

Numerical Methods and Computer Graphics

Module Code:	COS6021-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Computer Science
Subject Area:	Computer Science
FHEQ Level:	FHEQ Level 6
Module Leader:	Dr Ci Lei

Additional Tutors:
Professor Apostolos Vourdas

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	24
Laboratory	12
Directed Study	164

Availability Periods

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 for 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.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 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	Final Assess'
Summative	Examination - closed book	Examination	2 hours	70%	No
Referral	Examination - closed book	Supplementary Assessment: examination	2.5 hours	100%	No
Summative	Coursework	Individual Coursework		30%	No

Legacy Code (if applicable)

CM-0366D

Reading List

To view Reading List, please go to [rebus:list](#).