

Module Code:	CONL705
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Module Title:	Database Systems
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Level:	7	Credit Value:	15
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Cost Centre(s):	GACP	JACS3 code:	I240
		HECoS code:	100754

Faculty:	FAST	Module Leader:	Bindu Jose
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Scheduled learning and teaching hours	15 hrs
Guided independent study	135 hrs
Placement	0 hrs
Module duration (total hours)	150 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
MSc Computer Science (online)	✓	<input type="checkbox"/>
MSc Computer Science with Big Data Analytics	✓	<input type="checkbox"/>
MSc Computer Science with Software Engineering	✓	<input type="checkbox"/>

Pre-requisites
Studied CONL701 Critical Research for Postgraduate Study

Office use only

Initial approval: 04/09/2019

Version no:1

With effect from: 01/01/2020

Date and details of revision:

Version no:

Module Aims

This module is designed to give students an understanding of the role of database systems in Information Management, and the theoretical and practical issues that influence the design and implementation of relational database management systems. The module will provide the student with the skills required to create, maintain and interrogate a relational database management system using commercially available database software. The SQL constructs used adhere to the current standards, so will be applicable in all SQL-based platforms. The module will equip the students to critically analyse various database issues and recommend solutions in a multiuser relational database environment.

Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

At the end of this module, students will be able to

Key Skills

At the end of this module, students will be able to		Key Skills	
1	Demonstrate an advanced understanding of the principles of the relational database model, data integrity and functional dependency.	KS1	KS3
		KS4	KS5
		KS6	KS9
2	Apply knowledge of database principles to identify and design appropriate solutions to logical data design problems.	KS1	KS3
		KS4	KS5
		KS6	KS9
3	Perform data manipulation and information retrieval operations using query language and stored procedure using commercially available DBMS software e.g. ORACLE SQL	KS1	KS2
		KS3	KS5
		KS6	KS9
4	Identify and analyse various security, concurrency and availability issues in a multi-user relational database environment.	KS1	KS3
		KS4	KS5
		KS6	KS5
		KS8	KS9
5	Critically evaluate various security, backup and recovery strategies in a relational database environment	KS1	KS3
		KS4	KS5
		KS6	KS5
		KS8	KS9

Transferable skills and other attributes

Analysis and design skills
 Critical thinking and evaluation
 Organisation and time management

Derogations

None

Assessment:

Indicative Assessment Tasks:

Assessment of the module will be based on coursework requiring the students to complete weekly exercises, designing a database solution for a case study (Coursework 1) followed by its implementation using SQL and exploring security and accessibility issues and critically recommending security and backup strategies (Coursework 2).

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1,2,3	Coursework	70%	2,000 words (equiv)
2	4,5	Coursework	30%	1,000 words (equiv)

Learning and Teaching Strategies:

The overall learning and teaching strategy is one of guided independent study requiring ongoing student engagement. Online material will provide the foundation of the learning resources, requiring the students to login and engage on a regular basis throughout the eight-week period of the module. There will be a mix of suggested readings, discussions and interactive content containing embedded digital media and self-checks for students to complete as they work through the material and undertake the assessment tasks. The use of a range digital tools via the virtual learning environment together with additional sources of reading will also be utilised to accommodate learning styles. There is access to a helpline for additional support and chat facilities through Canvas for messaging and responding.

Syllabus outline:

Database systems

1. Database approach, environment, development cycle, relational model

Database development

2. Normalisation

3. Logical data structure AND physical design

Database programming

4. SQL

5. Database implementation

Relational Database Issues

6. Security issues and strategies

7. Backup and recovery issues and strategies

Indicative Bibliography:

Essential reading

Connolly, T.M. and Begg, C.E. (2014), *Database Systems - A Practical Approach to Design Implementation and Management*. 6th ed. Harlow: Pearson Education.

Other indicative reading

Elmasri, R. and Navathe, S.B. (2016), *Fundamentals of Database Systems*. 7th ed. Harlow: Pearson Education.

Kroenke, D.M. and Auer, D.J. (2015), *Database Processing: Fundamentals, Design, and Implementation*. 14th Ed. Pearson Education.

Viescas, J.L. (2018), *SQL Queries for Mere Mortals: A Hands-On Guide to Data Manipulation in SQL*. Addison-Wesley.

Watt, A. (2014), *Database Design*. 2nd Ed. BCampus