



Mathematical statistics  
Educational subject description sheet

**Basic information**

<b>Field of study</b> Animal husbandry	<b>Education cycle</b> 2024/25	
<b>Speciality</b> -	<b>Subject code</b> BD000000BZON.I2B.3068.24	
<b>Organizational unit</b> The Faculty of Biology and Animal Science	<b>Lecture languages</b> english	
<b>Study level</b> First-cycle (engineer) programme	<b>Mandatory</b> optional	
<b>Study form</b> Part-time	<b>Block</b> major subjects	
<b>Education profile</b> General academic	<b>Disciplines</b> Animal husbandry and fishery	
	<b>Subject related to scientific research</b> No	
	<b>Subject shaping practical skills</b> Nie	
<b>Teacher responsible for the subject</b>	Joanna Szyda, Tomasz Suchocki	
<b>Other teachers conducting classes</b>	Joanna Szyda, Michalina Jakimowicz, Łukasz Pawelec, Tomasz Suchocki	
<b>Period</b> Semester 2	<b>Examination</b> graded credit	<b>Number of ECTS points</b> 2.0
	<b>Activities and hours</b> lecture: 9 laboratory classes: 9	

**Goals**

C1	The student learns the basics of mathematical statistics and its practical application. In particular, the student learns how to perform statistical analysis of a data, hypotheses testing, statistical inference, modeling the relationship between variables. These skills allow for data analysis and proper interpretation of its results.
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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 graduate knows and understands the principles of conducting research in the natural sciences.	BH_P6S_WG12	written credit, oral credit, active participation, test
W2	The graduate knows and understands issues in the field of statistics.	BH_P6S_WG02	written credit, oral credit, active participation, test
<b>Skills - Student can:</b>			
U1	The graduate is able to use basic information technologies for processing information.	BH_P6S_UW04	written credit, oral credit, active participation, test

## Balance of ECTS points

Activity form	Activity hours*	
lecture	9	
laboratory classes	9	
lesson preparation	3	
exam participation	2	
exam / credit preparation	25	
consultations	10	
<b>Student workload</b>	<b>Hours</b> 58	<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> 9	<b>ECTS</b> 0.3

\* hour means 45 minutes

## Study content

No.	Course content	Activities
1.	1. Introductory lecture 2. Random variables 3. Populations and samples 4. Hypothesis testing and parameter estimation 5. Test 6. Chi-2 test 7. F test 8. Nonparametric tests 9. Summary of the material, analysis of examples, discussion 10. Correlation 11. Linear regression 12. Nonlinear regression 13. Determination of the quality of fit of the linear and non-linear regression equations 14. Analysis of variance 15. Summary of the material, analysis of examples, discussion	lecture

No.	Course content	Activities
2.	1. Introductory labs 2. Random variables 3. Populations and samples 4. Hypothesis testing and parameter estimation 5. Test 1 6. Test t 7. Chi-2 test 8. Test F 9. Test 2 10. Correlation 11. Linear regression 12. Nonlinear regression 13. Determination of the quality of fit of the linear and non-linear regression equations 14. Analysis of variance 15. Presentation of the project results, completion of exercises	laboratory classes

## Course advanced

### Teaching methods:

computer lab/laboratory, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit	50%
laboratory classes	active participation, test	50%

## Literature

### Obligatory

1. Hawkins, D. (2005) Biomeasurement. Understanding, analysing, and communicating data in the biosciences. Oxford University Press

### Optional

1. Collett, D. (1991) Modelling Binary Data, Chapman and Hall
2. Draper, N.R., Smith, H. (1998) Applied Regression Analysis, Wiley
3. Ruxton and Colegrave (2003) Experimental design for the life sciences.

## Kierunkowe efekty uczenia się

Kod	Treść
BH_P6S_UW04	The graduate is able to use basic information technologies in multimedia presentations and to obtain and process information in the field of animal science
BH_P6S_WG02	The graduate knows and understands issues in the field of chemistry, biochemistry, statistics, physics, biophysics and genetics
BH_P6S_WG12	The graduate knows and understands the principles of designing and conducting research in natural sciences