Computer Technology and Information Systems Bilkent University, Ankara, Turkey. 2017 - 2018 Spring

CTIS 489

Instructor Dr. Serkan Genç

Room C214 Phone ext. 5226

sgenc@bilkent.edu.tr e-mail Web Page Moodle Web page

Office Hours

Objectives

The objective of this course is to provide basic concepts and practice to develop interactive 2D and 3D graphics softwares without using any game engines. This course gives you the understanding of how game engine works. To demonsrate those concept, the students will use legacy OpenGL and GLUT libraries.

Resources

Text book: Lecture notes

References:

OpenGL Programming Guide, 7th Edition, Mason Woo, Addison Wesley.

OpenGL SuperBible 5th Edition, Richard S. Wright, et al. 2010, Addison-Wesley Interactive Computer Graphics, Edward Angel, 6th Edition, Addison-Wesley

Grading

Midterm #1 30% Attendance 5%

30% Midterm #2 Final 35%

Grading Policy: Missing **21** lecture hours leads to FZ grade.

Grades:

Lower Boundary	Letter
45	D
50	D+
55	C-
60	С
65	C+
70	B-
75	В
80	B+
85	A-
90	Α

Attendance Grade:

Missign Hours	Grade
0-3	5 Pts
4-6	4 Pts
7-9	3 Pts
10-12	2 Pts
13-15	1 Pt

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Outline

Date	Lecture
Week 01	a: Introduction to Computer Graphics, its purpose and usage areas
	b: Event-based Programming, GLUT interface
Week 02	a: GLUT properties, functions, programming, Introduction to OpenGL, Cartesian Coordinate
	System, Drawing primitives (point, line, triangle, polygon, fonts)
	b: GLUT, : 2D Drawing examples, 2D chart drawing.
Week 03	a: Basics of Trigonometry
	b: Vectors and Matrices
Week 04	a: Geometric Transformations and Matrix Operations using OpenGL, Basics of Animation,
	Display Properties, Double Buffering, Triple Buffering
	b: 2D Affine Transformation and Animation Example.
Week 05	a: 3D Drawing: 3D Coordinate System, Modeling
	b: 3D Viewing, Orthographic and Perspective Camera Models in OpenGL
Week 06	a: 3D Modeling, GLUT 3D Primitives, 2D and 3D cameras in the same scene.
	b: Walkthrough in a 3D Environment,
Week 07	Midterm #1
Week 08 a: Textu	a: Texture Mapping, SkyBox
	b: Example for Texture Mapping using OpenGL
Week 09	a: Color, Perception, Shading Models, Surface Normals, Lighting in Opengl
Week 10	b: Use cases about Lighting.
Week 11	Midterm #2
Week 12 a:	a: 3D Model Loading, animated characters (MD2 file format, OBJ file format)
	b: Use case
Week 13	a: Blending and Transparency, Reflections
	b: Use case
Week 14	a: Fogging
	b: Future Directions