



## Syllabus Course Program



# Data analysis tools

### Specialty

075 - Marketing

### Institute

Institute of Education and Science in Economics,  
Management and International Business

### Educational program

Marketing

### Department

Department of Marketing 201)

### Level of education

Master's level

### Course type

Mandatory

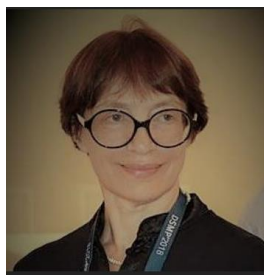
### Semester

1

### Language of instruction

English

## Lecturers and course developers



### Galyna Grinberg

[Galyna.Grinberg@khpi.edu.ua](mailto:Galyna.Grinberg@khpi.edu.ua)

Candidate of technical sciences, Docent, Associate Professor

The author of more than 70 scientific and educational and methodical publications.

Leading lecturer of the courses: "Information Systems and Technologies in Marketing", "Data analysis tools", "Marketing information visualization tools

[More details about the teacher are available on the department's website](#)

## General information

### Summary

The course is aimed at acquiring knowledge and forming skills in using approaches, methods and means of collecting, researching, and analyzing marketing information.

### Course objectives and goals

Systematization and expansion of knowledge in the field of data analysis, presentation, and use of analysis results in the process of forming management decisions. Special attention is paid to the formation of informational culture and understanding of the possibilities of using information technologies for data analysis in the process of solving applied marketing problems.

### Format of classes

Lectures, laboratory classes, consultations, self-study. Final control in the form of course credit.

### Competencies

3K6. Ability to search, process and analyze information from various sources.

CK1. The ability to logically and jointly reproduce and bring out knowledge from the latest theories, methods and practical techniques of marketing.

CK3. Ability to conduct independent research and interpret their results in the field of marketing.

CK9. The ability to evaluate theoretical and applied research in the field of marketing at an appropriate level of competencies according to the educational program.

## Learning outcomes

P2. To be able to adapt and apply new achievements in the theory and practice of marketing to achieve specific goals and solve the problems of a market entity.

P11. Use the methods of marketing strategic analysis and interpret its results in order to improve the marketing activity of the market entity.

P.15. Collect the necessary data from various sources, process and analyze their results using modern methods and specialized software

## Student workload

The total volume of the course is 150 hours (5 ECTS credits): lectures - 32 hours, laboratory classes - 32 hours, self-study - 86 hours.

## Course prerequisites

## Features of the course, teaching and learning methods, and technologies

Lectures are interactive and conducted using multimedia technologies. In laboratory classes, a project approach to learning is implemented, attention is focused on the application of information technologies at all stages of data processing, MS Excel and Google Sheets are used. Learning materials are available in the OneDrive cloud environment

## Program of the course

### Topics of the lectures

#### Topic 1. Data analysis: definition, goals, types, tools

Purpose of data analysis. Data analysis models. Stages of data analysis. Modern means of data analysis

#### Topic 2. Data preparation

Data sources. Stages of data preparation. Features of data preparation

#### Topic 3. Statistical analysis of marketing data

Classification of methods of statistical analysis. Limitations of statistical analysis.

#### Topic 4. Descriptive statistics

Statistical indicators. Distribution diagrams. Using the results of descriptive analysis.

#### Topic 5. Use of tables and matrices at various stages of data analysis.

Rules for building and designing tables. Crosstabulation. Matrixes of strategic analysis.

#### Topic 6. Charts as a tool for data analysis

Functions and chart type. Choosing a chart type. Charts construction algorithm. Rules for designing charts. Basic charts.

