GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming in Bioinformatics, PG_00058245
Field of study	Biotechnology

Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Optional subject group
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	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Wojciechowski	
	Teachers		

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						

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_K04] is aware of the need to solve problems and perform tasks, independently formulate questions to solve a given problem or task; is able to plan the execution of a larger task by dividing it into partial tasks and draw up an appropriate schedule	Student is able to analyze the presented problem and break it down into smaller, more manageable tasks according to a specified schedule.	[SK3] Assessment of ability to organize work
	[K7_U06] is able to apply statistical methods, computer solutions, especially bioinformatics methods to design experiments and technologies, analyze experimental results and technological processes and solve and technological processes and solve problems in the field of biotechnology, is able to use biotechnological databases	Student uses statistical and computational methods to design experiments, analyze results, and solve bioinformatics problems using self-prepared scripts	[SU4] Assessment of ability to use methods and tools
	[K7_W04] has a structured knowledge of the application of informatics tools in biotechnology and molecular modeling of biomolecules	Student has knowledge of the application of computational tools, including specialized programming libraries, in biotechnology and molecular modeling of biomolecules.	[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			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	practical test	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	Adresy na platformie eNauczanie:	
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		