Module Details

Module Title	Mathematics for Computing
Module Code	COS4014-B
Academic Year	2024/5
Credits	20
School	School of Computer Science, AI and Electronics
FHEQ Level	FHEQ Level 4

Contact Hours

Type	Hours
Lectures	24
Tutorials	12
Directed Study	164

Availability

Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims

As with all sciences, computer science is based on well-established mathematical principles, the understanding of which will facilitate the development of core skills such as abstraction, critical analysis and algorithmic thinking.

The module aims to provide the foundations for formal specification and modelling of computer systems, and provide the foundations for the use of computer technology for computational mathematics.

Outline Syllabus

Introduction to Discrete Mathematics: Sets and relations, logic, functions, graph theory. Introduction to formal languages, finite state automata and regular expressions. Introduction to the techniques available for differentiation and integration, matrices, and discrete probability.

Learning Outcomes

Outcome Number	Description
O1	Use the mathematical language of computer science to solve practical problems.
O2	Formalise problem scenarios using techniques based on set theory and logic.
O3	Use regular expressions and finite state automata to define and manipulate formal languages.

Learning, Teaching and Assessment Strategy

Concepts, principles and theories are presented in lectures, which includes worked examples and tasks for the students to complete so they can test their understanding of the material. These are supported by tutorials, where students are free to ask any questions they may have about the material and can receive feedback on exercises they have completed, and by directed study. Extensive oral feedback is given during tutorials.

One coursework (25%) assesses the students' knowledge and understanding of formal languages. The open book exam (75%) assesses the students? ability to apply the knowledge from the module to solve a variety of problems.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework - Artefact	Formal languages, finite state automata, regular expressions	25%
Summative	Examination - Open Book	Three questions drawn from topics in both discrete and continuous mathematics (2 Hrs)	75%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.