

Course Title	Computer Graphics				
Course Code	CEI/464				
Course Type	Computer Graphics / Modeling and Reconstruction				
Level					
Year / Semester	2020-2021/Winter Semester				
Teacher's Name	Dr. Marinos Ioannides				
ECTS	6	Lectures / week	2	Laboratories / week	1
Course Purpose and Objectives	Computer Graphics is a study of the hardware and software principles of interactive raster graphics. Topics include an introduction to the basic concepts, 2D and 3D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages and graphics systems				
Learning Outcomes	<p>The students will:</p> <ol style="list-style-type: none"> 1. Have an appreciation of the past and evolution of computer graphics, both hardware and software assessed by written homework assignment. 2. Have an understanding of 2D graphics and algorithms including: line drawing, polygon filling, clipping, and transformations. They will be able to implement these. Assessed by tests and programming assignments. 3. Understand the concepts of and techniques used in 3D computer graphics and modelling, including viewing transformations, hierarchical modeling, color, lighting and texture mapping. Students will be exposed to current computer graphics research areas. Assessed by tests, homework and programming assignments. 4. Be able to use a current graphics API (OpenGL). Assessed by programming assignments. 5. Be introduced to algorithms and techniques fundamental to 3D computer graphics and will understand the relationship between the 2D and 3D versions of such algorithms. 6. Be able to reason about and apply these algorithms and techniques in new situations assessed by tests and programming assignments. 				
Prerequisites	Students should have very good knowledge in Basic Geometry and Computer Programming.	Required	CEI 112 Introduction to Computing and Programming (C)		

			CEI 123 Object-Oriented Methodology and Programming (C ++)
Course Content	<ol style="list-style-type: none"> 1. Introduction to basic meanings of graphics 2. Geometric elements of 2D and 3D space. (points, lines, curves, triangles and polygon triangulation, planes) 3. Transformations and 2D plane projection (PC screen) 4. Basic Object Modelling structures 5. Simulation 6. Analysis and design of various applications and specialized examples 7. Planning and quality control 8. Graphics Standardization and industry appliance 9. Computer Aided Design /Computer Aided Manufacturing – CAD/CAM. 		
Teaching Methodology	Teaching will be through weekly lectures. At the same time, you will be given a semester work, as well as a series of small practical laboratory exercises.		
Bibliography	<p>Fundamentals of Computer Graphics, Latest Edition by A K Peters, Ltd. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen Marschner, Erik Reinhard, Kelvin Sung, William Thompson, Peter Willemsen, ISBN: 1568812698</p> <p>Research Papers/Articles</p>		
Assessment	The success of a student in the course requires a score of 4.5 or 10.0 on the final exam, regardless of the total number of points the student receives from the various assignments / exercises and the semester written exam. If a student scores less than 4.5 / 10.0 on the final exam, the semester grade for the course will be equal to the final exam grade		
Language	Greek		