University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Introduction to Data Science and Coding			
Code:	**SCQF Level: 11 (Scottish Credit and Qualifications Framework)**	**Credit Points: 20**	**ECTS: 10 (European Credit Transfer Scheme)**
School:	School of Business and Creative Industries		
Module Co-ordinator:	Mehran Ullah		

Summary of Module

This module is designed to equip students with the necessary data science skills to excel in today's competitive business environment. By providing foundational knowledge and practical skills in data science, students will be able to tackle real-world challenges in supply chain management domain. The ability to leverage data is critical for success in logistics and supply chain management. This module aims to enhance students' skills in utilizing data science and machine learning techniques to optimize operations, minimize risk, improve forecasting, and gain a competitive advantage through data-driven insights.

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	Develop Proficiency in appropriate programming language for Data Science and Machine Learning.
L2	Attain critical understanding, knowledge, skills, practices, and thinking in the area of Data Science.
L3	Attain critical understanding, knowledge, skills, practices, and thinking in the area of Machine Learning.
L4	Critical awareness of Leveraging Data Science and Machine Learning techniques for L&SCM Problems.
L5	Click or tap here to enter text.

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** Overview of the data-driven approach in logistics and supply chain management. A broad understanding of principal theories, concepts, and principles in Data Science and Machine learning A critical and integrated knowledge of Data Science impacting supply chain performance. A critical and integrated knowledge of how Machine learning is used in supply chain Decision Making.
Practice: Applied Knowledge and Understanding	SCQF Level **11** Apply Data Science and machine learning Algorithms in a programming language/software package Apply a range of principal professional skills, techniques, and practices associated with Data Science and Machine learning in real-world contexts.

	Utilize specialized skills, techniques, and practices from Data Science and Machine learning to address complex challenges in logistics and supply chain management.	
Generic Cognitive skills	SCQF Level **11** Applying critical analysis and evaluation to some issues in Data Science and Machine Learning Identification, conceptualization, and definition of new and abstract problems and issues in data science. Dealing with complex issues and making informed judgments in the absence of complete or consistent data/information.	
Communication, ICT and Numeracy Skills	SCQF Level **11** Communication with a range of audiences, peers, more senior colleagues, and specialists using appropriate methods in data science. Using a wide range of software and ICT applications to support and enhance learning. Critically evaluating a wide range of numerical and graphical data as appropriate. Use of programming language for Data Science and Machine learning	
Autonomy, Accountability and Working with others	SCQF Level **11** Exercising a significant autonomy and initiative in studies taking responsibility for own work. Management of complex ethical and professional issues and making informed judgments on issues not addressed by current professional and/or ethical codes or practices in data science.	
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

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.

The delivery strategy will focus on a student-centric and directed learning approach. This methodology will provide the foundation on which the students learning will be built through the face-to-face workshops. The workshops will have no more than 40 students and lab will have no more than 20 students. Prior to attending these workshops sessions, students will engage in preparatory work, setting the stage for in-depth exploration and contextualization within various scenarios. The workshops will be enquiry based with structure and unstructured activities. The students will be expected to take responsibility for their direction of learning.

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)
Laboratory/Practical Demonstration/Workshop	48
Independent Study	152
Choose an item.	
Choose an item.	
	Hours Total 200

****Indicative Resources: (eg. Core text, journals, internet access)**

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Chirag Shah, "A Hands-On Introduction to Data Science," Cambridge University Press, 2020.

Bishop, Christopher M., "Pattern recognition and machine learning," Springer, 2006

EMC Education Services, "Data Analytics Lifecycle: Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data", John Wiley & Sons, 2015

Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Right Harvard referencing style or agreed professional body deviation and in alphabetical order.
(**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. For the purposes of this module, academic engagement equates to the following: Student must attend and actively participate in every scheduled Face-to face and online sessions. Students must undertake directed reading and preparation before coming to each workshop sessions including any asynchronous activities.

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. Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..
(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	

Assessment Results (Pass/Fail)	Yes ☐No ☒
School Assessment Board	MITE
Moderator	TBC
External Examiner	Format: First initial + Surname. No titles. Please only enter if examiner has been approved for this module.
Accreditation Details	None
Changes/Version Number	1

Assessment: (also refer to Assessment Outcomes Grids below)
This section should make transparent what assessment categories form part of this module (stating what % contributes to the final mark). Maximum of 3 main assessment categories can be identified (which may comprise smaller elements of assessment). **NB: The 30% aggregate regulation (Reg. 3.9) (40% for PG) for each main category must be taken into account. When using PSMD, if all assessments are recorded in the one box, only one assessment grid will show and the 30% (40% at PG) aggregate regulation will not stand. For the aggregate regulation to stand, each component of assessment must be captured in a separate box.** Please provide brief information about the overall approach to assessment that is taken within the module. In order to be flexible with assessment delivery, be brief, but do state assessment type (e.g. written assignment rather than "essay" / presentation, etc) and keep the detail for the module handbook. Click or tap here to enter text.
Portfolio of written work
(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**
Portfolio of written work	✓	✓	✓	✓		100	00

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**

Component 3							
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**
Combined Total for All Components						**100%**	**00 hours**

Change Control:

What	When	Who
Further guidance on aggregate regulation and application when completing template	16/01/2020	H McLean
Updated contact hours	14/09/21	H McLean
Updated Student Attendance and Engagement Procedure	19/10/2023	C Winter
Updated UWS Equality, Diversity and Human Rights Code	19/10/2023	C Winter
Guidance Note 23-24 provided	12/12/23	D Taylor
General housekeeping to text across sections. .	12/12/23	D Taylor

Version Number: MD Template 1 (2023-24)