

Subject card

Subject name and code	Statistics for oceanographers - laboratory exercises, PG_00159300						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Bachelor'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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Physical Oceanography -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jordan Badur				
	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		4.0		30.0	64
Subject objectives	The course aims to: - develop the skills required for the proficient use of basic statistical terminology and statistical software in the natural sciences. - develop the ability to interpret data and research findings. - instruct on the use of statistical methods in oceanography. The statistical methods introduced in this course will provide a foundation for the comprehensive study of advanced statistical techniques covered in subsequent specialized courses.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OCEANL3-K03] is ready to exercise caution and criticism in accepting information from scientific literature, the Internet and other media relating to natural sciences	Students are prepared to independently determine the suitability of the presented statistical methods and to critically evaluate the results obtained from statistical research.	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written [SK5] implementation of a problem task
	OCEANL3-W05	Students will gain advanced understanding of the essential techniques and tools for the statistical analysis of processes and phenomena in marine environment, as well as the interconnections among objects, facts, processes, and phenomena within marine environment.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
	OCEANL3-U05	Students are able to apply their statistical knowledge to solve both routine assignments and complex, non-standard problems in oceanography by employing appropriate statistical techniques and software tools.	[SU4] test/exam - oral or written
Subject contents	1. Data organisation, graphical presentation of data 2. Descriptive statistics: forming and interpretation of frequency series, contingency tables, histograms; descriptive statistics of empirical distributions 3. Random variables and their probability distribution, 4. Confidence intervals for expected values and proportion; determination of smallest sample necessary for a specified uncertainty. 5. Introduction to statistical testing: normality tests, t-Students test, non-parametric tests, tests for two populations. 6. Regression and correlation analysis		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	mid-terms	51.0%	80.0%
	classroom assignments	51.0%	20.0%
Recommended reading	Basic literature	• Łomnicki A., Introduction to statistics for naturalists (in Polish). PWN Warszawa, 2003. • Rabiej M., Statistical analyses using Statistica and Excel (in Polish). Helion, 2018. • Rabiej M., Statistics with STATISTICA (in Polish). Helion, 2012. • Meissner W., Statistical methods in biology. Laboratory course guide (in Polish). Wydawnictwo Uniwersytetu Gdańskiego, 2014. • Górecki T., Elements of statistics with examples in R (in Polish), Wydawnictwo BTC, Legionowo, 2011.	
	Supplementary literature	• Kala R., Statistics for naturalists (in Polish). Wyd. AR Poznań, 2002 • Stanisław A., A simple statistics course using STATISTICA PL software based on examples in medicine, Vol. 1 (in Polish) StatSoft, 2006 • Sobczyk M., Statistics - theoretical foundations, examples, assignments (in Polish), Wydawnictwo UMCS, Lublin, 2003 • Koronacki J., Mielniczuk J., Statistics for engineering and science students (in Polish), PWN, Warszawa, 2018 • Kot S., Sokołowski A., Jakubowski J., Statistics, 2nd Ed, (in Polish), PWN, Warszawa, 2011	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	Determine the confidence interval for mean value, variance, proportion Formulate and test relevant hypothesis for testing one or two mean values (variances)	
Work placement	Not applicable		

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