GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming of computer systems, PG_00060472		
Field of study	Mechatronics		
Date of commencement of studies	October 2025	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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Division Of Mechatronics -> Institute Of Mechanics And Machine Design -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Galewski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	30.0	0.0	60

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	60	10.0	55.0	125

Subject objectives

Teaching students of structural (in C language) and object oriented programming (n Java) basics, relational databases and essentials of software engineering (software lifecycle, developement methods, system modelling).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U09] is able to formulate an algorithm, knows low and high level programming languages and appropriate IT tools for developing computer programmes to control mechatronic system	Student develops simple structural and object oriented programs in C and Java	[SU1] Assessment of task fulfilment
[K6_W06] has organised knowledge in the field of informatic that includes architecture of computer systems, programming of computers and embedded systems and elements of software engineering	Student understands basic principles of structural and object oriented programming	[SW1] Assessment of factual knowledge
[K6_W11] has knowledge about the life cycle of mechatronic systems and objects	Student describes life cycle of IT systems and selected methods of developement of such systems	[SW1] Assessment of factual knowledge
[K6_U05] is able to use properly chosen tools to compare design solutions of elements and mechatronics systems according to given application and economic criteria (e.g. power demand, speed, costs)	Student presnts basic skills in modern programming tools and techniques	[SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>Lectures

Programming in C language: basic elements of the C language, basic elements of program, functions, conditional
statements, loops, I/O operations, array operations, strings, pointers;
Programming in Java language: basic elements of the Java language, elements of object oriented programming (Classes, objectd, inheritance), I/O operations, collections, programming for GUI ;
Software engineering: software life-cycle, developement tehniques
UML modelling language;
Relational databeses (SQL);

Project:

Basics of programming in C language
Basics of programming in Java language</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>Obligatory project excercises</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Written exam</td><td>52.0%</td><td>60.0%</td></tr>
<tr><td>Individual projects</td><td>50.0%</td><td>20.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>[1] M. Galewski: Lecture materials published at the eNauczanie website
[2] M. Galewski, P. Duba: Laboratory exercises handbooks (C/ Java)</td></tr>
<tr><td>Supplementary literature</td><td>Kernighan B.W, Ritchie D.M, The C Programming Language, Prentice-Hall, 1988
Horstmann C.S, Java. Podstawy. Helion, 2019 (ew. wcześniejsze, ale niezbyt stare wydania)
Schmuller J., UML dla każdego, Helion 2003</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table>
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<tr><td>Example issues/
example questions/
tasks being completed</td><td>The list of sample questions for the exam (around 50) and laboratory individual projects (around 40) are given to the
student during the semester.
Sample examination questions:
- How does type cast operation work? When do we use it and why? Provide examples of type casting in C.
- What is pointer data type used for? When do we use it? What are it's advantages? What danger it brings for a program? Provide an example of pointer declaration and initialization.
- Describe principles of Object Oriented Analysis, Modelling and Design.
- Describe basic elements of relational data model.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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