
Laboratories	No Description	12	Every Week	12.00
Independent Learning Time	No Description	89	Every Week	89.00
			Total Weekly Contact Hours	36.00

Module Resources

Recommended Book Resources

> **Thomas Connolly, Carolyn Begg. (2014), Database Systems: A Practical Approach to Design, Implementation, and Management, 6. Pearson Education, [ISBN: 1292061189].**

> **Coronel, C. & Rob, P.. (2014), Database Principles: Fundamentals of Design, Implementation, and Management, Cengage Learning, Boston.**

Supplementary Book Resources

> **Elmasri, R. & Navathe, S.. (2015), Fundamentals of Database Systems (7th ed), Pearson Education, Boston.**

> **Kriev, O.. (2017), SQL: The Comprehensive Beginner's Guide to Learn SQL with Practical Examples, New York: Createspace Independent Publishing Platform.**

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note:	Approved on behalf of SoC to allow for approval of parent programmes.