GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	STATISTICAL PROGRAMMING, PG_00069545		
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 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 Polish
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Teleinformation Networks -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bartosz Czaplewski	
	Teachers	dr inż. Bartosz Czaplewski	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	0.0	0.0	30

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=4242

Moodle ID: 4242 Programowanie Statystyczne 2025/2026
https://enauczanie.pg.edu.pl/2025/course/view.php?id=4242

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	30	2.0	18.0	50

Subject objectives

The aim of the course is to familiarize students with the fundamentals of statistical programming in the context of experimental data analysis using Matlab, Python, and R. Students will learn how to process, analyze, and visualize data. They will also become familiar with methods for evaluating model performance using various metrics. During the course, students will acquire practical skills in working with real-world data, interpreting statistical results, calculating confidence intervals, and comparing analysis outcomes obtained in different programming environments.

<table>
<tr><td>Learning outcomes</td><td>
<table>
<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[K7_U03] is able to use statistical tools and IT solutions to analyze biological data and describe the processes occurring within them.</td><td>The student is able to use Matlab, Python, and R for the processing, analysis, and visualization of chemical data. They are able to interpret the obtained results and formulate conclusions regarding the investigated biological processes.</td><td>[SU1] Assessment of task fulfilment
[SU2] Assessment of ability to analyse information
[SU4] Assessment of ability to use methods and tools</td></tr>
<tr><td>[K7_W04] has knowledge of mathematical statistics to the extent necessary
to understand, describe, and model chemical processes with a deeper level of complexity</td><td>The student is able to implement mathematical statistics methods in Matlab, Python, and R for the analysis, description, and modeling of complex chemical processes. They are capable of selecting appropriate computational tools and evaluating the accuracy and usefulness of the resulting models.</td><td>[SW3] Assessment of knowledge contained in written work and projects</td></tr>
<tr><td>[K7_W07] has a thorough knowledge and understanding of the structure and operating principles of components and systems related to the field of study, including theories, methods, and complex relationships between them, as well as selected specific issues relevant to the curriculum InfoBioChem</td><td>The student has the necessary knowledge to apply tools such as Matlab, Python, and R to solve problems characteristic of the InfoBioChem field. They can analyze complex relationships between system components, using appropriate methods, theories, and computational tools in the context of addressing research problems.</td><td>[SW3] Assessment of knowledge contained in written work and projects</td></tr>
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<tr><td>Subject contents</td><td>Course content – laboratory
Fundamentals of Matlab
Fundamentals of Python, NumPy, Pandas
Fundamentals of R
Basic Statistics
Confidence Intervals
Data Analysis and Cleaning
Linear Regression
Classification Metrics
Statistical Tests
Fundamentals of PCA (Principal Component Analysis)
Data Visualization</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Fundamentals of Statistics and Probability</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>Laboratory Exercise Reports</td><td>100.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>brak</td></tr>
<tr><td>Supplementary literature</td><td>brak</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></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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