

SYLLABUS

Name: Statistical Methods in Research (BudAB>SM1STMERE19)

Name in Polish:

Name in English: Statistical Methods in Research

Information on course:

Course offered by department: Faculty of Civil Engineering
Course for department: Silesian University of Technology

Default type of course examination report:

EGZ

Language:

English

Course homepage:

<https://platforma2.polsl.pl/rb/course/view.php?id=473>

Short description:

Course objectives: Obtaining knowledge about: statistical analysis of random samples, methods of estimate the parameters of the population on the basis of research, elementary statistical tests and analysis of regression and correlation

Description:

LECTURE: 15 hours

Introduction to statistics and data analysis. Probability. Random variables and probability distributions. Mathematical expectation. Some discrete and continuous probability distributions. Fundamental sampling distributions and data descriptions. Estimation (point estimation, confidence level). Hypothesis testing. Regression and correlation.

CLASSES: 5 hours

Classes are an introduction to the project.

PROJECT: 10 hours

Project classes are conducted using the project method. In this method, students learn by doing and learn from each other.

Bibliography:

- [1] Ronald E. Walpole et al.: Probability & statistics for engineers & scientists, Prentice Hall 2007.
- [2] Prem S. Mann: Introductory statistics, JOHN WILEY & SONS, INC. 2020.
- [3] Koronacki J., J. Mielniczuk J.: Statystyka dla studentów kierunków technicznych i przyrodniczych, WNT 2006.
- [4] Hellwig Z.: Elementy rachunku prawdopodobieństwa i statystyki matematycznej, PWN 1998.

Learning outcomes:

KNOWLEDGE:

Student knows and understands:

- (1) basics of mathematical statistics and principles of statistical observations-[learning outcome K2A_W06]
- (2) methods of estimation of the parameters of population and the hypothesis tests-[learning outcome K2A_W06].

SKILLS:

Student can:

- (3) apply the statistical methods to the analysis of results of the research-[learning outcome K2A_W14]
- (4) planning the stages of the statistical survey and conduct the statistical inferring-[learning outcome K2A_W14]
- (5) apply the statistical methods to the engineering problems-[learning outcome K2A_W14].

Assessment methods and assessment criteria:

Prerequisites: prior completion of the subject: mathematics.

CONDITIONS FOR PASSING THE COURSE:

During the course the student works on the implementation of learning outcomes (1)-(5). During the course the student can get a maximum of 50 points in the following way:

- 0-20 points during the written exam verifying the learning outcomes of (1), (2);
- 0-30 points for preparation and defense of the project verifying the learning outcomes of (3), (4), (5).

To take the exam, students must submit and defend the project.

To obtain a positive final grade in the subject, the student must give and defend the project and score at least 21 points, pass each of the learning outcomes (1)-(5) at least 30% of the number of points provided for it. For students who do not pass some learning outcomes there will be an additional deadline to improve the exam.

FINAL GRADE:

The grade based on the number of points scored is calculated as follows:

- 0-20 points 2.0
- 21-26 points 3.0
- 27-35 points 3.5
- 36-40 points 4.0
- 41-45 points 4.5
- 46-50 points 5.0

In order to have partial grades rewritten, the student should contact the instructor within the first two weeks of the semester.

The syllabus is valid from the winter semester of the 2025/26 academic year, and its content is not subject to changes during the semester.

Element of course groups in various terms:

Course group description	First term	Last term

Course group description	First term	Last term
<i>missing group description in English</i> (BudAB-S2-2019-sem1)	2020/2021-Z	

Course credits in various terms:

<without a specific program>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2020/2021-Z	