#### Topic 7. Analysis of non-numerical information

Data types. Analysis of processes over time. The analysis of textual information. Data analysis using graphs. Analysis of information using time management tools

#### Topic 8. Dashboards

Dashboards as a modern report. Types of dashboards. Main characteristics of dashboards. Rules for building dashboards

### Topics of the workshops

The curriculum doesn't include workshops

### Topics of the laboratory classes

1. Structuring, organization and preparation of data for analysis. Building a data accounting system
2. Data analysis using filtering
3. Data analysis using aggregation and sorting
4. Crosstabulation. Data analysis using pivot tables
5. Application of conditional formatting. Building heat maps using conditional formatting
6. Construction of charts
7. Creating a dashboard

8. Development and construction of schemes for analysis of structure and processes. Construction of hierarchical and radial diagrams

## Self-study

Laboratory works include individual tasks for independent processing. The course provides for the implementation of an individual calculation task for the creation of an accounting system, data generation, and analysis of accounting data, followed by visualization and presentation of the results of the analysis. The results of the calculations are drawn up in a written report. Additional materials for self-study are also recommended to students.

## Course materials and recommended reading

### Compulsory materials

1. Сидорова А. В., Біленко Д. В., Буркіна Н. В. Бізнес-аналітика: навчально-методичний посібник. Вінниця: ДонНУ імені Василя Стуса. 2019. 104 с.

<https://drive.google.com/drive/folders/1RXVdoZfZl3knaOZwhslxU0fGgOtps7Cj>

2. Alan Agresti. Statistical Methods for the Social Sciences  
Fifth Edition University of Florida, 2018. 591p

<https://dokumen.pub/statistical-methods-for-the-social-sciences-fifth-edition-9780134507101-1292220317-9781292220314-013450710x.html>

3. Scott Pardo. Statistical Analysis of Empirical Data Methods for Applied Methods for Applied Sciences  
Global Medical & Clinical Affairs Ascensia Diabetes Care Valhalla, NY, USA, 2020. 278p

<https://dokumen.pub/statistical-analysis-of-empirical-data-methods-for-applied-sciences-1st-edition-3030433277-9783030433277-9783030433284.html>

4. Thomas J. Quirk, Eric Rhiney Excel 2019 for Marketing Statistics. Guide to Solving Practical Problems,  
Springer Cham, 2021, 238p.

5. Naresh K. Malhotra, Satyabhusan Das. Marketing Research An Applied Orientation Revised  
Edition. Pearson India, 2019,

### Additional materials

1. Майборода Р. Є. М14 Комп'ютерна статистика: підручник / Р. Є. Майборода. – К. : ВПЦ "Київський університет", 2019. – 589 с.

2. Литвин В.В. , Нікольський Ю.В., Пасічник В.В. Аналіз даних та знань. Навчальний посібник, 2021,  
276 с.

3. Бондаренко, Я. С. Посібник до вивчення дисципліни "Статистичний аналіз даних" [Текст] / Я.С.  
Бондаренко, С.В. Кравченко. – Д: Ліра, 2018. 40 с.

4. Олещенко Л.М. Технології оброблення великих даних: конспект лекцій з дисципліни «Технології  
оброблення великих даних». КПІ ім. Ігоря Сікорського.– Київ: КПІ ім. Ігоря Сікорського, 2021. 227 с.

5. Тревор Хасті. Основи статистичного навчання Інтелектуальний аналіз даних, логічний  
висновок і прогнозування, 2-е изд.,Диалектика, 2020. 768 с..

## Assessment and grading

### Criteria for assessment of student performance, and the final score structure

100% of the final score consists of the results of the credit (20%) and the current assessment (80%).

Current rating:

assessment of the performance of laboratory tasks (20%), current control during laboratory classes (10%), performance of an individual task (50%)

### Grading scale

Total points	National	ECTS
90-100	Excellent	A
82-89	Good	B
75-81	Good	C
64-74	Satisfactory	D
60-63	Satisfactory	E
35-59	Unsatisfactory (requires additional learning)	FX
1-34	Unsatisfactory (requires repetition of the course)	F

## Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

## Approval

Approved by

28.08.2023

Head of the department  
Diana RAIKO

28.08.2023

Guarantor of the educational program  
Oleksandra KOSENKO