GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	PYTHON LANGUAGE, PG_00070033		
Field of study	InfoBioChem		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Obligatory subject group 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	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Optoelectronics -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Katarzyna Karpienko	
	Teachers	dr inż. Katarzyna Karpienko	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	45.0	0.0	0.0	60

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 3670 JĘZYK PYTHON 2025-2026
https://enauczanie.pg.edu.pl/2025/course/view.php?id=3670

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	5.0	10.0	75

Subject objectives

The aim of the course is to introduce the fundamentals of programming in Python, with particular emphasis on working with data. It covers basic language constructs, principles of writing clear and correct code, and the use of libraries for data processing, analysis, and visualization.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U06] is able to obtain information from literature, databases, and other appropriately selected sources, also in English; is able to integrate the obtained information, interpret it, and draw conclusions	The student is capable of using Python's technical documentation and external libraries, integrating the acquired information into developed programming solutions, and interpreting the results.	[SU1] Assessment of task fulfilment
[K7_W05] has knowledge of theoretical computational and computer methods used to solve problems appropriate to the curriculum InfoBioChem.	Knows fundamental computational and informatics methods implemented in Python, including principles of algorithmic data processing and elementary approaches to building predictive models.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Course content – lecture
The lecture introduces the Python programming language and working environments, including interactive notebooks and integrated development environments (IDEs). It covers fundamental language constructs: variables, data types, conditional statements, loops, data structures (lists, dictionaries, tuples), and functions. The scope includes reading from and writing to data files in CSV, Excel, and JSON formats. The course also introduces the NumPy and pandas libraries, operations on arrays and data frames, transformation of tabular data, and data preparation for analysis. In addition, it addresses basic data exploration, elementary approaches to building predictive models, unit testing, version control with Git, and selected programming best practices.
Course content – laboratory
Laboratory classes are practice-oriented and focus on the implementation of programming solutions. They include structured programming and an introduction to object-oriented programming, data processing with NumPy and pandas, data cleaning and transformation, and preparation of datasets for analysis. Basic statistical methods are applied (measures of central tendency and dispersion, comparative tests, analysis of differences between groups, interpretation of p-values), along with data visualization using matplotlib and seaborn (scatter plots, histograms, box plots, bar charts, and heatmaps). Classes are conducted using real or synthetic datasets derived from quantitative research. The course concludes with a mini-project involving data preparation, analysis, and the presentation of results.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Prerequisites: Basic computer and operating system skills, including working with files and folders, installing and running software. Ability to use a web browser and basic text editing tools.

Additional requirements: Sufficient knowledge of English to use technical documentation and online resources.</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>70.0%</td></tr>
<tr><td></td><td>50.0%</td><td>30.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Python. Wprowadzenie, Lutz Mark, Helion, 2022
2. Python w analizie danych. Przetwarzanie danych za pomocą pakietów pandas i NumPy oraz środowiska Jupyter. Wydanie III Wes McKinney</td></tr>
<tr><td>Supplementary literature</td><td>1.
Python. Ćwiczenia praktyczne, Kierzkowski Andrzej, Gawryszewski Marek</td></tr>
<tr><td>eResources addresses</td><td>Basic
https://www.w3schools.com/python/ - This publicly available online course covers the fundamentals of Python, including syntax, data types, control structures, functions, and an introduction to selected libraries. The material is practical and includes short code examples and interactive exercises.</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Development of a Python program enabling the analysis of a selected dataset. The task includes importing data from a file, preliminary data cleaning and preparation, calculation of basic statistical measures for selected variables, and visualization of chosen relationships. The solution should have a clear, modular structure (use of functions) and include a concise summary of the obtained results.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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