

**Subject card**

<b>Subject name and code</b>	Bioinformatics for biologists, PG_00132659						
<b>Field of study</b>	Biology						
<b>Date of commencement of studies</b>	October 2025	<b>Academic year of realisation of subject</b>			2027/2028		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	3	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	5	<b>ECTS credits</b>			2.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			credit		
<b>Conducting unit</b>	Laboratory of Molecular Evolution and Bioinformatics -> Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		prof. dr hab. Marek Ziętara				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	30		2.0		18.0	50
<b>Subject objectives</b>	To introduce students to advanced bioinformatics tools for the basics: molecular phylogenetics, structural bioinformatics, genomics and proteomics, and genetic variation analysis.						
<b>Learning outcomes</b>	<b>Course outcome</b>		<b>Subject outcome</b>		<b>Method of verification</b>		
	[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		
[BIOLL3_K05] The graduate is prepared to take responsibility for their own and others' safety at work and to recognise risk 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			
<b>Subject contents</b>	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
	Colloquium	51.0%	60.0%
	Average of partial grades	51.0%	40.0%
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"> <li>• Baxevanis A.D., Oullette B.F. (red.) (2005) Bioinformatyka - podręcznik do analizy genów i białek. PWN, ISBN 83-01-142111</li> <li>• Paul G. Higgs, Teresa K. Attwood (2008) Bioinformatyka i ewolucja molekularna. PWN, ISBN 978-83-01-15494-3</li> <li>• scientific articles indicated by the lecturer</li> </ul>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	No applicable		
Work placement	Not applicable		

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