University of Gdańsk

Subject card

Subject name and code	Mathematics and Statistics - tutorials II, PG_00192593		
Field of study	Water Management and Protection of Water Resources		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
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	2.0
Learning profile	practical	Assessment form	credit
Conducting unit	Climate Research Laboratory -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Mirosława Malinowska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	30.0	0.0	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	1.0	19.0	50

Subject objectives

Acquire the ability to determine basic quantities in descriptive statistics and interpret them. Determine confidence intervals of basic elements, determine the minimum sample size, determine the relationship between two variables using correlation and linear regression and the statistical significance of the relationship

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GWOZWL3-U08] The student can use basic mathematical and statistical methods to analyze data and describe phenomena and processes occurring in the environment, as well as methods of information technology to assess the risk of threats to the of the environment, especially the hydrosphere.	knows how to use basic mathematical and statistical methods to analyze data and describe environmental phenomena and processes	[SU4] test/exam - oral or written
[GWOZWL3-K03] The student has the ability systematic further education and professional development, updating and expand their knowledge and skills, understands the limitations of his own knowledge in the context of civilization progress and recognizes authorities in the professional and scientific environment.	Systematically further educates himself and improves professionally, expands his knowledge and skills, understands the limitations of his own knowledge in the context of the progress of civilization and recognizes the authorities in the professional and scientific environment	[SK4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>Specific and distributive series, measures of position, dispersion, skewness, and kurtosis,

Interdependence and correlation analysis

Regression and trend function

Probability introduction.

Normal distribution

Poisson distribution

Bernoulli distribution

Graphical data presentation techniques</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>test</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Makać W., Urbanek-Krzysztofiak D., 2004. Methods of statistical description. Wyd. UG, Gdańsk.Balicki A., Makać W., 2010, Methods of statistical inference, Wyd. UG, Gdańsk.</td></tr>
<tr><td>Supplementary literature</td><td>Krysicki w., Bartos J., Dyczka W., Królikowska K., Wasilewski M., 1986. Probability calculus and mathematical statistics in tasks. Part II. Mathematical statistics, PWN, 328pp.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Based on the data presented, determine the mean median, dominant, standard deviation and kurtosis coefficient.2. the lake has frozen 20 times in the last 100 years. Calculate the probability that this lake will freeze at least once in the next 10 years.3. The output of a certain source has a normal distribution with a mean of 80l/s and a standard deviation of 10 l/s. Calculate the probability that the output of the source will be between 60-90 l/s.4. Test whether there is a statistically significant relationship between precipitation in a certain catchment area and flows of the main river in the closing profile. Calculate the strength of this relationship.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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