GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Script languages, PG_00062720		
Field of study	Technologies for Industry 5.0		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład fizyki układów nieuporządkowanych -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Szymon Winczewski	
	Teachers	dr inż. Szymon Winczewski	

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	5.0	50.0	100

Subject objectives

The aim of the course is to familiarize students with the basics of programming. The course framework includes learning the Python language and using it to solve sample problems encountered in engineering practice.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] demonstrates knowledge and understanding of mathematics, physics, chemistry and IT tools at the level necessary to formulate and solve typical engineering and technological problems	The student knows the basics of the Python language to a degree that allows for its practical use in solving typical engineering and technological problems.	[SW1] Assessment of factual knowledge
[K6_K02] makes decisions independently, carries out a critical assessment of own actions and actions of managed teams, is ready to make decisions and accept responsibility for the consequences of these actions	The student can propose a solution to a given problem and present it to a group. Additionally, the student understands and accepts criticism of the solution he/she presented. The student can also critically evaluate solutions proposed by others, identify weaknesses in these solutions, and suggest ways to improve them.	[SK1] Assessment of group work skills [SK4] Assessment of communication skills, including language correctness
[K6_U01] applies knowledge of mathematics, physics, chemistry, IT tools and other engineering disciplines to solve theoretical, engineering and technological problems	The student is able to write programs in Python from scratch, which are used to solve selected theoretical, engineering, and technological problems.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>Lecture:
1. Introduction to programming
2. Python language characteristics and applications
3. Python interpreter
4. Basics of programming in Python
a) variables and constants, and their types
b) basic arithmetic operations, assignment operation
c) conditional statements
d) loops
e) functions
5. Lists, tuples, sequences
6. Modules (including standard ones) and packages
7. Reading from/writing to files
8. Errors and exceptions
9. Classes
10. Modules/packages useful in engineering practice

Laboratory:
The laboratory involves practical use of the Python language in solving sample problems encountered in engineering practice. During the laboratory sessions, sample programs illustrating the content discussed in the lectures will be worked through. Typical programming constructs/solutions/algorithms will also be discussed. The scope of the laboratory also includes work on exemplary problems.

Project:
The project involves working on a given problem and solving it from scratch using a program written in Python.</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>working on project</td><td>50.0%</td><td>25.0%</td></tr>
<tr><td>working on lab problems</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>written exam in theory</td><td>50.0%</td><td>25.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. M. Lutz, Python. Wprowadzenie. Wydanie V, Helion 2023.
2. Python 3.12.2 documentation, https://docs.python.org/3/
3. The Python Tutorial, https://docs.python.org/3/tutorial/index.html</td></tr>
<tr><td>Supplementary literature</td><td>4. M. Eric, Python. Instrukcje dla programisty, Helion 2023.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Discuss the syntax of for and while loops in Python.
2. Explain how modules and packages are used in Python.
3. Explain how functions are defined in Python.
4. Write a program that processes a data set according to given rules.
5. Write a program that solves a given engineering problem.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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