University of Gdańsk

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 2027	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	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, prof. UG	
	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						

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

At the end of the course Students will be able to:

- 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-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
[MBMU2-KW04] Knows and deeply understands advanced research methods used in marine biotechnology and related sciences	Student kbows and understands advanced research methods used in marine biotechnology and marine biology	[SW4] test/exam - oral or written
[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

Subject contents

1. Introduction to statistics: basic terminology, steps of statistical research, measuring scales2. Data collection, manipulation, preparation and transformation; Experimental design; Presentation of scientific data3. Introduction to the methods of PRIMER4. Resemblance: similarities, dissimilarities and distances; Correlation and regression5. Clustering methods6. Ordination and Multi-dimensional scaling7. Analysis of Similarity (ANOSIM) and Analysis of Variance (ANOVA)8. Analyzing environmental variables and linking assemblage to environment

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	Clarke, K.R., Gorley, R.N. (2015) PRIMER v7: User Manual/Tutorial. PRIMER-E: Plymouth Clarke, K.R., Gorley, R.N., Somerfield, P.J., Warwick, R.M. (2014) Change in marine communities: an approach to statistical analysis andinterpretation, 3nd edition. PRIMER-E: Plymouth Ruxton G.D., Colegrave N. Experimental design (2016) Experimental Design for the Life Sciences, 4th edition. Oxford University Press
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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