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Subject card

Subject name and code	Fundamentals of Programming, PG_00058233					
Field of study	Biotechnology					
Date of commencement of studies	October 2023		Academic year of realisation of subject		2023/2024	
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	2		ECTS credits		1.0	
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		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	15.0	0.0	0.0	15
	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	15	3.0	7.0	25

Subject objectives	The aim of the course is to familiarize students with the basics of programming and good programming practices. During the classes, students learn how to prepare an algorithm that can be later encoded in a specific programming language.. Students learn to work in an integrated development environment (IDE) and to use this environment to identify and correct errors in created programs. As part of the course, students write simple programs to help solve bioinformatics problems.

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 divide a given problem into logical parts/stages and design appropriate functions and data structures to solve the problem	[SK5] Assessment of ability to solve problems that arise in practice
	[K7_W04] has a structured knowledge of the application of informatics tools in biotechnology and molecular modeling of biomolecules	The student has knowledge about the use of programming tools in solving various engineering problems, in particular, student has extended knowledge about the use of programming in solving issues in the field of biotechnology and molecular biology	[SW3] Assessment of knowledge contained in written work and projects
	[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 knows how to present a solution to a given problem in the form of an algorithm and is able to write it as a program in the Python programming language; The student is able to test the correctness of the program and detect and eliminate any errors.	[SU1] Assessment of task fulfilment

Subject contents	The basics of programming. Structured and object-oriented programming. Python programming basics. Using libraries, in particular the Biopython library to perform specific bioinformatics tasks

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	practical project	60.0%	100.0%
Recommended reading	Basic literature	Learning Python, 5th Edition, Mark Lutz, 2022, O'Reilly	
	Supplementary literature	Educational materials provided by the lecturer Dive into python http://wikobooks.org	
	eResources addresses	Adresy na platformie eNauczanie: Podstawy programowania - 2024 - Moodle ID: 33718 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33718	
Example issues/ example questions/ tasks being completed	preparation of a python script for basic protein structure analysis based on the PDB files		
Work placement	Not applicable		