University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Database Applications			
Code: COMP09050	**SCQF Level: 9 (Scottish Credit and Qualifications Framework)**	**Credit Points: 20**	**ECTS: 10 (European Credit Transfer Scheme)**
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Tahir Mahmood		

Summary of Module

This module considers how recent advancements in technologies have resulted in what is commonly referred to as the 'data explosion'. Vast quantities of data (structured, semi-structured and unstructured) are being created and businesses are seeking ways to effectively capture, organise and secure this valuable asset. This module examines how database technologies can fulfil this role.

Management of data is normally achieved through the use of database management system (DBMS) and it is this complex software that enables the creation and sharing of this valuable resource. As a centralized resource, a database must support the differing requirements of numerous concurrent users – presenting/using data in ways that is appropriate throughout a business. This module investigates the services provided by multi-user DBMSs and considers how modern database systems can ensure that data is both accessible and secure.

The most popular way to store and manage critical business data is using SQL (Structured Query Language) and relational databases. This module examines how relational databases can be designed and implemented to protect the underlying database while presenting appropriate interfaces (e.g. through views and stored procedures) to many the many different user groups/application programs accessing the database.

This module also explores increasingly popular approaches to the delivery of database services such as through cloud computing and examines alternative approaches and technologies (i.e. NoSQL) to the storage and management of Big Data.

- These days most of us spend an ever increasing amount of time at home and in the workplace using technology in one way or another. A key component of much of this technology is the database component, which is often hidden from us. This module explores the increasing prevalence of database applications and explores the nature of the underlying database technology.

- This module examines how the data requirements for a case study (using a company conducting business on the Web) can be met using the facilities

provided by a client-server DBMS such as Microsoft SQL Server DBMS or MySQL.

- The purpose of this module is to look at the topics associated with designing and implementing database systems in more depth and have more consideration of the real issues and techniques associated with dealing with 'live' databases.
- This module will work to develop a number of the key 'I am UWS' Graduate Attributes to make those who complete this module: Universal (Critical Thinker, Ethically-minded, Research-minded), Work Ready (Problem-Solver, Effective Communicator, Ambitious) and Successful (Autonomous, Resilient, Driven).

Module Delivery Method

Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
☒	☒	☐	☐	☐	☐

See Guidance Note for details.

Campus(es) for Module Delivery

The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☒	☐	☒	☒	☐	☐	Add name

Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1	☒	Term 2	☐	Term 3	☐

Learning Outcomes: (maximum of 5 statements)
These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module.
At the end of this module the student will be able to:

L1	Demonstrate broad and integrated knowledge of the typical functions of a DBMS with particular attention on those supporting the integrity/security of multi-user database system.
L2	Demonstrate a critical understanding of the issues associated with physical database design and monitoring and tuning the operational database system.

L3	Use a range of routine and some advanced skills and techniques to produce a conceptual, logical and physical database design for a database system that supports different database views.
L4	Use a range of routine and some advanced skills and techniques to implement a prototype database for a particular case study using a commercial client-server DBMS.
L5	Demonstrate a broad knowledge of the range of current and emerging database applications and technologies.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level **9** A broad and integrated knowledge and understanding of the scope and main areas associated with database systems. Knowledge and understanding of the database system development lifecycle with particular emphasis on ensuring the integrity and security of database systems support many users. Knowledge and understanding of the Structure Query Language (SQL) with particular focus on the creation of database tables, views, indexes and stored procedures. Knowledge and understanding of the enhanced concepts associated with entity-relationship (ER) and the factors that influence good design. Knowledge and understanding of the main issues associated with physical database design and monitoring and tuning the operational database system. Knowledge and understanding of the main concepts and issues associated with security, transaction management and concurrency control. Knowledge and understanding of current and emerging trends in database applications and technologies
Practice: Applied Knowledge and Understanding	SCQF Level **9** Use a selection of principal skills, techniques and practices associated with the database system development lifecycle to facilitate the development of a multi-user database system for a given case study.
Generic Cognitive skills	SCQF Level **9**

	Identify and analyse routine professional problems and issues associated with the development and use of database systems in the business world.	
Communication, ICT and Numeracy Skills	SCQF Level **9** Use a range of routine skills and some advanced and specialised skills in the establishing the requirements for a multi-user database system and in designing and implementing that database	
Autonomy, Accountability and Working with others	SCQF Level **9** Take some responsibility for the work of others and for a range of resources in undertaking the necessary activities to complete the module coursework.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code: COMP08002	**Module Title:** Database Development
	Other:	or similar module
Co-requisites	**Module Code:**	**Module Title:**

*Indicates that module descriptor is not published.

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	20
Tutorial/Synchronous Support Activity	8
Laboratory/Practical Demonstration/Workshop	20
Independent Study	152
	200 Hours Total

****Indicative Resources: (eg. Core text, journals, internet access)**
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Connolly, T.M. and Begg, C.E. (2005) Database systems: a practical approach to design, implementation, and management. 6th edition, Pearson. Gorman, K., Hirt, A., Noderer, D., Pearson, M., Rowland-Jones, J., Ryan, D., Sirpal, A. and Woody, B. (2020) Introducing Microsoft SQL Server 2019: Reliability, scalability, and security both on premises and in the cloud. Packt Publishing Ltd. Nielsen, P. and Parui, U. (2011) Microsoft SQL server 2008 bible. John Wiley & Sons. Internet access to Aula VLE to allow student access to all teaching material, including slides, labs, tutorials and coursework.
(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)
Attendance and Engagement Requirements
In line with the Student Attendance and Engagement Procedure: Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Nothing in the module should present difficulties for students on the basis of their gender, ethnicity, or sexual orientation. In relation to students with special needs, when a student discloses a disability the individual module tutor, in consultation with the special needs co-ordinator, will agree any appropriate adjustments to be made. Students should note that the language of instruction is English and that they will need to have a reasonable grasp of the language in order to keep abreast of the teaching materials and in submitting assessed work.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Computing
Assessment Results (Pass/Fail)	Yes ☐No ☒

School Assessment Board	Business & Applied Computing
Moderator	Frances McCormick
External Examiner	T Gaber
Accreditation Details	This module is accredited by BCS as part of a number of specified programmes.
Changes/Version Number	2.14 Section 9 - Change to Resources

Assessment: (also refer to Assessment Outcomes Grids below)
This module consists of the following assessments: ▪ **Class Tests:** The summative component of assessment is a class test worth 10% (individual) and this takes place approximately halfway through the module and the second summative component of assessment is towards the end of the module and this class test is worth 40% (individual). The results for these two summative assessments are combined to give a total worth 50%. ▪ **Coursework:** Formative assessment is available through completion of the practical labs - that allow students to test their progress and understanding of the practical aspects of the syllabus. The third summative assessment is lab-based, group work coursework worth 50% which is undertaken in the second half of the module.
Assessment 1 – **Class Tests**
Assessment 2 – **Coursework**
(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Learning Outcome (5)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Class test (written)	✓	✓	✓		✓	50	2

Component 2							
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Learning Outcome (5)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Dissertation/ Project report/ Thesis			✓	✓		50	0
Combined Total for All Components						**100%**	**2 hours**