



Title:	Database Design APPROVED
Long Title:	Database Design
Module Code:	SOFT7022
Duration:	1 Semester
Credits:	5
NFQ Level:	Intermediate
Field of Study:	Computer Science
Valid From:	Semester 1 - 2019/20 (September 2019)
Module Delivered in	6 programme(s)
Module Coordinator:	Sean McSweeney
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Module Description:	In this module students will learn about Database design which is the process of producing a detailed data model of a database. In this module students will be introduced to the database design process, its implementation and usage. The topics of conceptual, logical and physical database design are covered along with advanced database programming concepts to support the design process.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Develop conceptual data models for databases based on the information given by an enterprise, using an industry standard data modelling notation.
LO2	Devise and validate logical design solutions using normalization.
LO3	Discuss the main issues that should be considered during the physical database design and implementation.
LO4	Devise and implement efficient physical database design solutions.
LO5	Develop database programming solutions using an appropriate interface or driver.
Pre-requisite learning	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	
Co-requisites	
No Co Requisites listed	

Module Content & Assessment

Indicative Content

Database Design

Understand and use best design practice for developing databases from concept to implementation.

Conceptual Database Design

Develop conceptual design solutions for databases using design notation such as Chen notation, crow's feet or unified modelling language (UML).

Logical Database Design

Use of normalisation to help produce relations that are well structured, i.e. are in third normal form (3NF) or Boyce-Codd normal form (BCNF) where appropriate. Higher normal norms.

Physical Database Design

Issues to consider when designing - attribute format and group, record organisation, structures, query handling. Choosing storage formats for attributes from a logical data model; Designing physical records and denormalization; Designing physical files and selecting an appropriate file organization by balancing important design factors; Using and selecting indexes.

Database Connectivity

Open database connectivity (ODBC) & Java database connectivity (JDBC)

Assessment Breakdown

	%
Course Work	50.00%
End of Module Formal Examination	50.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Create a conceptual database design for a particular problem such as a banking system or insurance system.	1	20.0	Week 7
Project	Logical and physical design & implementation of database for a particular problem such as a banking system or insurance system.	2,3,4	30.0	Week 10

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	End of Semester Formal Examination	1,2,3,4,5	50.0	End-of-Semester

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.

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Lab supporting content delivered in class.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Independent Study.	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Lab supporting content delivered in class.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Independent Study.	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Module Resources

Recommended Book Resources

- Thomas M. Connolly, Carolyn E. Begg 2015, *Database Systems: A Practical Approach to Design, Implementation and Management*, 6 Ed., Pearson [ISBN: 9780132943260]
- C.J.Date 2003, *An Introduction to Database Systems*, 8 Ed., Pearson [ISBN: 9780321197849]

Supplementary Book Resources

- Ramez Elmasri, Shamkant B. Navathe 2016, *Fundamentals of Database Systems*, 7 Ed., Pearson [ISBN: 9780133970777]

This module does not have any article/paper resources

Other Resources

- website: Oracle
<http://www.oracle.com>
- website: Ingres
<http://www.actian.com>
- website: SQL Server
<https://www.microsoft.com/en-us/sql-server/sql-server-2016>
- website: MySQL
<http://www.mysql.com>

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_KSDEV_8	<u>Bachelor of Science (Honours) in Software Development</u>	3	Mandatory
CR_KDNET_8	<u>Bachelor of Science (Honours) in Computer Systems</u>	3	Elective
CR_KITMN_8	<u>Bachelor of Science (Honours) in IT Management</u>	3	Mandatory
CR_KITSP_7	<u>Bachelor of Science in Information Technology</u>	3	Mandatory
CR_KCOMP_7	<u>Bachelor of Science in Software Development</u>	3	Mandatory
CR_KCOME_6	<u>Higher Certificate in Science in Software Development</u>	3	Mandatory