GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	PROGRAMMING IN BIOINFORMATICS, PG_00063492		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Optional subject group Specialty subject group 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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Wojciechowski	
	Teachers	dr hab. inż. Marek Wojciechowski	

Lesson types and methods of instruction

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/moodle/course/view.php?id=46440

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	5.0	15.0	50

Subject objectives

The purpose of this laboratory is to teach students solving various bioinformatics problems by writing short scripts in python programming language. Students learn the basics of Python language itself, but also get familiar with modules dedicated for solving advanced bioinformatics tasks.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U08] prepares documentation of experiments and technological processes using professional terminology in biotechnology and related fields	Student properly documents the stages of solving the assigned task and presents the obtained results.	[SU5] Assessment of ability to present the results of task
[K7_U05] proposes solutions to technological and scientific problems in biotechnology and related fields using experimental methods and bioinformatics, statistics and specialized databases	Based on selected algorithms and specified databases, students prepare a script that fully automates the solution to the given bioinformatics problem.	[SU1] Assessment of task fulfilment
[K7_W04] selects methods of data analysis, including bioinformatics, statistical and molecular modeling, useful for solving technological and scientific problems in biotechnology and related fields	Students select libraries and algorithms appropriate for solving a specific problem in the field of bioinformatics	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

- basics of python programming language
- basics of numpy and matplotlib modules
- usage of biopython library

Prerequisites and co-requisites

Basic knowledge of Python programming after a first-semester course.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
ocena 2-5	60.0%	100.0%

Recommended reading	Basic literature	• Essential Bioinformatics, Jin Xiong, 2006, Cambridge University Press • Learning Python, 3rd Edition, Mark Lutz, 2007, O'Reilly Media
	Supplementary literature	Dive into python, http://www.diveintopython.net/
	eResources addresses	
Example issues/ example questions/ tasks being completed	• Preparation of a script that automatically analyzes the structure of a given protein and presents the results in a concise form, both text and graphic • Preparation of a script automatically querring both structural and sequential databases and carrying out an automated comparative analysis between structures and sequences of protein	
Work placement	Not applicable	

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