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MODULE DESCRIPTOR

Module Title

Database Security

Reference	CM3106	Version	2
Created	April 2017	SCQF Level	SCQF 9
Approved	July 2016	SCQF Points	15
Amended	October 2017	ECTS Points	7.5

Aims of Module

To enable students to evaluate and apply the techniques used in the development and administration of secure databases and to develop the skills necessary to defend against threats to database security.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Explain and analyse techniques used for designing and managing a secure database.
- 2 Identify and analyse threats to the security of a database.
- 3 Identify, analyse and appraise the necessary countermeasures to secure a database.
- 4 Apply the methods and techniques used in designing and managing a secure database.
- 5 Critically examine and appraise disaster recovery techniques in database management.

Indicative Module Content

Database secure design: SQL and Procedural SQL security features. Database administration and management: managing users and database structures; backup and recovery. Authentication, Authorisation and Auditing: managing user accounts, roles and privileges. Data Security: encryption, row?level security, virtual private database. Database security threats on the Web: SQL injection. Database Forensics: investigating attacks against the database. Data Security Compliance: PCI-DSS, etc. Standards and Best Practice Guides: ISO 27001, ISO 27005, ISO 27031.

Module Delivery

Key concepts are introduced and illustrated through lectures and directed reading. The understanding of students is tested and further enhanced through interactive tutorials. In the laboratories, the student will progress through a sequence of exercises to develop sufficient knowledge and skills in database security.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	48	N/A
Non-Contact Hours	102	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	50%	Outcomes Assessed:	1, 2, 3, 5
Description:	Exam.				

Component 2

Type:	Practical Exam	Weighting:	50%	Outcomes Assessed:	4
Description:	Practical exam.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

The calculation of the overall grade for this module is based on 50% weighting of C1 and 50% weighting of C2. An overall minimum grade D is required to pass the module.

		Examination:						
		A	B	C	D	E	F	NS
Practical Exam:	A	A	A	B	B	C	E	
	B	A	B	B	C	C	E	
	C	B	B	C	C	D	E	
	D	B	C	C	D	D	E	
	E	C	C	D	D	E	E	
	F	E	E	E	E	E	F	
NS		Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	CM2101 Database Systems, or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 Carter, P., 2018. Securing SQL Server
- 2 DBAs Defending the Database, 2nd Edition, ISBN 978-1-4842-4160-8, Apress; Galluccio,E.,Caselli E. & Lombari,G., 2020
- 3 SQL Injection Strategies: Practical techniques to secure old vulnerabilities against modern attacks, ISBN: 9781839217135. Packt Publishing; Elmasri,R. & Navathe,S., 2016.
- 4 Fundamentals of Database Systems,Global Edition. Pearson; Silberschatz,A. & Korth,H.,2019. Database System Concepts, 7th Edition. McGraw-Hill Education.