University of Gdańsk

Subject card

Subject name and code	3D Graphics Programming in OpenGL, PG_00179252		
Field of study	Informatics		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	Master's studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	6.0
Learning profile	academic	Assessment form	exam
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr Maciej Dziemiańczuk	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	20.0	0.0	0.0	40

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	40	0.0	0.0	40

Subject objectives

The aim of the course is to teach students how to create applications using the OpenGL library to generate and display three-dimensional graphics. It also includes familiarizing students with English terminology.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[INFMU2_W04] knows complex data structures and advanced methods of algorithmic solution of computationally difficult problems (exponential algorithms, approximation, heuristics)	Knows the basic techniques of 3D graphics processing in the OpenGL library using a graphics card. Understands how 3D objects are processed by graphics cards and displayed on a computer screen.	[SW4] test/exam - oral or written
[INFMU2_U05] can apply known algorithms in specific situations, can effectively select the type of algorithm depending on the problem at hand	Is able to evaluate differences between various 3D scene lighting algorithms and implement them using the OpenGL library.	[SU2] presentation/project/paper/ report

Subject contents

1. Introduction to the OpenGL library; 2. Basics of generating 3D objects using the OpenGL API; 3. Transformations of 3D objects; 4. Colors, materials, textures, and lighting; 5. Buffers in OpenGL; 6. Optimization methods; 7. Importing objects modeled in Blender or other 3d graphic editors.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	51.0%	50.0%
project	51.0%	50.0%

Recommended reading

Basic literature	1. OpenGL Reference Manual, Silicon Graphics, Inc. 2. LearnOpenGL.com - website. 3. Luke Benstead, Beginning OpenGL Game Programming, Cengage Learning PTR
Supplementary literature	not applicable
eResources addresses	

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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