GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Object-oriented programming, PG_00070259		
Field of study	Electrical Engineering, Automation, Robotics and Control Systems		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	
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 Control Engineering -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Paweł Kowalski	
	Teachers		

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	5.0	25.0	75

Subject objectives

Understanding the basic concepts of object-oriented programming. Acquiring skills in object modeling and solving problems using objects and the relationships between them. Gaining the ability to build and run programs in Java, Python, and Kotlin, with particular emphasis on object-oriented programming methods. Developing skills in designing and constructing graphical user interfaces.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W02] has a structured knowledge of the application of information systems to improve the reliability, efficiency, speed and mobility of control and management systems		
[K7_U04] has the ability for self-directed learning in order to improve his/her professional qualifications, and is able to identify directions for further learning		
[K7_U07] is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks and simple research problems in the field of automation and robotics		

<table>
<tr><td>Subject contents</td><td>Course content – lecture

• Introduction to object-oriented programming using the Java language as an example.
• Development of graphical user interfaces and event handling in Java.
• Integration with external systems using Python scripts.
• Similarities and differences between mobile applications and PC applications, illustrated with applications for the Android operating system.

Course content – laboratory

Fundamentals of object-oriented programming. Application of lecture knowledge to solve practical tasks in Java. Development of console applications and their extension with a graphical user interface.

Course content – project

As part of the project classes, three mini-projects are carried out in teams. The first involves creating a GUI on a PC. The second is a Python script that imports data from a selected external service. The third is a mobile application. The project structure allows for integration of the projects, enabling teams to expand their portfolio with an integrated system that combines data from external services with three applications developed in different programming languages.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td></td><td>50.0%</td><td>15.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>• S. Ludwiczak, M. Kunert: Kurs Programowania Java od Podstaw.
• JavaStart, https://javastart.pl/baza-wiedzy, 2021.
• Java Documentation, https://docs.oracle.com/en/java/
• Python Tutorial, https://docs.python.org/pl/3.8/tutorial/index.html
• Kotlin Documentation, https://kotlinlang.org/docs/home.html</td></tr>
<tr><td>Supplementary literature</td><td>• B. Eckel, Thinking in Java, Helion.
• Java Programming Language, Decodejava , https://www.decodejava.com.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>• Develop a GUI for a program in Java.
• Develop a Python script integrated with a Java application.
• Develop a mobile application that works with a PC-based system.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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