Subject card

Subject name and code	Computer Animation , PG_00047979						
Field of study	Informatics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2028/2029		
Education level	first-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Intelligent Interactive Systems -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jacek Lebiedź				
	Teachers		dr inż. Jacek Lebiedź				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30		2.0		18.0	50
Subject objectives	The purpose of the course is to familiarize students with the methods of computer animation.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W44] knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human-computer interaction, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining as well as standards and methods of IT systems administration, monitoring of processes and robustness to undesirable phenomena and activities	The student knows and understands the principles of computer animation design.	[SW1] Assessment of factual knowledge
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	Student designs visually correct animations	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
	[K6_U07] can apply methods of process and function support, specific to the field of study	Student is able to use the tools to prepare computer animation	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents	1. Rules of credit for a course, bibliography 2. Animation history, traditional cel animation: full animation, limited animation, rubber hose, rotoscoping 3. Stop motion: puppet animation, cutout animation, clay animation, model animation 4. Computer 2D animation techniques 5. Computer 3D animation skeletal animation 6. Computer 3D animation pre-vertex animation (morph target animation) 7. Computer 3D animation other techniques 8. Character animation, facial animation 9. Motion capture 10. Frame frequency, undesirable effects in animation stagecoach-wheel effect 11. Animation with key frames, key frames and tweened frames 12. Real motion and simulated motion 13. Principles of animation: anticipation, overshoot, follow through, slow in and slow out 14. Principles of animation: squash and stretch, overdraw, arch moving, moving hold 15. Parameterization of motion phases: anticipation, main, overshoot and moving hold. 16. Computer animation tools 17. Computer special effects used in a film

Prerequisites and co-requisites	No requirements (recommended classes in Computer Graphics)

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	53.0%	50.0%
	Practical exercise	60.0%	50.0%

Recommended reading	Basic literature	1. J. D. Foley, A. van Dam, S. K. Feiner, J. F. Hughes: Computer Graphics: Principles and Practice, Second Edition. Addison-Wesley, Reading 1990. 2. M. Giambruno: 3D Graphics & Animation, Second Edition. New Riders, Indianapolis 2002. 3. R. Parent: Computer Animation, Algorithms and Techniques (Second Edition). Morgan Kaufmann 2008.
	Supplementary literature	1. V. J. Lumelsky: Sensing, Intelligence, Motion, How Robots and Humans Move in an Unstructured World. Wiley Publ. 2006. 2. J. E. Pratt, G. A. Pratt: Exploiting Natural Dynamics in the Control of a 3D Bipedal Walking Simulation, Proceedings of International Conference on Climbing and Walking Robots CLAWAR 1999. 3. M. da Silva, Y. Abe, J. Popović: Interactive Simulation of Stylized Human Locomotion, SIGGRAPH 2008. 4. M. da Silva, Y. Abe, J. Popović: Simulation of Human Motion Data using Short-Horizon Model-Predictive Control, EUROGRAPHICS 2008.
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Basic animation of a humanoid character, animation of scenes using key poses and key frames

Work placement	Not applicable

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