POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Data analysis

_____**Course**

Field of study	Year/Semester
Product Lifecycle Engineering	1/2
Area of study (specialization)	Profile of study
	general academic
Level of study	Course offered in
Second-cycle studies	English
Form of study	Requirements
full-time	compulsory

_____ **Number of hours**

Lecture	Laboratory classes	Other (e.g. online)
10	10	
Tutorials	Projects/seminars	
10		

Number of credit points

2

_____**Lecturers**

Responsible for the course/lecturer: Responsible for the course/lecturer:

dr inż. Agnieszka Kujawińska

email: agnieszka.kujawinska@put.poznan.pl

tel. 61 665 2738

Faculty of Mechanical Engineering

Piotrowo Street No 3, 60-965 Poznań

_____ **Prerequisites**

Basic knowledge of mathematical statistics. The ability to think logically and independently obtain information from various sources, as well as understanding the need for learning.

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Course objective

The aim of the course is to transfer knowledge and skills in the field of data analysis.

Course-related learning outcomes

Knowledge

Classes will cover the theory of applying methods of statistical analysis of data obtained from quality control. Students will acquire knowledge in the field of descriptive statistics methods, data visualization, statistical inference, Data Mining methods.

Skills

Students will be able to: plan the selection and size of a sample, perform a statistical analysis of a sample, visualize data from a random sample, transfer conclusions from a random sample to population, assess the type of probability distribution, use Data Mining methods in analyzing large data sets.

Students will acquire the ability to use data analysis programs such as: MS Excel ("Analysis ToolPak" add-in), MiniTAB and Statistica - the basic goal is to develop the skills of practical application of data analysis methods in solving specific tasks and engineering problems using IT applications.

Social competences

The student can work in a group. Student is aware of the need and role of data analysis methods in the economy and the need to constantly expand knowledge.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit in writing or oral on the basis of scoring questions (credit in the event of obtaining 51% of points:> 50% - dst,> 60% - dst plus,> 70% - db,> 80% - db plus,> 90% points - very good) carried out at the end of the module.

Laboratory: Credit based on reports from laboratory exercises. To get credit, all exercises must be passed.

Tutorials: Credit based on the evaluation of the completed exercises presented in the form of a written report and presentation.

Programme content

Classes will be conducted in blocks consisting of lectures and laboratories /tutorials.

Topics of classes:
Descriptive Statistics.
Probability, random variable, probability distribution of a random variable.
Point and interval estimation. Selection of sample for examination - sampling.
Verifying parametric tests. Verifying nonparametric tests.
Analysis of the first, second type of error, analysis of the test power.
Analysis of relationships between variables: correlation and linear regression.

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Analysis of survey data.

DataMining methods.

Teaching methods

Lecture: The lecture will be illustrated with a multimedia presentation containing the discussed program content

Laboratory: practical classes

Tutorials: practical classes

Bibliography

Basic

1. Aczel A.D., Complete business statistics, PWN, Wohl Publishing, 2012.

2. Larose T., Discovering Knowledge in Data: An Introduction to Data Mining, Wiley & Sons, 2005.

3. Berry M.J.A., Linoff G., Mastering data mining, Wiley & Sons, 2000.

4. Han J., Kamber M., Pei J., Data Mining: Concepts and Techniques, 3rd Edition, in Morgan Kaufmann Series in Data Management Systems, Elsevier, 2012.

Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	20	1,0

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1 delete or add other activities as appropriate