

UNIVERSITY OF ECONOMICS - VARNA
FACULTY OF MANAGEMENT
DEPARTMENT OF INTERNATIONAL ECONOMIC RELATIONS

Adopted by the FC (record № 12/ 29.04.2024)

Adopted by the DC (record № 8/ 16.04.2024)

ACCEPTED BY:

Dean:

(Assoc. Prof. D. Dobrev, PhD)

SYLLABUS

SUBJECT: “DATA ANALYSIS”

DEGREE PROGRAMME: “Maritime Business and International Trade”; BACHELOR`S DEGREE

YEAR OF STUDY: 3; SEMESTER: 5

TOTAL STUDENT WORKLOAD: 240 hours; incl. curricular 60 hours

CREDITS: 7

DISTRIBUTION OF STUDENT WORKLOAD ACCORDING TO THE CURRICULUM

<i>TYPE OF STUDY HOURS</i>	WORKLOAD, hours	TEACHING HOURS PER WEEK, hours
CURRICULAR: incl. <ul style="list-style-type: none">● LECTURES● SEMINARS / LAB. EXERCISES	30 30	2 2
EXTRACURRICULAR	180	-

Prepared by:

1.
(Assoc. Prof. G. Marinov, PhD)
2.
(Chief. Ass. Prof. M.Kamdzhlov, PhD)

Head of department
“International Economic Relations”:
(Prof. V. Dimitrova, PhD)

I. ANNOTATION

The "Data analysis" course aims to be an introduction to finding and processing data related to business processes. The course highlights data on marine related services such as shipping. The students will be taught also to evaluate data consistency and reliability, as well as its integrity, through some analytic techniques and methodologies. The course concentrates around basic techniques for data evaluation and hypothesis testing, giving practical hints about most used techniques for enterprise purposes.

Throughout the course, students will develop mathematical competence and exact science, and numerical competence.

II. THEMATIC CONTENT

№	TITLE OF UNIT AND SUBTOPICS	NUMBER OF HOURS		
		L	S	L.E.
1. TYPES OF DATA		2	2	
1.1.	Types of data, part 1			
1.2.	Types of data, part 2			
1.3.	Types of data, part 3			
2. DATA REPRESENTATIONS AND FORMATS		2	2	
2.1.	Data representations and formats, part 1			
2.2.	Data representations and formats, part 2			
2.3.	Data representations and formats, part 3			
3. SQL AND DATA SELECTION		2	2	
3.1.	SQL and data selection, part 1			
3.2.	SQL and data selection, part 2			
3.3.	SQL and data selection, part 3			
4. INTRODUCTION TO PYTHON		2	2	
4.1.	Introduction to Python, part 1			
4.2.	Introduction to Python, part 2			
4.3.	Introduction to Python, part 3			
5. INTRODUCTION TO R		2	2	
5.1.	Introduction to R, part 1			
5.2.	Introduction to R, part 2			
5.3.	Introduction to R, part 3			
6. MARITIME DATA APIs AND MAIN DATA SOURCES		2	2	
6.1.	Maritime data APIs and main data sources, part 1			
6.2.	Maritime data APIs and main data sources, part 2			
6.3.	Maritime data APIs and main data sources, part 3			
7. DATA SELECTION AND MANIPULATION IN R		2	2	
7.1.	Data selection and manipulation in R, part 1			
7.2.	Data selection and manipulation in R, part 2			
7.3.	Data selection and manipulation in R, part 3			
8. PDA AND OTHER FACTOR ANALYSIS IN R		2	2	
8.1.	PDA and other factor analysis in R, part 1			
8.2.	PDA and other factor analysis in R, part 2			
8.3.	PDA and other factor analysis in R, part 3			
9. LINEAR MODELLING IN R		2	2	
9.1.	Linear modelling in R, part 1			
9.2.	Linear modelling in R, part 2			

9.3.	Linear modelling in R, part 3			
10.	PANEL MODELLING IN R	2	2	
10.1.	Panel modelling in R, part 1			
10.2.	Panel modelling in R, part 2			
10.3.	Panel modelling in R, part 3			
11.	TESTING FOR NON-STATIONARITY IN R	2	2	
11.1.	Testing for non-stationarity in R, part 1			
11.2.	Testing for non-stationarity in R, part 2			
11.3.	Testing for non-stationarity in R, part 3			
12.	TESTING FOR COINTEGRATION IN R	2	2	
12.1.	Testing for cointegration in R, part 1			
12.2.	Testing for cointegration in R, part 2			
12.3.	Testing for cointegration in R, part 3			
13.	INTERNET-BASED SOFTWARE SOLUTIONS FOR DATA ANALYSIS	2	2	
13.1.	Internet-based software solutions for data analysis, part 1			
13.2.	Internet-based software solutions for data analysis, part 2			
13.3.	Internet-based software solutions for data analysis, part 3			
14.	DATA SECURITY AND INTEGRITY	2	2	
14.1.	Data security and integrity, part 1			
14.2.	Data security and integrity, part 2			
14.3.	Data security and integrity, part 3			
15.	REPRESENTATION OF RESULTS	2	2	
15.1.	Representation of results, part 1			
15.2.	Representation of results, part 2			
15.3.	Representation of results, part 3			
	Total:	30	30	

III. FORMS OF CONTROL:

№	TYPE AND FORM OF CONTROL	Number	extracurricular, hours
1.	Midterm control		
1.1.	Project	1	50
1.2.	Test	2	50
	Total midterm control:	3	100
2.	Final term control		
2.1.	Examination (test)	1	80
	Total final term control:	1	80
	Total for all types of control:	4	180

IV. LITERATURE

REQUIRED (BASIC) LITERATURE:

1. Békés, G., & Kézdi, G. 2021. Data Analysis for Business, Economics, and Policy. Cambridge: Cambridge University Press. doi:10.1017/9781108591102.
2. Wickham, H. & Grolemund, G. 2023. "R for Data Science", O'Reilly, <https://r4ds.had.co.nz>.
3. Llaudet, E. & Imai, K. 2023. Data Analysis for Social Science: A Friendly and Practical Introduction, Princeton University Press.

RECOMMENDED (ADDITIONAL) LITERATURE:

4. McKinney, W. 2022. Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter, O'Reilly.
5. Tanimura, C. 2021. SQL for Data Analysis: Advanced Techniques for Transforming Data into Insights 1st Edition, O'Reilly.
6. Hubbard, D. 2014. How to Measure Anything: Finding the Value of Intangibles in Business, Wiley.
7. Meyer-Schonberger, V., & Cukier, K. 2014. Big Data: A Revolution That Will Transform How We Live, Work, and Think, Harper Business.