

Óbudai University			
Alba Regia Technical Faculty			
<i>Name of the subject and Neptun code: Software Tools of Game Development</i>			
<i>ECTS: 5</i>			
Faculty:			
Subject leader:	Éva Hajnal PhD.	Teacher:	Gaye Ediboglu Bartos
Prerequisites			
Weekly hours:	Lecture: 2	gs:0	Lab: 3
Way of assessment:	Exam		
Description of the subject:			
<p>Aim: Basics of computer graphics. Rendering pipeline. Ray tracking. Collision detection. Deformations. Animations and its mathematical basis. The students get acquainted with Unity and other development framework, its software basics and they get practice in it. Surface properties, physical attributes. Connection between the physical simulation and visualization. The elements of the graphics pipeline and its operation. Resources, memory handling. Graphics card controlling with OpenGL. Shaders. Water surface and terrain. Particle systems and nets. HDRI, software simulation of depth of field. Graphics card controlling from the console. Object oriented structure of game engines. Case study: game development.</p>			
<i>Curriculum:</i>			
Contents			Hours
Lecture:			
Basic concepts. Main features the object oriented model of a game engine. Unity, Ogre3D, XNA examples			2
Graphics. Main elements. The graphics card, graphics pipeline, DirectX. Resources. Memory handling			2
Programming of shaders with HLSL			2
Texture. Visualization of an environment. Water surface and terrain. Shades			2
Calculation of physics. Rigid bodies. Collision and collision detection. Particle systems and nets.			2
Movement. Projection of the movements. Physical animations			2
Light effects. Global illumination. PRT			2
HDRI, Depth of field and its software simulation.			2
Virtual reality and extended reality in the software development			2
Case study. FPS game development			2
Test			2
Practice:			
Game project development with Unity Introduction to Unity			3
Game framework			3
3D modelling			3
Animations			3
Collision			3
Texture			3
Lightning, Ray tracing			3
AI in Games			3
Particle system			3
Music and sounds			3
Test			3
Requirements			

	Finish the game development task of the computer laboratory practice
	Written exam at least 50% achievement
	grades 50% - 62% 2 63% - 74% 3 75% - 85% 4 86% - 5

References:	
	1. Alan Thorn: Game Development Principles ISBN 10 : 9781285427065 ISBN 13 : 1285427068
	2. Penny de Byl: <i>Holistic Game Development With Unity</i> ISBN 10 : 9781317497233 ISBN 13 : 1317497236