



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Data Analytics for Engineers		
Module Code	UFMFGQ-15-M	Level	Level 7
For implementation from	2018-19		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Contributes towards	Engineering Competence [Jan][PT][FR][2yrs] PGDip 2018-19		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> This module aims to enable students to practice data analysis on already available databases in their industry.</p> <p>Through this module the students should understand the necessity of a data driven approach to the decision making process.</p> <p><b>Outline Syllabus:</b> This module will introduce engineers to the field of Data Science. It will cover the following topics:</p>

## STUDENT AND ACADEMIC SERVICES

Introduction to big data and digitalization

Introduction to data analysis methods

Coding methods for data analyses

Statistical thinking for big data

Ethics of big data

**Teaching and Learning Methods:** Contact hours will be a mixture of seminar and computer “lectorials” that will take place over a block week delivery. A project based learning approach will be used in this module, where students will be given a group project as an assignment to complete.

### Part 3: Assessment

The module will be assessed through a group project with a group presentation followed by questions (50%), and an individual report (50%). The group presentation therefore creates a feed-forward opportunity for students to take advantage of when producing their individual reports. Building on the variety of background of the students (computer engineers, maths engineers, process engineers etc.), the task within each group will be divided so that each student will have the opportunity to explore the practical aspect of big data in their own domain while learning from the experience of others in the group.

#### Group project

The students will be divided in groups of 3-5. They will be given a data set from an open source, and a set of open questions. They will need to:

apply data cleaning techniques

program a data analyses in an appropriate coding language such as python

produce a re-usable, documented analysis pipeline

discuss the ethical consideration of this project

#### Group presentation

The group presentation will last 15 minutes followed by 5 minutes of questions. Students will receive a group mark which will be moderated following the Engineering Design and Mathematics guidelines for group work.

#### Individual report

The individual report (max 2000 words) must reflect the students own journey through the project. It will introduce the project as a whole and detail the role and technical contribution of the student.

Note that for any given delivery of the module the precise method for marking group work will be made known to students at the start of teaching.

## STUDENT AND ACADEMIC SERVICES

The resit strategy will be as follows:

Component A: Will provide, depending on the specific circumstance, either the:

Group with the opportunity to present and orally defend the reworked material.

OR

Student with the opportunity to present and orally defend the reworked material.

Component B: Will provide the student with the opportunity to rework the written report.

The “resit as 1st sit” strategy will be as follows: Students will be provided with a scenario and data set that will enable them to

Component A: prepare a 10 minute presentation and answer questions.

Component B: Write a reflective report considering the role of their particular discipline in arriving at the proposed solutions.

Risk of plagiarism will be mitigated by the individualised variables and data being issued to student groups with the assignment brief.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component B	✓	50 %	Individual report (max 2000 words)
Presentation - Component A		50 %	Group presentation (approx. 15 mins) and questions
Resit Components	Final Assessment	Element weighting	Description
Report - Component B	✓	50 %	Individual report (max 2000 words)
Presentation - Component A		50 %	Presentation and questions

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<b>Part 4: Teaching and Learning Methods</b>																			
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Reading List	<p>The reading list for this module can be accessed via the following link:  <a href="https://uwe.rl.talis.com/modules/UFMFGQ-15-M.html">https://uwe.rl.talis.com/modules/UFMFGQ-15-M.html</a></p>																		