

Subject card

Subject name and code	Statistical methods in geology - exercises, PG_00121005						
Field of study	Geology						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2024/2025	
Education level	undergraduate studies	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	2	ECTS credits				1.0	
Learning profile	academic	Assessment form					
Conducting unit	Pracownia Rekonstrukcji Geomorfologicznych -> Katedra Geomorfologii i Geologii Czwartorzędu -> Faculty of Oceanography and Geography						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Damian Moskalewicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	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		12.0		13.0	40
Subject objectives	Exercises: acquiring the ability to perform selected statistical analyzes used in geology, as well as presenting and interpreting research results (e.g. basic measures and descriptive statistics, hypothesis testing, analysis of variance, correlations, regressions, PCA, cluster analysis, LDA, statistical stratigraphic and lithological analyzes , data visualization)						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GEOLL3_W06] knows statistical and IT tools as well as the principles of preparing engineering and geological documentation and cartographic materials	knows statistical and IT tools and the principles of preparing geological and engineering documentation and studies of cartographic materials	[SW3] text preparation/written work [SW5] implementation of a problem task
	[GEOLL3_K03] is willing to exercise caution and criticism in receiving information from scientific literature, the Internet and other media related to natural sciences	is ready to be cautious and critical in accepting information from scientific literature, the Internet and other media relating to natural sciences in the field of statistics	[SK3] text preparation/written work [SK5] implementation of a problem task [SK8] observation of student's independent or team work
	[GEOLL3_U02] has the skill of analytical and synthetic way of reasoning leading to correct inference based on the results obtained or the facts presented	has the ability to use analytical and synthetic reasoning leading to correct conclusions based on the results of geological research	[SU3] text preparation/written work [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences	knows and understands the appropriate terminology in the field of statistical methods used in geology	[SW3] text preparation/written work [SW5] implementation of a problem task
	[GEOLL3_U04] is able to use specialized computer software and mathematical and statistical methods in the analysis of geological data	is able to use specialized computer software and mathematical and statistical methods in the analysis of geological data	[SU3] text preparation/written work [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
Subject contents	Laboratory exercises in the computer lab: B1. Descriptive statistics B2. Data visualization B3. Hypothesis testing and analysis of variance B4. Correlations and regressions B5. PCA, cluster analysis, LDAB6. Statistical stratigraphic and lithological analyses		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report on performed tasks	50.0%	100.0%
Recommended reading	Basic literature	Davis, J.C., 2002. Statistics and data analysis in geology. Wiley & Sons. Krysicki, W., Bartos, J., Dyczka, W., Królikowska, K., Wasilewski, M., 2011. Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach. Cz. 1 i 2. Wyd. PWN	
	Supplementary literature	Koronacki, J., Mielniczuk, J., 2009. Statystyka dla studentów kierunków technicznych i przyrodniczych. Wyd. Naukowo-techniczne. Łomnicki, A., 2014. Wprowadzenie do statystyki dla przyrodników. Wyd. PWN Biecek, P., 2017. Przewodnik po pakiecie R. Oficyna Wydawnicza GiS Biecek, P., 2014. Analiza danych z programem R. Modele liniowe z efektami stałymi, losowymi i mieszanymi. Wyd. PWN Gaetan, C., Guyon, X., 2010. Spatial Statistics and Modelling. Springer. Healy, K., 2018. Data Visualization: A Practical Introduction. Princeton University Press	
	eResources addresses	Adresy na platformie eNauczenie:	

Example issues/ example questions/ tasks being completed	CLA, PCA, LDA
Work placement	Not applicable

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