

Entertainment Systems Unit

Teaching Scheme - Academic Year 2006-07

Autumn Term

Week No	Week Commencing	Lecture	Seminar
1	9/10/06	NO LECTURE: Student Centered Learning	Student Centered Learning.
2	16/10/06	Introduction to Entertainment Systems <ul style="list-style-type: none"> • Multimedia Systems • Computer Games • Serious Applications of Entertainment System Technologies • Tool Development • Historical Overview (CG and Games) 	setting up the development environment, intro to API
3	23/10/06	Image Perception & 2D Images <ul style="list-style-type: none"> • Colour Perception • Colour Models • File Formats • Concepts & Issues • Image Manipulation • Moving Images 	Java 2D exercises
4	30/10/06	2D Mathematical Foundations 1 <ul style="list-style-type: none"> • Trigonometry • Cartesian Coordinate System 	intro to game-loop, simple game exercise
5	6/11/06	2D Mathematical Foundations 2 <ul style="list-style-type: none"> • Vectors (2D) 	simple game exercise
6	13/11/06	2D Mathematical Foundations 3 <ul style="list-style-type: none"> • Matrices (2D) • Interpolation • Additional Concepts 	simple game exercise
7	20/11/06	Sprite Engines 1 <ul style="list-style-type: none"> • The Framebuffer and Blitting • Advanced Blitting Concepts • Z-Ordering 	scrolling shooter exercise 1
8	27/11/06	Sprite Engines 2 <ul style="list-style-type: none"> • 2D Moving Images • 2.5D Animation Systems • Additional Concepts 	scrolling shooter exercise 2
9	4/12/06	Sound, Speech & Music 1 <ul style="list-style-type: none"> • What is Sound? • Sound Perception • Sound Analysis 	scrolling shooter exercise 3
10	11/12/06	Sound, Speech & Music 2 <ul style="list-style-type: none"> • Sound Synthesis • 3D Sound • Application issues 	scrolling shooter exercise 4

Spring Term

Week No	Week Commencing	Lecture	Seminar
11	15/1/07	Entertainment System Architecture <ul style="list-style-type: none"> • The Graphics Pipeline 	?? In-class TEST on topics covered so far ??
12	22/1/07	3D Mathematical Foundations 1 <ul style="list-style-type: none"> • Vectors (3D) • Matrices (3D) 	intro to OpenGL
13	29/1/07	3D Mathematical Foundations 2 <ul style="list-style-type: none"> • Object Representation • Additional Concepts 	object loader exercise
14	5/2/07	Scene Composition & management <ul style="list-style-type: none"> • Scene Graph • Spatial Partitioning 	simple game exercise
15	12/2/07	Computer Animation 1 <ul style="list-style-type: none"> • 2D/3D Animation Techniques • The Virtual Camera <ul style="list-style-type: none"> ○ Cinematography 	simple game exercise
16	19/2/07	INDEPENDENT LEARNING WEEK	
17	26/2/07	Computer Animation 2 <ul style="list-style-type: none"> • The Virtual Camera <ol style="list-style-type: none"> 1. Viewing Transformations 2. Visibility Processing (Extending Scene management) 	simple game exercise
18	5/3/07	Rasterisation & Display <ul style="list-style-type: none"> • 3D Frame Buffer 	simple game exercise
19	12/3/07	Computer Games & Advanced Effects <ul style="list-style-type: none"> • Overview 	simple game exercise
20	19/3/07	Integrated Assessment	
21	26/3/07	As above	

Summer Term

Week No	Week Commencing	Lecture	Seminar
22	23/4/07	Revision Lecture 1	Revision Seminar
23	30/4/07	Revision Lecture 2	Revision Seminar
24	7/5/07	Independent Revision	Independent Revision
25	14/5/07	EXAMS	
26	21/5/07	EXAMS	
27	28/5/07	EXAMS	

STAFFING

Lectures	Eike Anderson	W431	eanderson@bmth.ac.uk
Workshops	Leigh McLoughlin	W431	lmcloughlin@bmth.ac.uk

INTENDED LEARNING OUTCOMES

Having completed this unit the student is expected to be able to:

1. Demonstrate understanding of the fundamental data structures and formats that underpin the representation and presentation of 2D/3D graphics and sound.
2. Design a simple, interactive entertainment system using contemporary multimedia software tools.
3. Explain the characteristics of human and machine visual/auditory perception and processing.
4. Elucidate the high level relationships between the software layers in entertainment system architectures and frameworks.

LEARNING AND TEACHING METHODS

Indicative Styles

Learners will engage with theory through the provision of weekly lectures; the study of prescribed literature; and design discussions during seminars. The relevance and practical application of this unit will be explored through directed exercises within laboratories in the form of small scale projects.

ASSESSMENT

Assessment Weighting

The weighting of coursework to examination is: 50:50.

Assessment Regime

All the ILOs will be assessed through coursework and/or examination.

INDICATIVE KEY LEARNING RESOURCES

Essential Reading

'Mathematics for Computer Graphics', Vince, J; Springer-Verlag, 2005

'The Art of Computer Game Design', Crawford, C; <http://www.erasmatazz.com/free/AoCGD.pdf>

'Programming Guide to the Java 2D™ API: Enhanced Graphics and Imaging for Java'; Sun Microsystems, (latest edition)

Recommended Reading

Advanced

'Mathematical and Computer Programming Techniques for Computer Graphics', Comninos, P; Springer-Verlag, 2006

'OpenGL programming guide: the official guide to learning OpenGL', Woo M, Neider J, Davis T; Addison-Wesley, (latest edition)

'Computer Graphics: principles and practice', Foley, van Dam, Feiner and Hughes, 2nd Edition in C; Addison-Wesley, 1996

Background

'Real-Time Cinematography for Games', Hawkins, B; Charles River Media, 2005

'Physics for Game Programmers', Palmer, G; Springer-Verlag (Apress), 2005

'Geometry for Computer Graphics: Formulae, Examples and Proofs', Vince, J; Springer-Verlag, 2004

Unit Support Website

<http://ncca.bournemouth.ac.uk/eanderson/ES/>

Web-based sources

<http://www.libsdl.org>

<http://www.opengl.org>

<http://www.oberon.ethz.ch/WirthPubl/>

<http://nehe.gamedev.net>

<http://www.gamedev.net>

<http://www.gamasutra.com>