



## Subject card

Subject name and code	Programming in Bioinformatics, PG_00058245						
Field of study	Biotechnology						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
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	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						
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 capable of analyzing a given problem and breaking it down into smaller, more manageable subtasks 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 for designing experiments, analyzing results, and solving bioinformatics problems through independently prepared computer programs.			[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 programming tools, including specialized programming libraries, in biotechnology and molecular modeling of biomolecules			[SW3] Assessment of knowledge contained in written work and projects			

Subject contents	<p>basics of python programming language</p> <p>basics of numpy and matplotlib modules</p> <p>usage of biopython library</p>								
Prerequisites and co-requisites									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 461 794 495">Subject passing criteria</th> <th data-bbox="799 461 1137 495">Passing threshold</th> <th data-bbox="1142 461 1481 495">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 501 794 526">practical test</td> <td data-bbox="799 501 1137 526">60.0%</td> <td data-bbox="1142 501 1481 526">100.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	practical test	60.0%	100.0%
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Recommended reading	Basic literature	<p>Essential Bioinformatics, Jin Xiong, 2006, Cambridge University Press</p> <p>Learning Python, 3rd Edition, Mark Lutz, 2007, O'Reilly Media</p>							
	Supplementary literature	Dive into python, <a href="http://www.diveintopython.net/">http://www.diveintopython.net/</a>							
	eResources addresses	<p>Adresy na platformie eNauczenie:</p> <p>Programowanie w bioinformatyce - 2024 - Moodle ID: 30821</p> <p><a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=30821">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=30821</a></p>							
Example issues/ example questions/ tasks being completed	<p>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</p> <p>Preparation of a script automatically querring both structural and sequential databases and carrying out an automated comparative analysis between structures and sequences of protein</p>								
Work placement	Not applicable								