

Subject card

Subject name and code	3D Simulation, PG_00179255						
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 everything can be in English		
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 Piotr Arłukowicz				
	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 introduce students to the world of 3D simulation.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFMU2_W01] has in-depth knowledge of the branches of mathematics necessary for the study of computer science; has a good understanding of the role and importance of the construction of mathematical reasoning		The student is able to create a complex simulation of multiple objects using simulation engines selected appropriately for the given problem.		[SW5] implementation of a problem task		
	[INFMU2_U05] can apply known algorithms in specific situations, can effectively select the type of algorithm depending on the problem at hand		The student understands the principles of creating 3D simulations using Blender.		[SU2] presentation/project/paper/report		
Subject contents	Rigid Body Simulations Soft Body Simulations Cloth Simulations Particle Simulations Basics of the Newtonian Model Particle Simulations Boids Model Particle Simulations Keyed Model Particle Simulations Fluid Model Fluid Simulations: liquids, smoke, fire, explosions Fluid Simulations: fluid with optional effects like foam, bubbles, splashes Dynamic Paint Force Fields Collisions						
Prerequisites and co-requisites	Familiarity with Blender, or completion of a 3D Graphics or 3D Animation course, is recommended and highly encouraged.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	51.0%	100.0%
Recommended reading	Basic literature	Tony Mullen: Bounce, Tumble, and Splash!: Simulating the Physical World with Blender 3D, John Wiley & Sons, 6 cze 2008 - 400 Ruan Lotter: Taking Blender to the Next Level: Implement advanced workflows such as geometry nodes, simulations, and motion tracking for Blender production pipelines, Packt Publishing Ltd, 30 maj 2022 - 520	
	Supplementary literature	Abdelilah Hamdani: 3D Environment Design with Blender: Enhance your modeling, texturing, and lighting skills to create realistic 3D scenes, Packt Publishing Ltd, 31 sty 2023 - 344	
	eResources addresses	Basic https://docs.blender.org/manual/en/latest/ - Blender Manual Supplementary https://youtube.com - A variety of tutorials concerning 3D simulations	
Example issues/ example questions/ tasks being completed	Building Explosion Car Crash Fire Bomb Explosion Flood Text Morphing Space Flight		
Work placement	Not applicable		

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