GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Object-oriented Programming and Computer Graphics, PG_00047585
Field of study	Automatic Control, Cybernetics and Robotics

Date of commencement of studies	October 2021	Academic year of realisation of subject	2022/2023
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	4	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Decision Systems and Robotics -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Karol Szymański
	Teachers	mgr inż. Karol Szymański
		dr inż. Marcin Pazio

Lesson types and methods of instruction	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	4.0	51.0	100

Subject objectives	The main aim of this subject is to introduce its participants an object oriented programming in Java language (including Java 3D API). Java classess and program development mechanisms are to prepare the students to create applications with computer graphics. The applications include 2D graphics, simple animations as well as 3D graphics (Java 3D API).

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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	Student knows and understands the principles of object-oriented software preparation in applications related to computer graphics.	[SW1] Assessment of factual knowledge
	[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	Student is able to program computer graphics processing systems in object-oriented languages.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents	The content of the subject includes basics of object oriented programming, the structure of Java virtual machine, threads (with timer). Moreover it concers drawing primitives, handling events (AWT calss). Further part presents Java 3D API, its specific structures, 3D primitives, material, textures, lighting. There are also classess to animate 3D graphic objects and detect dependencies between them.

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	50.0%	50.0%
	project	50.0%	50.0%
Recommended reading	Basic literature	Bruce Eckel, Thinking in Java. Edycja polska (Wydanie IV), Helion 2006 Java 3D API documentation, Oracle (www.oracle.com)	
	Supplementary literature	Java Programing, Wikibooks Edition	
	eResources addresses	Adresy na platformie eNauczanie: Programowanie Obiektowe i Grafika Komputerowa - 2023 - Moodle ID: 29855 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29855	
Example issues/ example questions/ tasks being completed	Animation od a flying object based on timer ond keyboard events (2D graphics). Creating 3D primitives with a given material and lighting. Animation of 3D objects with colission detection.		
Work placement	Not applicable		