



Project: „Improving competences in data analysis”
implemented under POWER co-financed

from the European Social Fund (Contract No: POWR.03.01.00-00-W032/18)

COURSE PROJECT

Methods, techniques and tools used in data analysis

<u>Course name</u>	Methods, techniques and tools used in data analysis
<u>Field of study</u>	All fields of study at the Faculty of Management, Czestochowa University of Technology
<u>Form of study</u>	e-learning
<u>Level of qualification</u>	I and II degree
<u>Year</u>	2020/2021
<u>Semester</u>	5 and 6 (3-year I degree studies), 6 and 7 (3.5-year I degree studies), 3 and 4 (2-year II degree studies)
<u>Leading unit</u>	Business Informatics and Ecosystems Department Faculty of Management Czestochowa University of Technology
<u>Preparer</u>	Ph.D. Paula Bajdor, Ph.D. Eng. Iłona Pawełszek
<u>Profile</u>	Pan-academic
<u>Type of subject</u>	Additional to choose



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MODULE 1. Introduction to the course

Lesson 1. Welcome:

- Welcome message
- Basic course information

Lesson 2. Objectives and course participants

- Course objectives
- Course participants

Lesson 3. Course instructors

- Presentation of the course instructors

MODULE 2 . Introductory lecture on data analysis

Lesson 1. Theoretical introduction

- What is data analysis?
- The role of data analysis in decision making
- Objectives of data analysis

Lesson 2. Presentation of the tools used in the course

- Excel
- Statistica
- Orange

Lesson 3. Knowledge quiz

MODULE 3. Using the Solver in Excel

Lesson 1. Theoretical introduction

- The notion of optimization
- Examples of optimization
- Knowledge check

Lesson 2. Exercise 1.

- Example presentation

Lesson 3. Challenge 1.

- Tasks to be solved on your own

MODULE 4. Pivot tables

Lesson 1. Theoretical introduction

- The purpose of creating pivot tables
- Pivot table options
- Knowledge check

Lesson 2. Exercise 1.

- A pivot table creation

Lesson 3. Challenge 2.

- Tasks to be solved on your own



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MODULE 5. Pivot charts and pivot maps

Lesson 1. Theoretical introduction

- The purpose of creating charts and pivot maps
- Possibilities of pivot charts and maps
- Knowledge check

Lesson 2. Exercise 1.

- Creating a pivot chart

Lesson 3. Exercise 2.

- Creating a pivot map

Lesson 4. Challenge 3.

- Tasks to be solved on your own

MODULE 6. Excel statistical functions

Lesson 1. Theoretical introduction

- Presentation of selected Excel statistical functions
- Cases of using selected functions
- Knowledge check

Lesson 2. Exercise 1.

- An example of using the selected statistical function

Lesson 3. Exercise 2.

- An example of using the selected statistical function

Lesson 2. Exercise 3.

- An example of using the selected statistical function

Lesson 4. Challenge 4.

- Tasks to be solved on your own

MODULE 7. Analysis Toolpack

Lesson 1. Theoretical introduction

- Running the AT add-on
- Presentation of selected Analysis Toolpack functions
- Knowledge check

Lesson 2. Exercise 1.

- An example of using the selected AT function

Lesson 4. Challenge 5.

- Tasks to be solved on your own



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MODULE 8 . Power query

Lesson 1. Theoretical introduction

- PQ functions
- Import of data from web sources
- Knowledge check

Lesson 2. Exercise 1.

- An example of using PQ

Lesson 4. Challenge 6.

- Tasks to be solved on your own

MODULE 9 . Data clustering

Lesson 1. Theoretical introduction

- Goals and methods
- The notion of clustering
- Knowledge check

Lesson 2. Using the Orange package

- Clustering parameters
- Presentation of examples
- Interpretation of clusters
- Knowledge check

Lesson 3. Exercise 1.

- An example of using clustering

Lesson 4. Challenge 7.

- Tasks to be solved on your own

MODULE 10. Data classification

Lesson 1. Theoretical introduction

- The notion of data classification
- Knowledge check

Lesson 2. Application of Statistica for data classification

- Presentation of examples
- Knowledge check

Lesson 3. Exercise 1.

- An example of using data classification

Lesson 4. Challenge 8.

- Tasks to be solved on your own



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MODULE 11. Basket analysis

Lesson 1. Theoretical introduction

- The notion of basket analysis
- The goals of basket analysis
- Knowledge check

Lesson 2. Application of Statistica for basket analysis

- Presentation of the STATISTICA SAL. Function

Lesson 3. Exercise 1.

- An example of using basket analysis

Lesson 4. Challenge 9.

- Tasks to be solved on your own

MODULE 12. End of the course

Lesson 1. Course summary