

Subject card

Subject name and code	Bioinformatics for biologists, PG_00132659						
Field of study	Biology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2028/2029		
Education level	Bachelor's 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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Molecular Evolution and Bioinformatics -> Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Marek Ziętara				
	Teachers						
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						
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	To introduce students to advanced bioinformatics tools for the basics: molecular phylogenetics, structural bioinformatics, genomics and proteomics, and genetic variation analysis.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[BIOLL3_K05] The graduate is prepared to take responsibility for the safety of his/her and that of others, as well as to recognize hazardous situations and take appropriate action	The student is responsible for the entrusted computer equipment, materials, his/her own work and respects the work of others.			[SK8] observation of student's independent or team work		
	[BIOLL3_U04] The graduate will be able to apply statistical methods and computer algorithms and techniques to the description of phenomena and the analysis of biological data	The student uses bioinformatics tools to classify biological data and obtain the structures of second- and third-order biological molecules.			[SU2] presentation/project/paper/report		
Subject contents	Introduction to biological databases. Sequence comparison. Models of DNA substitution. Introduction to molecular phylogenetics. Construction of phylogenetic trees on a selected research model - methods and programs. The principle of the molecular clock. Predicting genes and promoters. Structural bioinformatics. Mapping, assembling and comparing genomes. Introduction to functional genomics and proteomics. Analysis of genetic variation.						

Prerequisites and co-requisites	<p>formal requirements: the student is required to participate in the lecture Bioinformatics for biologists.</p> <p>additional requirements:</p> <p>1. The student is obliged to participate in classes, and in the event of absence, it must be excused in accordance with paragraph 12 of the UG Study Regulations. 2. The condition for passing the exercises is participation in at least 85% of classes. 3. The student is obliged to fill in the gaps in knowledge and skills caused by absence from classes in the manner and on the date indicated by the Lecturer.</p>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Average of partial grades	51.0%	40.0%
	Colloquium	51.0%	60.0%
Recommended reading	Basic literature	<p>A. Literature required for the final passing of the course: A1. used during classes: Jin Xiong, Podstawy bioinformatyki. Wydawnictwo Uniwersytetu Warszawskiego</p> <p>A2. Self-studied by the student: Barry G. Hall Łatwe drzewa filogenetyczne. Wydawnictwo Uniwersytetu Warszawskiego</p>	
	Supplementary literature	<p>B. Supplementary literature:</p> <ul style="list-style-type: none"> • Baxevanis A.D., Oullette B.F. (red.) (2005) Bioinformatyka - podręcznik do analizy genów i białek. PWN, ISBN 83-01-142111 • Paul G. Higgs, Teresa K. Attwood (2008) Bioinformatyka i ewolucja molekularna. PWN, ISBN 978-83-01-15494-3 • scientific articles indicated by the lecturer 	
	eResources addresses		
Example issues/ example questions/ tasks being completed	No applicable		
Work placement	Not applicable		

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