

Subject card

Subject name and code	Statistics for Oceanographers - laboratory, PG_00206157						
Field of study	Oceanography						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
Education level	Bachelor'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			Polish		
Semester of study	3	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Maciej Mańko				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30		2.0		18.0	50
Subject objectives	The aim of the course is to develop the ability to freely use basic statistical terms and software and functions for statistical analyzes in order to describe natural phenomena; developing the ability to interpret the obtained research results; learning about the possibilities of applying statistical methods in the studied field. The methods discussed will provide students with the basis for deeper study of statistical methods as part of specialized subjects taken during their studies.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OCEANL3-W05] has an advanced knowledge of techniques, research methods, and tools (mathematical, statistical, and computational) used by oceanographers to describe and interpret processes and phenomena occurring in the marine environment		Knows basic techniques and tools at an advanced statistical level for the description of processes and phenomena occurring in the marine environment, and also for the description of the relationships between objects/facts/processes/phenomena in marine environment		[SW4] test/exam - oral or written		
	[OCEANL3-K03] is ready to exercise caution and criticism in accepting information from scientific literature, the Internet and other media relating to natural sciences		He is ready to make his own decisions about regarding the use of learned statistical methods and to critically assess the obtained results of statistical research (program content of the lecture and exercises).		[SK2] presentation/project/paper/report [SK4] test/exam - oral or written		
	[OCEANL3-U05] is able to use general-purpose and specialized software, as well as mathematical and statistical methods, in data analysis and the presentation of results		Is able to use knowledge of statistics to solve tasks and complex and unusual problems in the field of oceanography by selecting and using appropriate statistical methods and specialized computer software		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		

Subject contents	<p>1. Data organization, graphical presentation of data</p> <p>2. Descriptive statistics: creation and interpretation of distribution series, multi-way tables, histograms; descriptive characteristics of empirical distributions</p> <p>3. Random variables and their distributions, use of a probability calculator</p> <p>4. Confidence interval for expected value and proportion; determining the minimum sample size for estimation with a given uncertainty</p> <p>5. Introduction to testing statistical hypotheses: testing the normality of the distribution of variables, Student's t-tests - calculations and interpretation of results</p> <p>6. Analysis of variance (ANOVA): introduction do applying ANOVA, including verification of assumptions, results interpretation and running post hoc tests.</p> <p>7. Interdependence and regression analysis: Pearson's linear correlation coefficient and testing its significance, linear regression function (estimation and interpretation of function parameters, assessment of fit, testing the significance of the regression coefficient)</p>														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Test</td> <td>51.0%</td> <td>70.0%</td> </tr> <tr> <td>Entry tests</td> <td>51.0%</td> <td>20.0%</td> </tr> <tr> <td>Reports</td> <td>51.0%</td> <td>10.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Test	51.0%	70.0%	Entry tests	51.0%	20.0%	Reports	51.0%	10.0%		
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Recommended reading	Basic literature	<p>Łomnicki A., 2003, Introduction to statistics for naturalists. PWN Warszawa Rabiej M., 2018, Statistical analyzes with Statistica and Excel. Helion Rabiej M., 2012, Statistics with the Statistica program. Helion Meissner W., 2014, Statistical methods in biology. Subject practice guide. University of Gdańsk Publishing House A.2. studied independently by the student Górecki T., 2011, Basics of statistics with examples in R, Wydawnictwo BTC, Legionowo;</p>													
	Supplementary literature	<p>Kala R., Statistics for naturalists. Ed. AR Poznań 2002 Stanisz A., 2006, Accessible statistics course based on the STATISTICA PL program with examples from medicine (Volume I), StatSoft Sobczyk M., 2003, Statistics. Theoretical foundations, examples - tasks, UMCS Publishing House, Lublin Koronacki J., Mielniczuk J., 2018, Statistics for technical and natural sciences, PWN, Warsaw Kot S., Sokołowski A., Jakubowski J., 2011, Statistics, Ed. 2, PWN, Warsaw</p>													
	eResources addresses														
Example issues/ example questions/ tasks being completed															
Work placement	Not applicable														

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