



MODULE SPECIFICATION

Part 1: Information			
Module Title	Programming for Data Science		
Module Code	UFCFVQ-15-M	Level	Level 7
For implementation from	2020-21		
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		
PSRB Requirements	None		

Part 2: Description
<p>Overview: This module introduces you to principles of data science and programming with a range of applications to appropriate domains.</p> <p>Educational Aims: This module is intended for students with little or no programming experience but also for those keen to improve their programming skills. 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.</p> <p>Outline Syllabus: The module will cover the following topics:</p> <p>Introduction:</p> <p>Introduction to the field of data science, reviewing common functionalities and features tools used in the context of data science.</p> <p>Basic Programming and Algorithm Design:</p>

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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.

Procedural implementation of statistical Algorithms

Data analytics practices:

Understanding the concept of data structures and learning how to read in data into Data Frames, 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.

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 practical 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 code. The submission is via a report showing the development process and a logbook of programming exercises.

Resit Assessment Strategy: Comp B: 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. Resit Comp A: exam.

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	25 %	Online Final Examination (2 hours) 24 hour window
Practical Skills Assessment - Component B		75 %	Practical coursework
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	25 %	Online Written Exam (2 hours) 24 hour window
Practical Skills Assessment - Component B		75 %	A programming coursework

Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	
	Module Learning Outcomes	Reference

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	Apply the principles of programming and data management to solve problems	MO1
	Apply object-oriented approaches to software problems.	MO2
	Design and implement algorithms for numerical analysis	MO3
	Deal with software reliability and program vulnerability issues through the use of proactive error handling techniques	MO4
	Critique and reflect on alternative solutions to a given problem or on their own work in a constructive way	MO5
	Undertake independent research activities with relation to innovative approaches to data science problem solving	MO6
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	<p>The reading list for this module can be accessed via the following link:</p> <p>https://rl.talis.com/3/uwe/lists/A10BE78B-FBBD-5B51-F13F-81ACBA7590F3.html?lang=en-US&login=1</p>

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Data Science [Sep][FT][Frenchay][1yr] MSc 2020-21

Data Science [Sep][PT][Frenchay][2yrs] MSc 2020-21

Data Science [Sep][FT][GCET][1yr] MSc 2020-21