University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Mathematics for Computing			
Code: MATH07005	SCQF Level: 7 (Scottish Credit and Qualifications Framework)	Credit Points: 10	ECTS: 5 (European Credit Transfer Scheme)
School:	School of Computing, Engineering & Physical Sciences		
Module Co-ordinator:	Dr Wan Mekwi		

Summary of Module

This is a foundation level module in mathematics and statistics, supported by suitable technology. The module covers an elementary understanding in algebra, matrix algebra, set theory, statistics and probability. It aims to provide participants with the foundations required to tackle, in their future studies, more mathematically based computing subjects such as database systems and data compression schemes.

The content of the mathematical material will primarily focus on working with formulae, including the use of scientific notation, the solution of common types of basic equations, and the use of powers. The essentials of set theory will be covered. Matrices will be introduced, along with standard matrix algebra.

The emphasis in the statistical material will be on the use of diagrams and summary measures to inform coherent interpretations of descriptive univariate statistics. The essential laws of probability will also be covered. Using the output from suitable software participants will statistically analyse, and calculate probabilities from, data. Participants will also use said software to create reports including tables/charts.

The Graduate Attributes relevant to this module are given below:

- 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
☒	☐	☒	☐	☐	☐
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:
☒	☐	☐	☒	☐	☒	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	☐	Term 2	☒	Term 3	☐

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 the basic processes of arithmetic, algebra, matrices and set theory correctly.
L2	Use a range of standard techniques for displaying and analysing statistical data.
L3	Make valid interpretations of results in basic mathematical and statistical contexts.
L4	Use suitable computer software to perform and display appropriate analyses.

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 competence in 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 drawing valid conclusions from 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 results to basic mathematical or statistical problems, as appropriate, and making valid interpretations of the output.
Autonomy, Accountability and Working with others	SCQF Level **7** Working autonomously to produce individual output on basic mathematical and statistical problems. Collaborating with others in a group context to solve basic mathematical and statistical problems.

Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	**Module Title:**
	Other:	SQA National 5 in Mathematics (Grade C or above) 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	12
Tutorial/Synchronous Support Activity	3

Laboratory/Practical Demonstration/Workshop	3
Independent Study	82
	Hours Total 100

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 such as Microsoft WORD and EXCEL. Course notes on the University VLE. College Algebra 2e, OpenStax *Foundation Maths*, Croft, Davison, Davison
(**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. Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..
(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
Assessment Results (Pass/Fail)	Yes ☐ No ☒
School Assessment Board	Computing, Engineering and Physical Sciences
Moderator	Dr Kenneth Nisbet
External Examiner	P Wilson
Accreditation Details	This module forms part of a number of programmes accredited by the BCS.
Changes/Version Number	1.08 Slight change to assessment components, module delivery method, timetabled hours, and module summary.

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1 - Assignment (50% of the final mark). This group exercise will involve the execution of appropriate statistical analysis and will use suitable software.
Assessment 2 - Class Test (50% of the final mark). This will involve appropriate mathematical and/or statistical analyses, as required.
(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)		Weighting (%) of Assessment Element	Timetabled Contact Hours
Coursework		✓	✓	✓		50	0

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 (closed book, unseen)	✓	✓	✓			50	1.5
Combined Total for All Components						**100%**	**1.5 hours**