

Module Details	
Module Title	Numerical Analysis
Module Code	COS5018-B
Academic Year	2022/3
Credits	20
School	Department of Computer Science
FHEQ Level	FHEQ Level 5

Contact Hours	
Type	Hours
Lectures	12
Tutorials	12
Laboratories	12
Directed Study	164

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims
To introduce the basic concepts of error analysis and iteration, and elementary numerical methods for solving algebraic equations. To develop and implement efficient numerical algorithms. To instil an appreciation of the techniques available for numerical interpolation and linear algebra.

Outline Syllabus
number representation; IAS machine model; instruction set; machine language; Errors; iteration; iterative solution of $f(x) = 0$; systems of equations, finite difference methods; numerical integration; polynomials; interpolation, polynomial least squares approximation.

Learning Outcomes	
Outcome Number	Description
01	Show a breadth of knowledge and appreciation of some of the basic techniques of numerical analysis.
02	Apply in realistic situations the fundamental methods of numerical algebra and calculus and construct/validate many of the numerical tools inherent in the construction and analysis of numerical methods.
03	Learn and work independently with patience and persistence using good general skills of organisation and time-management, be adaptable with a readiness to assess problems from new areas logically through an analytical approach, write coherently and clearly communicate results.

Learning, Teaching and Assessment Strategy
The basic theory and illustrative examples are presented and developed in formal lectures. Complementary tailor-made example sheets are provided. These are discussed, and assistance with their solution is provided in laboratory sessions, either on a one-to-one basis or as a staff or student-led group, as appropriate. Formative tasks are provided to encourage ongoing digestion of the material, with the extent of the cumulative knowledge and skills acquired assessed through one coursework assignment.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Coursework - Artefact	Individual Coursework	40%
Summative	Examination - Closed Book	Exam - Closed book (2 Hrs)	60%

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.

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