MODULE SPECIFICATION

Part 1: Information			
Module Title	Statistical Reasoning		
Module Code	UFMFPA-30-1	Level	Level 4
For implementation from	2019-20		
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	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: In this module students will be introduced to the reasoning behind statistics which will be balanced with analysis and exploration of real data that reflect the widespread application of statistics to virtually every profession and academic discipline

Outline Syllabus: Types of data. Data collection methods. Sampling methods.

Exploratory data analysis, methods of exploring, summarising and illustrating data.

Probability. Probability distributions. Bayes Theorem. Mathematical expectation. Moments. Elementary moment generating functions.

Discrete and continuous probability distributions including binomial, Poisson, uniform, exponential, normal.

Estimation. Sampling distributions. Confidence intervals.

Hypothesis testing: Z-tests, t-tests, F-test for variances, Chi-square tests for contingency tables and goodness of fit, nonparametric tests.

Introduction to correlation and regression.

Additive and multiplicative time series models; calculating and interpreting

Index numbers

Teaching and Learning Methods: The module will comprise lectures, computer practicals and classroom tutorials and will make use of statistical computer packages (e.g. MINITAB, R). Emphasis will be on the choice of analysis and on the interpretation and communication of results.

Students will be encouraged to develop critical awareness, intuition and interpretive skills in the application of statistical procedures. To prepare for assessment, students are expected to undertake self-directed learning addition to the directed learning which supports taught classes.

Scheduled teaching hours takes the form of:

Whole group lectures used to deliver new material and to consolidate previous material;

Small group computer practicals with data-driven activities designed to allow students to apply their knowledge and develop statistical literacy;

Small group classroom tutorials with activities designed to reinforce and enhance students understanding of the lecture material.

Contact time: 72 hours
Assimilation and development of knowledge: 150 hours
Coursework preparation: 22 hours
Examination preparation: 56 hours
TOTAL: 300 HOURS

Part 3: Assessment

Component A consists of an examination that is summative and assesses students' understanding of concepts and techniques together with their ability to apply them.

Component B consists of three short assignments designed to test understanding of material and report writing

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		8.5 %	Assignment 1
Written Assignment - Component B		8.25 %	Assignment 2
Written Assignment - Component B		8.25 %	Assignment 3
Examination - Component A	✓	75 %	Written examination (3 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		25 %	Single assignment
Examination - Component A	✓	75 %	Written examination (3 hours)

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
Show a detailed knowledge and understanding of the basic concepts of probability theory and the basic methods of statistical inference	MO1
Identify, perform, and draw conclusions from appropriate statistical analyses of data sets	MO2
Apply Statistical packages to aid statistical analysis	MO3
Communicate the results of a statistical analysis in the form of a written report.	MO4

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/ufmfpa-30-1.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Mathematics and Statistics {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Mathematics and Statistics {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2018-19

Mathematics {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2018-19

Mathematics {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Mathematics with Qualified Teacher Status (QTS) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19