University of the West of Scotland

Module Descriptor

Session: 2023/24

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Title of Module: Data Analysis and Visualisation

Code: COMP11108	**SCQF Level: 11** (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:	Graeme A McRobbie		

Summary of Module

This module examines the factors that have led to the emergence and increasing popularity of data analytics (also known as business intelligence or business analytics) and how this business function supports corporate decision makers. This module examines the technologies necessary to provide data analytics such as the backend databases and frontend tools. This module reviews the main methodologies for designing the backend databases (known as data warehouses), and also considers more affordable options for smaller businesses. This module examines the additional technologies that can form the data analytics environment including tools capable of providing online analytical processing (OLAP), data mining and dashboards. This module considers the major vendors in the data analytics environment such as SAS, SAP, Microsoft, Oracle and open-source providers such as BIRT. This module explores emerging trends associated with the data analytics such as in-memory analytics, self-service BI (SSBI), data as a service (DaaS) and sentiment analysis.

This module includes practical classes using a data analytics tool such as Tableau to learn about the process of Visual Data Discovery (VDD). Data visualisations are key in supporting the data analytics process and this module will highlight best practices in their creation. Students will be exposed to data analytics scenarios that requires investigation of emerging data analytics technologies and exploration of data sets using VDD.

- The intended audience for this module are students interested in following a career in data management and/or data analytics.
- 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	HybridO	Work-based Learning
				✓	

Face-To-Face
Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.

Blended
A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered “blended” if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations

Fully Online
Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.

HybridC
Online with mandatory face-to-face learning on Campus

HybridO
Online with optional face-to-face learning on Campus

Work-based Learning
Learning activities where the main location for the learning experience is in the workplace.

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)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
✓				✓		

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	✓	Term 2	✓	Term 3	✓

Learning Outcomes: (maximum of 5 statements)

On successful completion of this module the student will be able to:

L1. Demonstrate a critical understanding of the principal theories, concepts and issues associated with data analytics and data visualisation.

L2. Demonstrate knowledge and a critical understanding of the principal methodologies, techniques and technologies associated with data analytics and visualisation

L3. Use a range of routine and specialist skills, techniques and technologies to conduct data analysis including data visualisations for a given case study

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 11. A critical understanding of the principal theories, concepts and principles associated with data analytics and data visualisation. A critical understanding of the principal theories, concepts and services associated with data analytics and data visualisation technologies. Extensive, detailed and critical knowledge and understanding of best practices and approaches to data analytics and data visualisation
Practice: Applied Knowledge and Understanding	SCQF Level 11. Use a range of the principal professional skills, techniques, practices and/or materials associated with the analysis and visualization of data
Generic Cognitive skills	SCQF Level 11. Apply critical analysis, evaluation and synthesis to forefront issues and routine problems (including those associated with the security and privacy of data) associated with the development and use of data analytics and visualization applications in a business environment
Communication, ICT and Numeracy Skills	SCQF Level 11. Critically analyse, interpret, and evaluate case study data and visualisations to

	achieve business goals and targets
Autonomy, Accountability and Working with others	SCQF Level 11. Take responsibility for own work and/or significant 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:	**Module Title:**
	Other:	
Co-requisites	**Module Code:**	**Module Title:**

* Indicates that module descriptor is not published.

Learning and Teaching

This module is delivered through live and pre-recorded lectures. Lectures are supplemented with tutorials for smaller groups of students to allow for the re-examination of the more complex aspects of the syllabus. Lab (PC)-based classes complement the lectures by providing an environment to support the learning of the more practical-based aspects of the syllabus.

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:

Successful Business Intelligence: Unlock the Value of BI & Big Data, 2nd Edition by Cindi Howson (2014) McGraw-Hill Osborne*

(**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)

Engagement Requirements

In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: Academic engagement procedure

Supplemental Information

Programme Board	Computing
Assessment Results (Pass/Fail)	No
Subject Panel	Applied and Business Computing
Moderator	tbc
External Examiner	tbc
Accreditation Details	pending
Changes/Version Number	1

Assessment: (also refer to Assessment Outcomes Grids below)
Formative assessment is available using on-line practice tests (on Aula) - that allow students to test their progress and understanding of the syllabus. The first summative component of assessment is a class test worth 10% (individual) and this takes place approximately halfway through the module and the third 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%.
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 second summative assessment is lab-based, group work coursework worth 50% which is undertaken in the second half of the module.
(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 Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class test (written)	✓	✓		50	0

Component 2

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

Footnotes
A. Referred to within Assessment Section above
B. Identified in the Learning Outcome Section above

Note(s):
1. More than one assessment method can be used to assess individual learning outcomes.
2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).

This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity
UWS Equality and Diversity Policy
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)