STUDENT AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Information			
Module Title	Introduction to Programming and Data Science		
Module Code	UFCFVQ-15-M	Level	Level 7
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	
Department	FET Dept of Computer Sci & Creative Tech		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
Overview: This module introduces you to principles of data science and programming with a range of applications to appropriate domains. **Educational Aims:** This module is intended for students with little or no programming experience. It aims to provide students with an understanding of the role computation can play in solving problems and, regardless of their background, feel justifiably confident of their ability to write small programs that allow them to accomplish useful goals **Outline Syllabus:** The module will cover the following topics: Introduction: Introduction to the field of data science, reviewing common functionalities and features tools used in the context of data science. Basic Programming: Principles of programming through a particular programming language such as Python. Use of appropriate IDE or an approved virtual programming environment for the practical

sessions.

Basics of Statistical Inference/Analysis:

Learning basic statistical properties of samples and distributions; population and sample distribution, central limit theorem, point estimates, confidence intervals and an introduction to hypothesis testing.

Data analytics practices:
Understanding the concept of data structures and learning how to read in data into Data Frame structures, how to query these structures, and how the details about such structures are indexed.

Introduction to popular data analysis and statistical learning tools and frameworks, Data Frames, generating summary tables, data grouping, and data manipulating. Creating metrics for analysis.

Data management, processing and manipulation:
Introduction to relational databases, data management, data pre-processing and cleansing and data manipulation

Teaching and Learning Methods: See Assessment

Part 3: Assessment

The assessment strategy for this module is a combination of written examination and coursework assignment. The written examination is of two hours duration and comprises questions to examine cognate and practical skills via a range of problem-solving exercises, and appropriate analysis techniques questions.

Where appropriate, partial source code fragments or partial text cases may be provided as the basis for the examination question. The coursework assignment is a highly interactive one, wherein students demonstrate and present their design work. One-to-one and immediate feedback is provided, which enriches and deepens the on-going learning of the student.

The different components assessed are:

Component A: Final summative assessment will be a final examination on the fundamental concepts of data science and programming with a main focus on data analysis.

Component B: Summative assessment is achieved through the demonstration of a working program together with the submission of a report showing the development process (B) and a logbook of programming exercises.

Resit Assessment Strategy: Students will be required to submit a report showing the development process of a program (solving a problem related to a given domain application) together with a demonstration of the created program running.

First Sit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B		75 %	Practical coursework
Examination - Component A	✓	25 %	Final Examination (2 hours)
Resit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B		75 %	A programming coursework
Examination - Component A	✓	25 %	Written Exam (2 hours)

Part 4: Teaching and Learning Methods		3
Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	

Module Learning Outcomes	Reference
Discuss the foundations of data science, evaluate the difference between data management and data science	MO1
Apply the principles of programming and data management to solve problems.	MO2
Apply object-oriented approaches to software problems.	MO3
Perform basic statistical analysis with suitable tools	MO4
Deal with software reliability and program vulnerability issues through the use of proactive error handling techniques	MO5
Critique and reflect on alternative solutions to a given problem or on their own work in a constructive way	MO6
Undertake independent research activities with relation to innovative approaches to data science problem solving	MO7

Contact Hours	**Independent Study Hours:**	
	Independent study/self-guided study	114
	Total Independent Study Hours:	114
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150
Reading List	*The reading list for this module can be accessed via the following link:* https://uwe.rl.talis.com/index.html	

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Financial Technology [Sep][FT][Frenchay][1yr] MSc 2019-20 Financial Technology [Sep][PT][Frenchay][2yrs] MSc 2019-20