

Subject card

Subject name and code	Study Planning and Data Analysis - lecture, PG_00204998						
Field of study	Oceanography						
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 Optional subject group		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			1.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Bożena Graca				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	1.0		9.0	25	
Subject objectives	To familiarise the student with the principles of planning experiments and field studies of the marine environment and the statistical processing of the results obtained.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OCEANMU2-W05] knows and understands the principles of planning and conducting field and laboratory research as well as advanced methods and tools of scientific research, especially in the field of the studied specialty		understands the principles of planning environmental and experimental research, can appropriately select a statistical tool to verify the hypothesis of the study, can apply multivariate statistical tools		[SW4] test/exam - oral or written		
	[OCEANMU2-K03] is ready to effectively organize his/her own work, is active and persistent and punctuality in completing tasks, is ready to carrying out evaluation of their own activities		Is prepared to exercise caution and criticism in accepting information from scientific literature, the Internet and other media relating to marine science.		[SK1] oral statement/conversation/discussion		
Subject contents	A1. Principles of planning experiments and field studies. A2. Recording and storage of results. A3. Reliability of results. A4. Descriptive statistics of one and two variables. A5. Parametric and non-parametric distributions (Shapiro-Wilk test, Box-Cox transformation). A6. Outliers and extremes (Normal test, Thickness test, Tukey test, data cleaning). A7. Examples of applications and interpretation of regression analysis (linear and non-linear regression) in marine environmental studies. A8. Point and interval estimation. A9. Examples of application of tests of significance of differences in environmental studies (Student's t-test, Mann-Whitney U-test, ANOVA, Wilcoxon, Kruskal-Wallis ANOVA, Friedman, post-hoc tests). A10. Application and interpretation of multivariate analyses (principal component analysis, factor analysis, cluster analysis) in marine environmental studies.						

Prerequisites and co-requisites	basics of statistics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written assessment	51.0%	100.0%
Recommended reading	Basic literature	A.1. Andrzej Stanisł, Przystępny kurs statystyki z zastosowaniem STATISTICA na przykładach z medycyny.(tom I, II i III), wydawca StatSoft Polska, łącznie 1900s. Internetowy podręcznik statystyki (http://www.statsoft.pl/textbook/stathome.html)	
	Supplementary literature	B1. Radosław Kala, Statystyka dla przyrodników, Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu (wydanie III) 234s.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	To plan an environmental or experimental study in such a way that a specific statistical tool can be used to verify a hypothesis.		
Work placement	Not applicable		

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