

KARTA PRZEDMIOTU**I. Dane podstawowe**

Nazwa przedmiotu	Descriptive statistics
Nazwa przedmiotu w języku angielskim	Descriptive statistics
Kierunek studiów	Mathematics
Poziom studiów (I, II, jednolite magisterskie)	I
Forma studiów (stacjonarne, niestacjonarne)	Full-time studies
Dyscyplina	Mathematics
Język wykładowy	English

Koordinator przedmiotu/osoba odpowiedzialna	dr Kamil Powroźnik
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Forma zajęć (<i>katalog zamknięty ze słownika</i>)	Liczba godzin	semestr	Punkty ECTS
wykład	30	IV/VI	5
konwersatorium			
ćwiczenia	30	IV/VI	
laboratorium			
warsztaty			
seminarium			
proseminarium			
lektorat			
praktyki			
zajęcia terenowe			
pracownia dyplomowa			
translatorium			
wizyta studyjna			

Wymagania wstępne	W1. Knowledge of the basic notions of mathematics and elementary arithmetical calculations.
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II. Cele kształcenia dla przedmiotu

C1. The main aim of the course is to teach the students about the methods and the procedures of descriptive statistics.

III. Efekty uczenia się dla przedmiotu wraz z odniesieniem do efektów kierunkowych

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	The student understands the importance of mathematics and its applications, in particular its role in the context of contemporary civilization's dilemmas.	K_W01
W_02	The student has advanced knowledge of the basic areas of higher mathematics, in particular in statistics, and other selected fields of mathematics and its applications.	K_W04
W_...		
UMIEJĘTNOŚCI		
U_01	The student can employ statistical characteristics of population and their sample analogues.	K_U34
U_02	The student is able to use his knowledge to formulate complex and unusual mathematical problems in a correct and understandable way, discuss them and methods of solving them and present mathematical results in contents, in particular using information and communications techniques.	K_U29,K_U36
U_....		
KOMPETENCJE SPOŁECZNE		
K_01	The student is prepared to appreciate the role and importance of knowledge in solving cognitive and practical problems, typical of occupations and workplaces appropriate for graduates in the field of mathematics and consulting experts in the case of difficulties in solving the problem.	K_K02
K_02	The student is ready to present selected achievements of higher mathematics in a popular way.	K_K05
K_...		

IV. Opis przedmiotu/ treści programowe

<ol style="list-style-type: none"> 1. The main concepts, subject of research, functions and purposes of descriptive statistics. Examples of statistical problems. Types and organisation of statistical research. 2. The basic definitions of descriptive statistics (data, sample, population, variable, empirical distribution, absolute frequency, cumulative frequency and others). Measurements scales. 3. Statistical grouping. Frequency tables. Ungrouped and grouped data. Creation of the table scheme for grouped data. 4. Graphical data displays (histogram, pie plot, line plot and others). Graphical comparison of populations. Types of empirical distributions. 5. Measures of central tendency (mean, mode, median), quartiles. 6. Measures of variability (variance, standard deviation, range, absolute deviation, quartile deviation, coefficient of variation and others). 7. Measures of asymmetry: classical and positional coefficients of asymmetry, moments and central moments. 8. Measures of concentration: kurtosis and the Lorenz coefficient of concentration. 9. Elements of multivariate analysis. Pearson correlation coefficient. Spearman's rank correlation coefficient. Foundations of regression analysis (linear and nonlinear). Correlation matrices. 10. Time series, indices of dynamics, trends, seasonal effect, foundations of time series forecasting.
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V. Metody realizacji i weryfikacji efektów uczenia się

Symbol efektu	Metody dydaktyczne (lista wyboru)	Metody weryfikacji (lista wyboru)	Sposoby dokumentacji (lista wyboru)
WIEDZA			
W_01	Problem lecture	Written test/exam	Evaluated test/exam
W_02	Conventional lecture	Written test/exam	Evaluated test/exam
W_...			
UMIEJĘTNOŚCI			
U_01	Guided practice	Written test/exam	Evaluated test/exam
U_02	Guided practice	Written test/exam	Evaluated test/exam
U_....			
KOMPETENCJE SPOŁECZNE			
K_01	Conversational lecture	Written test/exam	Evaluated test/exam
K_02	Group work, work in pairs	Written test/exam	Evaluated test/exam
K_...			

VI. Kryteria oceny, wagi...

Detailed terms are announced to students during the course.

Exam:

Written exam (only for students, who completed classes). The final grade:

[90%-100%] - excellent (5,0),

[80%,90%) - very good (4,5),

[70%,80%) – good (4,0),

[60%,70%) – satisfactory (3,5),

[50%,60%) – sufficient (3,0),

less than 50% - fail (2,0).

Classes:

Two written tests together constitute the final grade:

[90%-100%] - excellent (5,0),

[80%,90%) - very good (4,5),

[70%,80%) – good (4,0),

[60%,70%) – satisfactory (3,5),

[50%,60%) – sufficient (3,0),

less than 50% - fail (2,0).

VII. Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	In total: 90
- lecture	30
- classes	30
- individual consultations	30
Liczba godzin indywidualnej pracy studenta	In total: 60
- preparation for classes	15
- studying books	15
- preparation for tests and exam	30

VIII. Literatura

Literatura podstawowa
1. Z. Holcomb, „Fundamentals of Descriptive Statistics”, Routledge, 1997.
2. D. Freedman, R. Pisani, R. Pruves, “Statistics”, W W Norton & Co Inc.
Literatura uzupełniająca
1. Chapter 2 „Descriptive Statistics” in D.S. Shafer, Z. Zhang „Beginning Statistics”.
2. J. Nicholas, „Introduction to Descriptive Statistics”, University of Sydney, 2006.