



Title:	Database Administration APPROVED
Long Title:	Database Administration
Module Code:	COMP8017
Duration:	1 Semester
Credits:	5
NFQ Level:	Intermediate
Field of Study:	Computer Science
Valid From:	Semester 1 - 2019/20 (September 2019)
Module Delivered in	2 programme(s)
Module Coordinator:	Sean McSweeney
Module Author:	ARTHUR TOBIN
Module Description:	This module will provide students with a broad insight into the administration of a database management system. Every Database Management System (DBMS) requires database administration to ensure efficient and effective use of databases by users and applications.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Discuss database systems architecture and configuration concepts.
LO2	Describe and explain database management, data management, user management, optimisation concepts and server side processing (triggers and stored procedures).
LO3	Specify appropriate transaction controls for recovery and concurrency in a multi user database management system.
LO4	Apply concepts of recovery, concurrency, security and data management in a multi-user environment.
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 Architecture

The architecture of a multi-user transaction based relational database systems. Alternatives to relational systems.

Data Management

Data integration and migration; Data fragmentation, clustering, compression techniques. System performance and monitoring. System catalogs. Query optimisation. Stored procedures, triggers. User management.

Concurrency

Transactions. Problems with interleaved transaction management in a database environment. Locking. Serializability. Locking and protocols to effect serializability. Isolation levels. Intent Locking. SQL implementation(Cursors). Timestamping concurrency control, Optimistic concurrency

Recovery

Types of failure: Volatile and non volatile memory failure. Logs. Write ahead log strategy. Log implementations (dual and circular) and log management. Checkpoints (Transaction, Action and Fuzzy). Recovery procedures(Undo/Redo). Link between buffer management and recovery schemes (No Undo/redo etc). Non volatile failure and archival Databases/logs.

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
Other	A combination of practical/skills evaluation and written report relating to the application of database recovery, concurrency, security and database administration in a multi-user database environment.	1,2,3,4	50.0	Every Week

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

Reassessment Requirement
<p>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.</p>

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
<i>Recommended Book Resources</i>
<ul style="list-style-type: none"> • Connolly & Begg 2014, <i>Database Systems</i>, 6th Ed., Pearson [ISBN: 9780132943260]
<i>Supplementary Book Resources</i>
<ul style="list-style-type: none"> • Elmasri & Navathe 2015, <i>Fundamentals of Database Systems</i>, 7th Ed., Pearson [ISBN: 9780133970777] • Craig S. Mullins 2012, <i>Database Administration: The Complete Guide to Practices and Procedures</i>, Addison-Wesley [ISBN: 9780321822949]
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<ul style="list-style-type: none"> • Website: <i>MySQL</i> http://www.mysql.com • Website: <i>Ingres</i> http://www.actian.com • Website: <i>Tutorialspoint</i> Keywords: <i>Database Management, Recovery, Concurrency, Security</i> , Tutorialspoint http://www.tutorialspoint.com/ • Website: <i>Slideshare</i>, LinkedIn Corporation, Web https://www.slideshare.net/

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_KITMN_8	<u>Bachelor of Science (Honours) in IT Management</u>	4	Mandatory
CR_KITSP_7	<u>Bachelor of Science in Information Technology</u>	4	Elective