

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Analysis of Data			
Code: MATH07001	SCQF Level: 7 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Dr Raymond Carragher		
Summary of Module			
<p>This module gives an introduction to methods in probability and statistics. These methods are underpinned by the necessary mathematical concepts, and are supported by appropriate software.</p> <p>The mathematical concepts covered will include the necessary basic algebra, including the study of exponentials and logarithms.</p> <p>In statistics, the emphasis will be on the use of diagrams and summary measures to inform the interpretation of descriptive statistics (including averages and measures of spread), working with both univariate and bivariate data.</p> <p>The concepts in basic probability are discussed including addition and multiplication laws, complements, and conditional probability.</p> <p>Introduction to hypothesis testing and test of mean for normal populations.</p> <p>The concept of correlation is discussed for continuous data. The basic ideas of linear regression are then discussed, including interpretation of scatter plots, the idea of the line of best fit $Y = A + BX$, and making predictions (interpolation and extrapolation). The value of B is statistically tested to validate the linear regression model.</p> <p>Categorical data is also discussed, with a discussion of independence.</p> <p>Suitable software will be used to produce statistical output to a range of problems.</p> <p>The Graduate Attributes relevant to this module are given below:</p> <ul style="list-style-type: none"> • Academic: Critical thinker; Analytical; Inquiring; Knowledgeable; Problem-solver; Digitally literate; Autonomous. • Personal: Effective communicator; Motivated; Resilient • Professional: Collaborative; Ambitious; Driven. 			

Module Delivery Method

Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See Guidance Note for details.					

Campus(es) for Module Delivery						
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	<input type="checkbox"/>	Term 2	<input checked="" type="checkbox"/>	Term 3	<input type="checkbox"/>

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end of this module the student will be able to:	
L1	Perform graphical and basic algebraic processes correctly.
L2	Demonstrate understanding of concepts of probability.
L3	Perform suitable statistical analysis of continuous and categorical data.
L4	Use suitable computer software to perform statistical analysis and interpret results.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 7 Demonstrating basic awareness of the application of mathematical or statistical techniques, as appropriate, to the solution of problems.

Practice: Applied Knowledge and Understanding	SCQF Level 7 Using basic techniques of calculation in solving standard mathematical or statistical problems, as appropriate, and making valid interpretations of these.	
Generic Cognitive skills	SCQF Level 7 Using a range of methods to analyse well-defined problems in relevant mathematical or statistical contexts.	
Communication, ICT and Numeracy Skills	SCQF Level 7 Using suitable software to obtain, and present, results from basic statistical problems, as appropriate. Making valid interpretations of the output of appropriate software.	
Autonomy, Accountability and Working with others	SCQF Level 7 Working autonomously to produce short reports on basic statistical problems. Collaborating with others in a small team to solve basic statistical problems.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	Module Title:
	Other:	National 5 Mathematics, or equivalent
Co-requisites	Module Code:	Module Title:

*Indicates that module descriptor is not published.

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	24

Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	12
Independent Study	152
	200 Hours Total

****Indicative Resources: (eg. Core text, journals, internet access)**

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Suitable software, e.g. Excel, SPSS, Word

The module VLE.

"Foundation Mathematics", A Croft and R Davison

"A Basic Course in Statistics", GM Clarke and D Cooke

"Introductory Statistics", Openstax (online resource)

(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the [Student Attendance and Engagement Procedure](#): Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality, Diversity and Human Rights Code](#).

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Engineering and Physical Sciences
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Assessment Results (Pass/Fail)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
School Assessment Board	Computing, Engineering and Physical Sciences
Moderator	Dr Wan Mekwi
External Examiner	P Wilson
Accreditation Details	
Changes/Version Number	2.17 Slight change to module summary, and supplemental information. Slight change to timetabled assessment hours.

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1 Coursework worth 40% of final mark. This will include a final presentation.
Assessment 2 Two class tests worth 60% of the final mark.
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Presentation				✓		40	4

Component 2							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours

Class test (unseen, open book)	✓	✓	✓			60	3
Combined Total for All Components						100%	7 hours