

Module Details	
Module Title:	Numerical Methods and Computer Graphics
Module Code:	COS6021-B
Academic Year:	2019-20
Credit Rating:	20
School:	Department of Computer Science
Subject Area:	Computer Science
FHEQ Level:	FHEQ Level 6
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	Hours
Lectures	24
Laboratory	12
Directed Study	164

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims
To introduce, analyse and apply the basic principles, concepts, techniques and tools that are used to develop numerical algorithms for computer graphics, computer games and general real time applications. To instil an appreciation of the numerical techniques available or computer graphics, computer games, and general real time applications.

Outline Syllabus
Co-ordinate system; geometric transformation and projection; rotation and translations in 2D; surfaces; advanced rendering; rotation in 3D; raster graphics algorithms; Bezier curve; interpolation; fixed point iteration; optimization techniques.

Learning Outcomes	
1	demonstrate a breadth of knowledge of the problems encountered in real time implementation of numerical algorithms. Demonstrate knowledge in the use of computer libraries to develop and implement efficient numerical algorithms for computer graphics, computer games, and general real time applications.
2	analyse and then implement real time solutions to problems in computer graphics, computer games and general real time applications. Use the state of the art computer libraries to develop and implement efficient numerical algorithms for computer graphics, computer games and general real time applications.
3	learn and work independently with patience and persistence using good general skills of organization and time-management, be adaptable with a highly-developed ability 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 will be presented and developed in formal lectures. Complementary tailor-made example sheets will be 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.

Mode of Assessment				
Type	Method	Description	Length	Weighting
Summative	Examination - closed book	Examination	2 hours	70%
Referral	Examination - closed book	Supplementary Assessment: examination	2.5 hours	100%
Summative	Coursework	Individual Coursework		30%

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.