MODULE SPECIFICATION

Part 1: Information			
Module Title	Multivariate Statistical Modelling		
Module Code	UFMFW9-30-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	Statistical Modelling 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: This module is concerned with the application of modern statistical methods suitable for modelling complex data. There will be extensive use of statistical computer packages, including: Minitab, R and SPSS

Outline Syllabus: Bayesian Statistics:
Bayesian paradigm
Conjugacy
Computing Posterior Densities – exact and numerical methods
Prior Elicitation including building robust priors

Multivariate Statistics:
Cluster Analysis, CHAID/CART
Factor Analysis and Principal Components Analysis
Structural Equation Modelling
Correspondence Analysis
Multidimensional Scaling
Multivariate Multiple Regression

Generalised Linear Models:

Introduction to the exponential family of distributions
Canonical form of the natural exponential family
Link functions
Associated model diagnostics, model fitting and model building

Teaching and Learning Methods: Scheduled teaching hours will take the form of lectures, workshops and computer practicals. The students will be directed to a programme of self study initiated by the lecture sessions and supported by the practicals/workshops.

Contact time 72 hours
Assimilation and development of knowledge 150 hours
Assessment 78 hours
TOTAL 300 HOURS

Part 3: Assessment			
Component A consists of an examination which assesses students' understanding of concepts and techniques as well as their ability to interpret results within different contexts. Component B consists of two assignments worth 25% each. The assessments will focus on the statistical modelling of data and the mathematical principles on which those techniques are based.			
First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online Written examination
Written Assignment - Component B		25 %	Coursework 1 (max 10 pages)
Written Assignment - Component B		25 %	Coursework 2 (max 10 pages)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online Written examination
Written Assignment - Component B		50 %	One coursework comparable with the coursework in the first assessment attempt. (max 20 pages)

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
Determine appropriate statistical techniques for given contexts and then apply these using modern day software	MO1
Identify appropriate exploratory data analysis techniques and then combine appropriate modelling techniques for a variety of situations	MO2
Assess model diagnostics to inform empirical model building	MO3
Interpret and explain a wide variety of statistical models in different contexts to both expert and non-expert audiences	MO4
Examine limitations of inference from statistical models based on model evaluation techniques	MO5

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	228
Total Independent Study Hours:	228
Scheduled Learning and Teaching Hours:	
Face-to-face learning	72
Total Scheduled Learning and Teaching Hours:	72
Hours to be allocated	300
Allocated Hours	300

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/modules/ufmfw9-30-3.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Mathematics and Statistics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Statistics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Mathematics [Sep][FT][Frenchay][4yrs] MMath 2018-19

Mathematics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19