

FACULTY OF CHEMISTRY

SUBJECT CARD**Name of subject in Polish** Planowanie eksperymentów w Statistica**Name of subject in English** Planning experiments in Statistica**Main field of study (if applicable):** Chemical Engineering and Technology**Specialization (if applicable):****Profile:** academic**Level and form of studies:** 2nd level, full-time**Kind of subject:** optional**Subject code** W03CET-SM2101C**Group of courses** NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)		30			
Number of hours of total student workload (CNPS)		50			
Form of crediting (Examination / crediting with grade)		crediting with grade			
For group of courses mark (X) final course					
Number of ECTS points		2			
including number of ECTS points for practical classes (P)		2			
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)		1,2			

*delete as not necessary

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basics of probability theory: the concept of probability and its properties, independence of random events
2. Basic knowledge of mathematical analysis and linear algebra

SUBJECT OBJECTIVES

- C1 Getting to know the Statistica environment
 C2 Learning about selected experiment planning techniques.
 C3 Acquiring the ability to select an appropriate statistical test to analyze the results
 C4 Acquiring the ability to use linear and non-linear regression in the analysis of results
 C5 Acquiring the ability to use the selected Statistica package in planning the experiment and analyzing the results

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

Person who passed the subject:

PEU_W01 – Has knowledge in the field of statistics

PEU_W02 – Has knowledge in planning research using experimental methods used in biotechnology

relating to skills:

Person who passed the subject:

PEU_U01 – Can operate Statistica software

PEU_U02 – Is able to create an experiment diagram with a work schedule

PEU_U03 – Is able to perform basic statistical analyzes and correctly interprets the obtained results

relating to social competences:

Person who passed the subject:

PEU_K01 – Is ready to critically evaluate their knowledge

PEU_K02 – Is aware of the importance of acquired theoretical and practical knowledge and is ready to apply general and engineering skills in practice

PEU_K03 – Has the ability to work in a team of several people

PROGRAMME CONTENT

Classes		Number of hours
C1	Introduction to Statistica. Sample, types of data, data presentation	2
C2	Variable distributions (normal, normality test, binomial distribution, Poisson)	2
C3	Correlations, Anova	2
C4	Sets of variables, group analysis	2
C5	Data management. Worksheet formulas and multivariable transformation. Importing from Excel. Data preparation (cleaning and flirting)	2
C6	Characteristics of the purpose and object of research	2
C7	Optimal research plans. Selection based on the specific purpose and object of research	2
C8	Complete plans.	2
C9	Two-value complete or fractional plans. Bivalent elimination plans	2
C10	Plans with three-valued input quantities. Plans in which some factors are bivalent and some are trivalent	2
C11	Compositional master plans	2
C12	Statistical analysis of results 1	2
C13	Statistical analysis of results 2	2
C14	Practical use of results	2
C15	Collquium	2
	Total hours	30

TEACHING TOOLS USED

- N1. Multimedia presentation.
 N2. Lab.
 N3. Description of results using computer graphics programs.
 N4. Consultations.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
F1	PEU_W01-W02	Colloquium
F2	PEU_U01-U03 PEU_K01-K03	Preparation of a computational project
P = (F1+F2)/2		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Joaquim P. Marques de Sá., Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer Berlin, Heidelberg, 2007
 [2] Lindsey, J.K., Introduction to Applied Statistics. Oxford University Press, 2003

SECONDARY LITERATURE:

- [1] Statistica: przewodnik. StatSoft, Kraków, 2011
 [2] T. Greber, Statystyczne sterowanie procesami - doskonalenie jakości z pakietem STATISTICA, Kraków, 2000
 [3] B. Kacprzyński, Planowanie eksperymentów : podstawy matematyczne, Wydawnictwa Naukowo-Techniczne, 1974

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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