

WM283-15 Databases and Information Management

27/28

Department

WMG

Level

Undergraduate Level 2

Module leader

Sarah Aktaa

Credit value

15

Module duration

10 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Databases are the backbone of modern information systems, serving as repositories for vast amounts of data. They provide structured organization and efficient retrieval, making them essential in various industries, from business and healthcare to technology and research. Understanding databases is crucial for effective data management and decision-making. In this module, students will be introduced to the essential concepts of databases, data modelling, and optimisation. This knowledge will empower students to craft efficient databases for superior information management. As our digital world becomes increasingly data-driven, protecting this data from cyber threats is of paramount importance. Therefore, students will give particular attention to database security and cybersecurity, equipping them with the expertise needed to safeguard valuable data and defend against potential threats. From understanding Database Management Systems (DBMS) and data modelling to mastering Structured Query Language (SQL) and optimizing queries, students will gain indispensable skills for designing and maintaining robust databases.

Module aims

This module is designed to provide students with a broader understanding of the pivotal role that

databases play in contemporary information systems. It will cover effective data modelling, information management, database security, and their practical applications in real-world scenarios. Additionally, the module seeks to foster the integration of diverse data sources, ensuring data integrity and consistency, thereby nurturing a comprehensive understanding of information repositories. It emphasizes compliance with standards such as GDPR (General Data Protection Regulation) and the implementation of robust controls. GDPR directly influences how organisations design and operate their data systems. Databases must be structured to support individuals' rights under GDPR, such as the right to access, right to rectification, and right to be forgotten. This requires implementing features like data audit trails, access controls, data minimisation practices, and the ability to anonymise or delete user data upon request.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The content of this course will be presented with a primary focus on cyber security principles and perspectives:

Databases and information management terms and concepts.

Database management systems (DBMS).

DBMS architecture.

Data modelling techniques.

Entity-Relationship Diagrams (ERDs).

Normalization and database design principles.

Structured Query Language (SQL) fundamentals.

Optimisation techniques for query performance.

Common database vulnerabilities.

Strategies for cyber threat prevention.

Learning outcomes

By the end of the module, students should be able to:

- Design and construct a data model that fulfils specific information management needs [CITP: 2.1.1, 2.1.12]
- Assess the potential cyber security impacts resulting from information management in a specific scenario. [CITP: 2.1.5]
- Conduct a critical analysis of database security, identifying weaknesses, and implementing effective measures to enhance it. [CITP: 2.1.11, 2.2.2]
- Demonstrate the deployment, configuration, and management of database security, including user administration and policy optimisation. [CITP: C12]

Indicative reading list

[Reading lists can be found in Talis](#)

[Specific reading list for the module](#)

Subject specific skills

This module enables students to develop a comprehensive understanding of the fundamentals of databases and information management. Furthermore, in addition to gaining expertise in aspects like database design, data modelling, query construction, data retrieval techniques, access control, and authorisation methods, students also will develop their capability to implement security policies and protocols within database environments.

Transferable skills

Information literacy
Critical thinking
problem-solving
written communication

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (10%)
Supervised practical classes	15 sessions of 1 hour (10%)
Online learning (independent)	16 sessions of 1 hour (11%)
Private study	44 hours (29%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

Engage in individual tasks outside of workshop hours that involve following up on activities initiated during previous workshops or preparing for upcoming workshop sessions.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time	Eligible for self-certification
Assessment component			
Coursework	70%	42 hours	Yes (extension)
The report outlines the execution of a specific database type encompassing the development of suitable techniques for data population, querying, and data modification. It mandates a thorough and critical assessment by the student, centred on the security controls implemented to protect certain aspects of the information lifecycle process by solving a case study provided.			

Reassessment component is the same

Assessment component			
Unseen, closed book Test	30%	18 hours	No
The in-class test is designed to assess students' foundational understanding of core topics in databases and information management covered in the module. The test evaluates theoretical knowledge and some practical application skills essential for designing, querying, and managing relational database systems. In addition assessing their critical thinking in areas such as data governance, ethical/legal implications, and conceptual aspects of database security.			

Reassessment component is the same

Feedback on assessment

The coursework will receive written feedback, and during tutorial sessions, verbal feedback will be provided. Solutions to tutorial questions will also be made available, and summative feedback will be given for assignments and the test.

Feedback on the test will be provided in the form of a cohort-level summary outlining common strengths, frequent errors, and areas for improvement.

Availability

Courses

This module is Core for:

- UWMA-H651 Undergraduate Cyber Security
 - Year 2 of H651 Cyber Security
 - Year 2 of H651 Cyber Security
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