



Subject card

Subject name and code	Multimedia in Human-Computer Interaction, PG_00047655						
Field of study	Multimedia i interfejsy						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Intelligent Interactive Systems -> Faculty of Electronics Telecommunications and Informatics -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Mariusz Szwoch				
	Teachers		dr inż. Mariusz Szwoch				
Lesson types	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						
	eNauczanie source addresses: Moodle ID: 44690 Multimedia i interfejsy 2025 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=44690						
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		10.0		35.0	75
Subject objectives	Familiarization with the problems of multimedia systems, image processing and recognition, human perception, acquisition and compression of multimedia data, as well as the creation of multimedia applications, in particular video games in the Unity environment using modern methods of student activation, e.g. contest.						

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	Differentiates and implements methods and algorithms of image processing. Creates software with graphical user interface for image processing and multimedia performance. Creates software with animation and simple video games using game engines. Creates and process raster graphics.	[SW1] Ocena wiedzy faktograficznej [SW2] Ocena wiedzy zawartej w prezentacji
	[K6_K03] is ready to meet social obligations, co-organise activities for the social environment, initiate actions for the public interest, think and act in an entrepreneurial way	Be able to interact in a group, design, prepare and implement an IT product together with others.	[SK2] Ocena postępów pracy
	[K6_W04] knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Differentiates and implements methods and algorithms of image processing. Student describes methods of human perception and acquisition of multimedia data. Explains differences between different formats and methods of compression of multimedia data. Differentiates methods and algorithms of image processing and pattern recognition. Differentiates, examines and evaluates a quality of user interfaces. Describes creation methods of 3D vector animation	[SW1] Ocena wiedzy faktograficznej
[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	Differentiates and implements methods and algorithms of image processing. Creates software with graphical user interface for image processing and multimedia performance. Creates software with animation and simple video games using game engines. Creates and process raster graphics.	[SU1] Ocena realizacji zadania [SU4] Ocena umiejętności korzystania z metod i narzędzi	
Subject contents	1. Introduction 2. Multimedia - definitions and applications 3. Information media 4. Human perception 5. Multimedia data acquisition 6. Multimedia storing formats 7. Compression of multimedia data: images, sound and video 8. Image processing 9. Image recognition: OCR, OMR and other applications 10. Programming of multimedia applications. 11. Creation of graphical interfaces. Visual programming 12. Game Engines 13. Video games development 14. Role of the interface, examples of a good and a bad interface 15. Classification of users 16. Human factors, cultural differences 17. Evaluation of the interface 18. Task analysis 19. Interface layers: mental models 20. Metaphors 21. Methods/interaction styles 22. User help 23. Interface description methods, GOMS 24. GOMS - examples 25. Final exam		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	51.0%	50.0%
	Practical exercise	51.0%	50.0%

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. W.Malina, S.Ablameyko, W.Pawlak: Podstawy cyfrowego przetwarzania obrazów, Warszawa 2002. 2. R.Tadeusiewicz, P.Korohoda: Komputerowa analiza i przetwarzanie obrazów, Kraków 1997. 3. K.Skarbek (red.): Multimedia Algorytmy i standardy kompresji, Akademicka Ofic. Wyd., Warszawa 1998 4. W.L.Rosch: Biblia o multimediami, Intersoftland, Warszawa 1997 5. E. Adams: Projektowanie gier. Podstawy, Helion, 2011. 6. B. Miguel, T. de Sousa: Programowanie gier. Kompendium, Helion, Gliwice 2003. 7. A.Thorn: Unity 2018 By Example - Second Edition, Packt Publishing 2018 8. N.A.Borromeo , J.G.G.Salas: Hands-On Unity Game Development - Fourth Edition, Packt Publishing, 2024 9. M.Smith, S.Ferns, S.Murphy, Unity Cookbook - Fifth Edition, Packt Publishing, 2023
	Supplementary literature	<ol style="list-style-type: none"> 1. D.Baron: Hands-On Game Development Patterns with Unity 2019, Packt Publishing 2019 2. H. Ferrone: Learning C# by Developing Games with Unity 2019 - Fourth Edition, Packt Publishing 2019
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Practical activities within the subject	Not applicable	

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