

## Course syllabus

binding for the doctoral students of the CUT Doctoral School commencing their studies  
in the academic year 2022/2023

### Information on the course

Name of the course in Polish	Analiza i opracowanie danych eksperymentalnych
Name of the course in English	The analysis of experimental data
Number of the ECTS points	1
Language of instruction	Polish
Category of the course	Elective
Field of education	Engineering and Technology
Discipline of education	Environmental engineering, ,mining and power engineering
Person responsible for the course Contact	Prof. Artur Cebula, <i>doctor hab.</i> , MSc in Eng. , professor of CUT acebula@pk.edu.pl

### Type of course, number of hours in the study programme curriculum

Semester	Credit type (G / NG)*	Lecture	Practical class	Laboratory	Computer Laboratory	Project class	Seminar
2, 3, 4, 5, 6	G	15	0	0	0	0	0

\*G – graded credit, NG – non-graded credit

### Course objectives

Code	Objective description
Objective 1	Introduction to the basic problems of mathematical statistics
Objective 2	Acquiring skills of research planning and obtaining linear mathematical models of the second degree and power
Objective 3	Mastering the single- and multi-criteria optimization methods

### Learning Outcomes

Code	Description of the learning outcome adjusted to the specific characteristics of the discipline	Learning outcome symbol in the CUT SD	Methods of verification
OUTCOMES RELATED TO KNOWLEDGE			
EUW1	The doctoral student knows the basic concepts of statistics, random variable distributions, correlations and regressions.	E_W01	Involvement in class activities, paper
EUW2	The doctoral student knows the methods of testing statistical hypotheses	E_W02	Involvement in class activities, paper
OUTCOMES RELATED TO SKILLS			
EUU1	The doctoral student is able to:		

	- plan the course of the experiment on the defined issue, - select the appropriate statistical program for the experiment.	E_U01	Graded presentation and paper
EUU2	The doctoral student is able to optimize the technological process, perform optimization on the basis of a mathematical model	E_U02	Graded presentation and discussion
<b>OUTCOMES RELATED TO SOCIAL COMPETENCES</b>			
EUK1	The doctoral student is able to refer to statistical plans and optimization methods known in the literature; justify the choice of the plan and / or optimization method to the issue related to the implementation of the doctoral dissertation or the lack of the need to use them	E_K01	Discussion

### Course outline

No.	Contents	Learning outcomes for the course	No. of hours
<b>LECTURE</b>			
W1	Basic concepts of statistics	EUW1, EEU1 EUU2, EUK1,	3
W2	Statistical correlations and regression	EUW1, EEU1 EUU2, EUK1,	3
W3	Statistical hypothesis testing	EUW2, EEU1 EUU2, EUK1	3
W4	Study of the significance of the impact and static plans		3
W5	Methods of optimizing technological processes		3

### The ECTS points statement

WORKING HOURS SETTLEMENT	
Type of activity	Average number of hours (45 min.) dedicated to the completion of an activity type
<b>SCHEDULED CONTACT HOURS WITH THE ACADEMIC TEACHER</b>	
Hours allotted in the syllabus	15
Consultations	1
Examination / course credit assignment	2
<b>HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER</b>	
Independent study of the course contents	8
Preparation of a paper, report, project, presentation, discussion	4
<b>ECTS POINTS STATEMENT</b>	
Total number of hours	30
The ECTS points number	1

### Preliminary requirements

No.	Requirements
1	Basic knowledge of statistics
2	knowledge of the English language

**Course credit assignment conditions / method of the final grade calculation**

No.	Description
COURSE CREDIT ASSIGNMENT CONDITIONS	
1	40% attendance in class.
2	60% delivery/ submission of a paper/presentation.
METHOD OF THE FINAL GRADE CALCULATION	
Credit assigned on the grounds of a paper/ presentation	

**Additional information**

None
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**The course reading list**

1	Methodology of the experiment: planning, implementation and statistical processing of the results of technological experiments / Mieczysław Korzyński. - pub. 2 amended, (PWN). - Warsaw, 2017
2	A First Course in Design and Analysis of Experiments/Gary W. Oehlert, 2010, W.H.Freeman & Co Ltd