GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00030017
Field of study	Mathematics

Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bartosz Reichel
	Teachers	dr inż. Bartosz Reichel

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0	0.0	60
	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	60	5.0	35.0	100

Subject objectives	Understanding the basics of of graphics creation pipline on computers,
	Learning basic operations and transformation (projection, rotation, filling, tessellation)
	Knowledge of basic libraries 3D (OpenGL, DirectX)
	Getting to know the Unity platform, to create a simple game.

Learning outcomes	Course outcome	Subject outcome	Method of verification

Subject contents	- Display Process: how it works on simple graphics card
	- The process of creating 2D graphics
	- Bitmaps operations (Terenary raster Operations)
	- Collision in 2D systems
	- The process of creating 3D graphics
	- The importance of basic concepts in 3D graphics (eg camera) and elements associated with them
	- Shaders (basic)
	- Collisions in 3D
	- Physics engine libraries for games
	- Sound (playback, create / filtering)
	- Input-output devices (HID devices)
	- Use of platforms: OpenGL / DirectX, GDI +
	- Unity Platform.

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Implementation of tasks on the laboratory	50.0%	100.0%

Recommended reading	Basic literature	• Pro C# 5.0 and the .NET 4.5 Framework,6th Edition,Andrew Troelsen, Apress • Graphics Gems (I-V), Academic Press
	Supplementary literature	Dave Calabrese, Unity 2D Game Development, March 2014, ISBN 139781849692564 or a similar from scope of Unity
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Implement a simple 2D game (eg. PAC MAN)	
Work placement	Not applicable	

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