

Subject card

Subject name and code	Statistics in marine biotechnology - laboratory classes, PG_00192716						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
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	1	Language of instruction			English		
Semester of study	2	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Plankton Biology -> Department of Marine Biology and Biotechnology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Agata Weydmann-Zwolicka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	20.0	0.0	0.0	20
	E-learning hours included: 0.0						
	Additional information: Computer laboratory classes						
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	20		2.0		28.0	50
Subject objectives	<p>At the end of the course Students will be able to:</p> <ul style="list-style-type: none"> - Plan scientific research and design experiments; - Collect data and prepare basic data bases; - Apply proper statistical methods and computer tools for data analysis; - Explain differences between different data transformations, standarization and normalization, analysis of similarity and analysis of variance; - Discuss possible errors; 						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MBMU2-KU02] Can collect and interpret empirical data; applies statistical methods and computer tools in data analysis; formulates conclusions based on empirical data	Student is able to collect and interpret empirical data; uses statistical methods and IT tools to analyze data; formulates conclusions based on empirical data	[SU4] test/exam - oral or written
	[MBMU2-KW04] Knows and deeply understands advanced research methods used in marine biotechnology and related sciences	Student knows and understands advanced research methods used in marine biotechnology and marine biology	[SW4] test/exam - oral or written
	[MBMU2-KK01] Is ready to critically evaluate his knowledge and continuously improve, update and upgrade his skills in the field of marine biotechnology	Student is ready to critically evaluate their knowledge and constantly improve it, update it and improve his qualifications in the field of data analysis and statistical methods used in marine biotechnology	[SK4] test/exam - oral or written
Subject contents	<p>1. Introduction to statistics: basic terminology, steps of statistical research, measuring scales 2. Data collection, manipulation, preparation and transformation; Experimental design; Presentation of scientific data 3. Introduction to the methods of PRIMER 4. Resemblance: similarities, dissimilarities and distances; Correlation and regression 5. Clustering methods 6. Ordination and Multi-dimensional scaling 7. Analysis of Similarity (ANOSIM) and Analysis of Variance (ANOVA) 8. Analyzing environmental variables and linking assemblage to environment</p>		
Prerequisites and co-requisites	Basic computer skills; Basics of statistics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical test	51.0%	100.0%
Recommended reading	Basic literature	<p>Clarke, K.R., Gorley, R.N. (2015) PRIMER v7: User Manual/Tutorial. PRIMER-E: Plymouth</p> <p>Clarke, K.R., Gorley, R.N., Somerfield, P.J., Warwick, R.M. (2014) Change in marine communities: an approach to statistical analysis and interpretation, 3rd edition. PRIMER-E: Plymouth</p> <p>Ruxton G.D., Colegrave N. Experimental design (2016) Experimental Design for the Life Sciences, 4th edition. Oxford University Press</p>	
	Supplementary literature	Set of up-to-date scientific papers selected by the teaching staff	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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