GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mobile Multimedia Applications, PG_00063914		
Field of study	Informatics		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2027/2028
Education level	second-cycle studies	Subject group	Optional subject group Specialty 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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geoinformatics -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marek Kulawiak	
	Teachers	dr inż. Marek Kulawiak	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45
	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	45	6.0	24.0	75

Subject objectives	The goal of the subject is to familiarize the students with technologies applicable to mobile multimedia application development.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W03] knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	The student knows and uses satellite navigation systems.	[SW2] Assessment of knowledge contained in presentation
[K7_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices	The student knows how to generate and display three-dimensional graphics in their own applications.	[SW1] Assessment of factual knowledge
[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	The student is able to design and develop software using the technologies and programming environments dedicated to multimedia applications.	[SU4] Assessment of ability to use methods and tools
[K7_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, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it	The student is able to utilize sensors built in a mobile device.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Course content – lecture
1. Augmented reality in mobile devices.
2. Sensors and multimedia in mobile devices.
3. Sound processing in mobile devices.
4. Satellite navigation.
5. OpenGL ES and game engines.

Course content – laboratory
1. Programmatic use of microphone and camera.
2. Processing of sensor data.
3. Creating augmented reality applications.
4. Satellite navigation in Android.
5. OpenGL ES basics.

Course content – project
Development of a complex and interactive mobile application based on modern technologies for rendering 3D graphics.

Prerequisites and co-requisites

Object-oriented programming

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Colloqium	60.0%	34.0%
Project	60.0%	33.0%
Laboratory	60.0%	33.0%

Recommended reading

Basic literature	A. Munshi, D. Ginsburg, D. Shreiner: OpenGL ES 2.0 Programming Guide, Addison-Wesley, 2010

	Supplementary literature	C. Morales, D. Nelson: Mobile 3D Game Development: From Start to Market;Charles River Media, 2007
	eResources addresses	
Example issues/ example questions/ tasks being completed	Describe three types of sensors found in modern mobile devices. What reference systems are used in mobile devices and computer graphics? List the pros and cons of using video game engines.	
Practical activites within the subject	Not applicable	

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