CS1D4-15 Database Systems (DBS)

21/22

Department
Computer Science
Level
Undergraduate Level 1
Module leader
Adam Chester
Credit value
15
Module duration
5 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This module will enable students to gain a firm grasp of the basics of databases, including the principles of relational databases, how to write database queries, and what the principles of database design are, allowing them to design and implement a database from requirements. They will also learn what the basic features of database management and security are, and how to apply this to their own area of work.

Module aims

This module aims to provide students with a basic introduction to database systems. it will cover aspects relating to the theory of relational databases, query languages, database development, query development, database management, and database security.

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.

This module will teach students:

- An overview of databases and database management systems

- Concepts and language for relational theory (including values, variables, types, operators, propositions, and predicates)
- Relations and predicates and relational and logical operators
- Relational algebra
- Integrity constraints
- Query planning and optimisation
- Database design issues (including functional dependency and normalisation)
- SQL for table definition, selection and queries, as well as constraints, join, and aggregation
- An overview of database management and security issues

Learning outcomes

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

- Demonstrate an understanding of and apply key knowledge in the theory and practice of database design and theory.
- Create appropriate efficient database designs for a range of simple applications.
- Use notations such as SQL to implement a database design.
- Construct appropriate queries in standard notations for a range of queries needed in common applications.
- Identify and express relevant integrity constraints for a given database design.
- Demonstrate an understanding of key issues of database management and security.
- Be able to apply their knowledge to the design and development of an effective database.

Indicative reading list

Elmasri, R., and Navathe, SB, "Database Systems: Models, Languages, Design and Application Programming (6/e)", Pearson (2011)
Connolly, T., and Begg, C., "Database Systems: A Practical Approach to Design, implementation and Management (5/e)", Pearson (2010)

Subject specific skills

- Identify organisational information requirements and model data solutions using conceptual data modelling techniques
- Implement a database solution using an industry standard database management system (DBMS)
- Perform database administration tasks and is cognisant of the key concepts of data quality and data security
- Apply industry standard processes, methods, techniques and tools to execute projects
- The role of data management systems in managing organisational data and information
- The fundamentals of data structures, database system design, implementation and maintenance

Transferable skills

- Have demonstrated that they have mastered basic business disciplines, ethics and courtesies, demonstrating timeliness and focus when faced with distractions and the ability to complete tasks to a deadline with high quality.
- Flexible attitude
- Ability to perform under pressure
- A thorough approach to work

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	19 sessions of 30 minutes (6%)
Tutorials	14 sessions of 1 hour (9%)
Practical classes	8 sessions of 1 hour (5%)
Work-based learning	197 sessions of 30 minutes (65%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time
Tests and practical work during block learning	30%	
Practical assignment covering database design, development, and evaluation based on work-based learning	70%	

Feedback on assessment

Written and verbal

Availability

Courses

Course availability information is based on the current academic year, so it may change.
This module is Core for:

- Year 1 of DCSA-I1I2 Undergraduate Computer Science and Technology Solutions (Data Analyst) (Degree Apprenticeship)