Module Descriptor

Title	Applied Mathematics for Computing		
Session	2025/26	**Status**	Published
Code	MATH07012	**SCQF Level**	7
Credit Points	10	**ECTS (European Credit Transfer Scheme)**	5
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Dr Kenneth Nisbet		

Summary of Module

This module provides a grounding in mathematics for students in programmes in Computer Science and related disciplines.

Some topics traditionally covered in Higher and Advanced Higher Mathematics are reviewed, extended, and deepened. An introduction to statistics is presented to provide connectivity with its use later in the range of programmes. Topics include:

Algebra: An overview of algebra required for synthesis in more detailed problems, including properties of some standard functions (polynomial, rational, exponential, trigonometric, etc.) and solving equations involving these functions; partial fraction expansion of rational functions.

Matrices: The concept of a matrix as a useful mathematical storage device. Matrix operations and application to the solution of systems of linear equations.

Vectors: The concept of two and three-dimensional vectors. Vector algebra and some common applications.

Sets and Probability: Basic concepts in set theory, including discussion of the algebra of sets. Connection to concepts in basic probability.

Statistics: Diagrammatic and descriptive statistics (including a treatment of the various measures of central tendency and spread).

The Graduate Attributes relevant to this module are given below:

- Academic: Critical thinker; Analytical; Inquiring; Knowledgeable; Problem-solver; Autonomous.
- Personal: Effective communicator; Motivated; Resilient
- Professional: Collaborative; Driven

Module Delivery Method	**On-Campus[1]** ☐		**Hybrid[2]** ☒		**Online[3]** ☒	**Work -Based Learning[4]** ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries		☒ Lanarkshire ☐ London ☒ Paisley		☒ Online / Distance Learning ☐ Other (specify)	
Terms for Module Delivery	Term 1	☒	Term 2	☐	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Obtain solutions to a range of problems involving basic algebra, matrices, and vectors.
L2	Obtain solutions to a range of problems in set theory and probability.
L3	Perform suitable statistical analysis in a range of problems.
L4	
L5	

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 7** Developing a broad knowledge of a range of important mathematical concepts, including algebra, matrices, vectors, and sets. Developing a basic awareness of the evolution of fundamental mathematical ideas and methods over time, and of the basics of diagrammatic and descriptive statistics.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Practice: Applied Knowledge and Understanding	**SCQF 7** Showing an ability to perform basic calculations in routine contexts.
Generic Cognitive skills	**SCQF 7** Presenting mathematical and statistical arguments, such as performing calculations, generating graphical output, and providing basic verifications. Explaining mathematical and statistical reasoning, using a range of concepts.
Communication, ICT and Numeracy Skills	**SCQF 7** Using the output from mathematical and statistical reasoning to communicate results in a coherent way.
Autonomy, Accountability and Working with Others	**SCQF 7** Identifying and addressing their own learning needs both during and outside class time. Working in a small group context to produce coherent mathematical and statistical output.

Prerequisites	**Module Code**	**Module Title**
	Other SQA National 5 in Mathematics (Grade C or above) or equivalent	
Co-requisites	**Module Code**	**Module Title**

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** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	12
Tutorial / Synchronous Support Activity	6
Independent Study	82
Please select	
Please select	
Please select	
TOTAL	100

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Class notes as published on the University VLE. No set text is required, but OpenStax free online texts such as OpenStax Statistics OpenStax Algebra will be very useful.
(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. **For the purposes of this module, academic engagement equates to the following:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. Your attendance will be noted at each online session, and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

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. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. Specialist assistive equipment, support provision and adjustment to assessment practice are in accordance with the University's policies and regulations.
(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 Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to**

	programme accreditation requirements. Please check the associated programme specification for details.
School Assessment Board	Physical Sciences
Moderator	tbc
External Examiner	Dr Chris Guiver
Accreditation Details	This module forms part of a number of programmes accredited by the BCS.
Module Appears in CPD catalogue	☒ **Yes** ☐ **No**
Changes / Version Number	1.02. Assessment Component 1 tidied up. Accreditation details added.

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Individual unseen Class Test (60%)
Assessment 2
A Group Coursework Task (40%)
Assessment 3
(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.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class test (unseen)	☒	☒	☐	☐	☐	70	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Coursework Assignment	☐	☒	☒	☐	☐	30	0

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	hours

Change Control

What	When	Who
Assessment Component 1 tidied up	March 2025	K Nisbet
Accreditation details added.	March 2025	K Nisbet
Moderator tbc	March 2025	K Nisbet