

Subject card

Subject name and code	Bioinformatics and molecular modeling - lecture, PG_00192720						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
Education level	Master'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	2	Language of instruction			English		
Semester of study	3	ECTS credits			1.0		
Learning profile	academic	Assessment form			exam		
Conducting unit	Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Małgorzata Waleron				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	0.0	0.0	10
	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	10		1.0		14.0	25
Subject objectives	<p>Getting students acquainted with the basic knowledge in the area of bioinformatics that allows students to consciously use bioinformatics methods and tools applied in marine biotechnology and other fields of science.</p> <p>Students will widen their knowledge in the related areas and disciplines of science that will allow them to see relationships and dependencies in nature, in particular those essential for marine biotechnology.</p>						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[MBMU2-KW04] Knows and deeply understands advanced research methods used in marine biotechnology and related sciences		The student has knowledge in the field of bioinformatic methods applied in marine biotechnology. The student has an extended knowledge of the interpretation of bioinformatics analyses and their use in marine biotechnology			[SW4] test/exam - oral or written	

Subject contents	<ol style="list-style-type: none"> 1. Overview of sequence databases. 2. Collection, storage and processing of sequences for deposit in public databases. 3. Sequence formats and conversion. 4. Sequence comparison (pair-wise sequence comparison, multiple sequence comparison). 5. Searching for similar sequences in databases. 6. Operon assembly and annotation. 7. Open reading frame search. 8. Protein function prediction. 9. Evolutionary models. 10. Phylogenetic prediction. 11. Predicting the 3D structure of a protein based on its amino acid sequence using the AlphaFold database. 12. Protein Structure Database. 								
Prerequisites and co-requisites									
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Subject passing criteria</th> <th style="width: 30%;">Passing threshold</th> <th style="width: 30%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 602 794 696">The theoretical knowledge acquired during the course will be verified by means of a written examination.</td> <td data-bbox="794 602 1141 696">51.0%</td> <td data-bbox="1141 602 1487 696">100.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	The theoretical knowledge acquired during the course will be verified by means of a written examination.	51.0%	100.0%
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Recommended reading	Basic literature	Applied Bioinformatics : An Introduction, Paperback by Selzer,Paul M. (EDT) Springer 2018 Bioinformatics. A Practical Guide to the Analysis of Genes and Proteins. A.D. Baxevanis, B.F.F. Ouellette. 1998 Bioinformatics and Molecular Evolution. Paul G. Higgs, Teresa K.Attwood. 2004							
	Supplementary literature	<ul style="list-style-type: none"> • Bioinformatics. Sequence and genome analysis". D.W. Mount. 2001. • Students individually search for materials concerning classes using electronic resources. 							
	eResources addresses								
Example issues/ example questions/ tasks being completed									
Work placement	Not applicable								

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