

Subject card

Subject name and code	Introduction to biostatistics, PG_00143363						
Field of study	Natural Resources Conservation						
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 Subject group related to scientific research 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	4	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Vertebrate Ecology and Ethology -> Department of Vertebrate Ecology and Zoology -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Adrian Zwolicki				
	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		3.0		17.0	50
Subject objectives	<ol style="list-style-type: none"> 1. Familiarizing students with software for data processing and analysis, including basic programming skills useful for data handling in the natural sciences. 2. Preparing students to use basic data processing methods and apply them to the interpretation of natural phenomena. 						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[OZPL3_U05] The graduate is able to apply basic statistical methods and computer techniques and tools to describe phenomena and analyze biological data		Applies basic programming and data analysis methods to describe phenomena and analyze biological data.			[SU4] test/exam - oral or written	
	[OZPL3_W12] The graduate possesses knowledge of statistical methods and IT tools relevant to the field of study.		Has knowledge of the use of data analysis methods in areas related to their field of study.			[SW4] test/exam - oral or written	
	[OZPL3_K01] The graduate is ready to recognise the limitations in his/her own knowledge and understands the need for continuous learning and development		Recognizes the limitations of their own knowledge and understands the need for continuous learning and development.			[SK4] test/exam - oral or written	
	[OZPL3_W08] The graduate possesses advanced knowledge and understanding of data analysis tools required to comprehend natural laws and describe biological processes		Identifies programming and data analysis tools necessary for understanding the laws of nature.			[SW4] test/exam - oral or written	

Subject contents	RStudio Interface (R Script and R Markdown). R software and packages (installation, browsing available resources). Importing and exporting data in various formats. Operations on .xlsx files. Operations on vectors and data frames. Operational functions and pivot tables. Data structure and variable types in biostatistics. Basic operations on variables. Data transformation and reshaping (tidyverse). Data exploration, visualization, and graphical presentation of results using the ggplot2 package in R. Statistical hypothesis testing (parametric tests: t-test, linear model, ANOVA; non-parametric tests: Mann-Whitney test, Kruskal-Wallis test, randomization).								
Prerequisites and co-requisites									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 371 786 398">Subject passing criteria</th> <th data-bbox="799 371 1139 398">Passing threshold</th> <th data-bbox="1152 371 1469 398">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 405 786 432">not applicable</td> <td data-bbox="799 405 1139 432">50.0%</td> <td data-bbox="1152 405 1469 432">100.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	not applicable	50.0%	100.0%		
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not applicable	50.0%	100.0%							
Recommended reading	Basic literature	Gagolewski, M. 2014. Programowanie w języku R. Analiza danych, obliczenia, symulacje, Warszawa Biecek, P. 2017. Przewodnik po pakiecie R, wydanie IV							
	Supplementary literature	Zuur, A., Ieno, E. N., & Meesters, E. 2009. A Beginner's Guide to R. Springer Science & Business Media. Stanisz, A., & Tadeusiewicz, R. 2007. Przystępny kurs statystyki z zastosowaniem STATISTICA PL na przykładach z medycyny. I-III. StatSoft							
	eResources addresses								
Example issues/ example questions/ tasks being completed	<p>Question 1 Create an object named v1, which will be a vector containing numbers from 10 to 20. As your answer, paste the source code and the output showing the object v1 from the R console.</p> <p>Question 2 Create an object named df, which will be a data frame with two variables:</p> <ul style="list-style-type: none"> • The first variable will contain the data from the vector v1 (from Question 1), • The second variable will be the logarithm of the v1 vector, named log_v1. Use any type of logarithm. As your answer, paste the source code and the output (view of the data frame) from the R console. 								
Work placement	Not applicable								

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