

**Subject card**

<b>Subject name and code</b>	Bioinformatics in diagnostics, PG_00090770						
<b>Field of study</b>	Genetics and Experimental Biology						
<b>Date of commencement of studies</b>	October 2022	<b>Academic year of realisation of subject</b>	2024/2025				
<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>	6	<b>ECTS credits</b>	2.0				
<b>Learning profile</b>	academic	<b>Assessment form</b>	credit				
<b>Conducting unit</b>							
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>	prof. dr hab. Marek Ziętara					
	<b>Teachers</b>	prof. dr hab. Marek Ziętara dr Beata Guzow-Krzemińska dr Natalia Olędrzyńska mgr Michalina Kijowska					
<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>Additional information:</b> The number of student work hours consists of 30 hours of classes, 3 hours of consultations, and 17 hours of independent work.						
<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	0.0	0.0	30		
<b>Subject objectives</b>	The aim of the course is to familiarize students with advanced bioinformatics tools, with the techniques of molecular phylogenetics, with elements of structural bioinformatics and with the basics of genomics.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GBEL3_U02] The graduate is able to: use computer programmes for analysis and calculation, and use databases and bioinformatics tools to solve biological problems	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
	[GBEL3_K08] The graduate is prepared to: takes responsibility for equipment/materials entrusted to it and respects the work of others	Is responsible for the computer equipment/materials entrusted to him/her, his/her own work and respects the work of others.	[SK8] observation of student's independent or team work
	[GBEL3_U04] The graduate is able to: read scientific texts in English and Polish with comprehension, synthesise the knowledge they contain, prepare well-documented papers on biological problems and on the commercialisation of research	Can read and understand scientific texts in bioinformatics in English and prepare their translation into Polish.	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
Subject contents	<p>Exercises: Reconstruction of phylogenetic relationships of diagnosed taxa in a selected research model. Use of bioinformatics tools for detailed description of phylogenetic trees for their presentation and interpretation. Estimation of phylogenetic compounds using the molecular clock method. Application of bioinformatics methods to predict selected RNA/protein structures. Application of bioinformatics methods to map, assemble and compare genomes. Use of specialized software (e.g. MEGA, Seaview, BEAST, MrBayes, tRNAscan-SE).</p>		
Prerequisites and co-requisites	<p>prerequisites: knowledge and skills in Fundamentals of Bioinformatics.</p> <p>formal requirements: the student is obliged to participate in the lecture Bioinformatics in diagnostics additional requirements: 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 the absence from lectures on his/her own, while the gaps in knowledge and skills caused by the absence from the 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 (passing the exam): A.1. used during classes Jin Xiong. Podstawy bioinformatyki. Wydawnictwa Uniwersytetu Warszawskiego A.2. studied by the student on his or her own Barry G. Hall Łatwe drzewa filogenetyczne. Wydawnictwa Uniwersytetu Warszawskiego scientific articles indicated by the lecturer</p>	
	Supplementary literature	<p>B. Supplementary literature Baxevanis A.D., Ouellette 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</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Not applicable		
Work placement	Not applicable		

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