



Faculty of Mathematics and Computer Science

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Course title: **STATISTICS IN DATA ANALYSIS**

ECTS credit allocation (and other scores): **6**

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English /Polish

Number of hours per semester: 45 lectures + 30 classes = 75 hours

Course coordinator/ Department and e-mail: Adam Lecko/ WMil, [alecko@matman.uwm.edu.pl](mailto:alecko@matman.uwm.edu.pl)

Type of classes: classes and lectures

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Substantive content

CLASSES:

Applications of statistical methods in data analysis.

LECTURES:

Sequences of random variables. Laws of large numbers. Central limit theorem. Statistical space. Basic concepts of mathematical statistics. Chi-square distribution, Student's t-distribution, F-Snedecor distribution. Classification of estimators. Properties of estimators. Point estimation. Interval estimation. Confidence intervals. The issue of minimum sample size. Verification of statistical hypotheses. Parametric tests. Test power. Significance tests. Non-parametric tests. Tests for consistency, independence and randomness. Linear regression, parameter estimation.

LEARNING PURPOSE

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Acquisition by students of the ability to use theorems to solve probabilistic problems and models of statistics to solve typical statistical problems.

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On completion of the study programme the graduate will gain:

Knowledge:

W1 – (The student knows and understands): basic concepts of probability and statistics, necessary to conduct data analysis; rules for using computer programs for data analysis;

Skills:

(The student is able to): use statistical data analysis techniques; construct probabilistic models and apply statistical methods to analyze data; use selected data analysis software.

Social Competencies:

(The student is ready to): independently expand the ability to create presentations of statistical research results; exercise caution, understanding the limitations of numerical data used in statistical research, and demonstrating responsibility for the interpretation of results presented.

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**BASIC LITERATURE**

1. J. Koronacki, J. Mielniczuk, Statystyka dla studentów kierunków technicznych i przyrodniczych, Wyd. WNT, R. 2018

**SUPPLEMENTARY LITERATURE**

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The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 3,08 ECTS points,

Student's independent work: 2,92 ECTS points,