***Data Analysis***

***B.1.1.2.1***

**Degree: Bachelor**

**Year:** *2*

**Semester:** 3 (Fall) and 4 (Spring)

**General workload:** 8 ECTS credits, 288 hours

**Goals and objectives of the course**

To acquire basic theoretical knowledge of probability theory and mathematical statistics; to acquire the ability to use data (including Big Data) processing techniques and machine learning to solve applied problems related to financial services.

**Key didactic units**

* Data in the economy, their visualization and pre-processing
* Random events
* Random quantities
* Limit theorems of probability theory
* Assessment of parameters
* Statistical hypotheses testing
* Dispersion analysis
* Fundamentals of nonparametric statistics
* Fundamentals of machine learning

**Place of the discipline within the curriculum**

The course is part of the computer science and mathematics module (information module) of mandatory disciplines within the curriculum of program 38.03.01 in Economics.

**Upon completing the course, the students should:**

*Know:*

* Basic concepts of probability theory and mathematical statistics; calculation techniques used in data analysis; probabilistic and statistical methods
* Key methods of applied statistics and machine learning
* Key methods of probability theory, mathematical and applied statistics used in economics and finance
* Methods for estimating points and intervals of the parameters of random variables distributions, statistical hypotheses testing techniques.
* Basic principles of pre-processing, data visualization and analysis, probabilistic and statistical methods

*Be able to:*

* Use descriptive statistics and data visualization tools, probabilistic and statistical methods for solving standard problems
* Use applied statistics and machine learning methods to solve applied economic problems
* Use probabilistic and statistical methods to solve standard professional financial and economic problems, interpret the results obtained
* Make point and interval estimates of financial and economic indicators as parameters of random variables distributions, test statistical hypotheses related to financial and economic indicators
* Use descriptive statistics and data visualization tools, probabilistic and statistical methods for solving applied economic problems

*Have:*

* Skills in Microsoft Excel use
* For solving standard problems
* For solving applied economic problems
* For solving standard professional financial and economic problems
* For examining financial and economic indicators
* Practical Microsoft Excel skills

**Course structure:** Lectures; practicals and seminars, interactive classes

**Summative assessment:** pass/fail examination (autumn semester) and examination (spring semester)