

Data Visualization and Analysis

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This course is designed to help students develop skills and knowledge in the following area(s):

- Develop an understanding of what is a good visualization for a given purpose
- Learn visualization theory & techniques
- Build a substantial visualization project
- Apply data analysis and visualization with Tableau, Power BI Desktop, Excel.
- Learn how to build a number of essential business visualizations.

Students who complete this course will demonstrate the following: How to effectively analyze and communicate the analysis results through a variety of visualization techniques.

Discipline status: Optional

Volume: 4 ECTS (lectures – 20 h, practice – 20 h, independent work – 80 h)

Info: The implosion of available data has made visualization more critical but also more challenging. Data analysis and data visualization are essential tools for business analysts, engineers, policy-makers, and decision-makers. In this course students will learn a large number of data visualization methods. Focus will be given to business data visualizations similar to those that appear in business publications. Students will learn through practice using the software Tableau, MS Power BI, MS Excel.

Chapters:

1. Introduction to business analytics
2. Data visualization and analysis in MS Excel
3. Pivot tables, charts and functions in MS Excel
4. Dashboards as a business analysis tool
5. Solving optimization problems in MS Excel. Solver tool.
6. Analysis of project sensitivity. Monte Carlo method in MS Excel
7. MS Power BI Desktop
8. «Analysis and output of data in the R language» (Prometheus)
9. «Machine learning» course (Prometheus)

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GRADING POLICY:

Final exam	– 40 points
Homework Assignments	– 60 points:
- Power BI Desktop (3 tasks)	24 points;
- Tableau (3 tasks)	24 points;
- MS Excel (6 tasks)	12 points.
TOTAL	100 points.

TECH REQUIREMENTS:

Internet access;
OS: Windows;
Browsers: Chrome / Opera / Mozilla Firefox / MS Edge / other;
Software: MS Power BI Desktop, Tableau, R, MS Excel, Zoom/Google Meet etc.;
Moodle 3.9

CLASS POLICIES:

- 1) **Attendance & Absences** – Full attendance and participation is expected.
- 2) **Assignment Completion & Late Work** – All assignments should be submitted on time. If there is a delay, the student must be in touch with the instructor. Late submissions without reasons will result in grade deduction. You can turn in an assignment up to our next class, in which case you receive a 0% penalty, if late you receive a 50% penalty.
- 3) **Academic Conduct Code** – Cheating and plagiarism will not be tolerated in any BSNU course. They will result in no credit for the assignment or examination and may lead to disciplinary actions.

PROGRAM LEARNING COMPETENCIES:

General competences:

GC01. Ability to abstract thinking, analysis and synthesis.
GC02. Ability to search, process and analyze information from various sources.

Special (professional) competences (SC): SC02, SC04, SC05.

Learning outcomes: LO 01, LO 02, LO 05, LO 07, LO 08, LO 09.

Teaching methods used in the process of teaching the discipline: explanatory-illustrative, reproductive method, problem-based presentation method, partial-search method. Forms of control: current, final (exam).