



Biostatistics and methods of data collection  
Educational subject description sheet

**Basic information**

<b>Field of study</b> Veterinary Medicine	<b>Education cycle</b> 2024/25	
<b>Speciality</b> -	<b>Subject code</b> MD000000MWW-AJS.J1.3219.24	
<b>Organizational unit</b> The Faculty of Veterinary Medicine	<b>Lecture languages</b> english	
<b>Study level</b> Long-cycle programme	<b>Mandatory</b> mandatory	
<b>Study form</b> Full-time	<b>Block</b> major subjects (conducted) in foreign languages	
<b>Education profile</b> General academic	<b>Disciplines</b> Veterinary medicine	
	<b>Subject related to scientific research</b> No	
	<b>Subject shaping practical skills</b> Nie	
<b>Teacher responsible for the subject</b>	Heliodor Wierzbicki	
<b>Other teachers conducting classes</b>	Heliodor Wierzbicki	
<b>Period</b> Semester 1	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> laboratory classes: 30	
	<b>Standard groups</b> A. Basic sciences, C. Supplementary classes	

## Goals

C1	The general aim of the course is to provide students with theoretical knowledge and practical skills (use of computer software for statistical analysis of data) in biostatistical methods used in the collection and description of a set of data (descriptive statistics) and hypothesis testing (parametric and non-parametric tests). It also covers correlation, simple linear regression and analysis of variance.
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## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the basic biostatistical methods used in the analysis of data collected by veterinarians and animal breeders	O.W15	project
<b>Skills - Student can:</b>			
U1	to carry out basic biostatistical analyses of collected data, to visualise the results obtained and prepare a presentation of the results together with their interpretation	O.U10	project
<b>Social competences - Student is ready to:</b>			
K1	to formulate conclusions on the basis of the biostatistical analyses carried out and to share this knowledge with co-workers	O.K5	observation of student's work

## Balance of ECTS points

Activity form	Activity hours*	
laboratory classes	30	
project preparation	15	
class preparation	15	
<b>Student workload</b>	<b>Hours</b> 60	<b>ECTS</b> 2.0
<b>Workload involving teacher</b>	<b>Hours</b> 30	<b>ECTS</b> 1.0
<b>Practical workload</b>	<b>Hours</b> 30	<b>ECTS</b> 1.0

\* hour means 45 minutes

## Study content

No.	Course content	Activities
1.	1. Descriptive biostatistics (1) – basic definitions and concepts; measures of central tendency 2. Descriptive biostatistics (2) – measures of variability; random variables and their distributions; methods of data collection 3. Excel/the SAS computer system – an introduction. 4. Excel/the SAS computer system – data management. 5. Excel/the SAS computer system – basic procedures (descriptive statistics). 6. Hypothesis testing (1) - basic definitions and concepts; types of hypotheses; significance level; critical value; rejection region; type I and II errors, power of the statistical test. 7. Hypothesis testing (2) – parametric tests; t-test (single sample; two independent samples; two paired samples). 8. Hypothesis testing (3) – non-parametric tests; chi-square test (one-way classification, two-way classification). 9. Correlation and simple linear regression. 10. Analysis of variance. 11. Excel/the SAS computer system - using computer software for hypothesis testing – t-test; Duncan test; chi-square test. 12. Excel/the SAS computer system - using computer software to compute correlation coefficients and construct simple linear regression equation. 13. Excel/the SAS computer system - using computer software to perform analysis of variance. 14. Introduction to final project preparation - data, statistical analysis, data visualization and interpretation. 15. Final project presentation.	laboratory classes

## Course advanced

### Teaching methods:

project-based learning (PBL), teamwork, computer lab/laboratory, lecture

Activities	Examination methods	Percentage in subject assessment
laboratory classes	project, observation of student's work	100%

## Entry requirements

mathematics, computer science

## Literature

### Obligatory

1. Beginning statistics v.1.0. Douglas S. Shafer, Zhiyi Zhang.  
<https://2012books.lardbucket.org/pdfs/beginning-statistics.pdf>
2. Basics of statistics. Jarkko Isotalo. <http://www.mv.helsinki.fi/home/jmisotal/BoS.pdf>

### Optional

1. Starting SAS -  
<https://support.sas.com/documentation/cdl/en/hostwin/69955/HTML/default/viewer.htm#p16esisc4nrd5sn1ps5l6u8f79k6.htm>

## Kierunkowe efekty uczenia się

Kod	Treść
O.K5	Formulates conclusions from own measurements or observations
O.U10	Performs basic statistical analysis and uses appropriate methods for presentation of the results
O.W15	Presents the basic IT and biostatistic methods used in veterinary medicine.