



COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Business Analysis Methods (Business Mathematics – 2 ECTS, Business Statistics – 3 ECTS, Digital Finance – 5 ECTS)	

Academic staff	Core academic unit(s)
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Study cycle	Type of the course unit
First	Mandatory

Mode of delivery	Semester or period when it is delivered	Language of instruction
Classroom / Online	Autumn semester (1 semester)	English

Requisites	
Prerequisites:	Co-requisites (if relevant):

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
10	260	100	160

Purpose of the course unit
<p>Business Statistics. To familiarize students with the main methods of statistical data collection, presentation, and analysis, with applied statistical methodology based on probability calculations, and to develop their ability to apply statistics in the business decision-making process.</p> <p>Business Mathematics. To introduce students to the essential concepts and techniques of matrix algebra and mathematical analysis, and to teach them to use the acquired mathematical knowledge to analyze and solve various business and economic problems.</p> <p>Digital Finance. To provide knowledge and skills related to the application areas of information technologies, to develop abilities and competencies in using the Excel program and the Power BI business analytics platform, and to apply them when solving tasks or problems related both to the field of finance and to business in general.</p>

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Students will understand the possibilities of using modern information technologies, the use of the Visual Basic for Applications language for automating tasks in MS Excel, the basics of Power BI, and their application in solving financial and economic tasks.	Lectures, discussions, case modeling and analysis	Independent work, practical tasks, exam

Students will be able to apply the most important statistical methods in data analysis, understand the principles of such analysis, interpret the analysis results, and use them wisely in the business decision-making process.	Problem-based teaching, analysis of practical situations, group applied research	Practical tasks, exam
Students be capable of performing operations with matrices and sets, identifying the analytical expression of a linear function, finding derivatives of functions of variables, calculating limits, and optimizing functions. They will also understand the meaning and significance of applying linear algebra, set theory, and mathematical analysis to the analysis and solution of business and economic problems.	Lectures, problem-based teaching, analysis of practical situations	Independent work, practical tasks, test

Content	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship	Contact hours, total	Individual work	Tasks for individual work
1. Business Mathematics (2 ECTS)	14	1	6				21	31	
1.1. Matrices: concepts, terminology, and basic matrix operations. Determinant.	2		1				3	5	Independent problem-solving tasks, literature study, test.
1.2. Inverse matrix. Cramer's rule. Application of matrix algebra to solving economic equilibrium problems.	2		1				3	5	
1.3. Concept of a function. Determining the analytical expression of a linear function. Finding the break-even point.	2		1				3	5	
1.4. Definition of a limit. Application and calculation of limits in economic problem contexts.	2		1				3	4	
1.5. Optimization of single-variable functions without constraints.	2		1				3	4	
1.6. Multivariable functions. Partial derivatives. Optimization of multivariable functions without constraints.	2		1				3	4	
1.7. Constrained optimization: the Lagrange multipliers method. Application of optimization methods in finding optimal business and economic solutions.	2						3	4	
1.8. Consultation		1					1		
2. Business Statistics (3 ECTS)	18	1	10				29	49	

2.1. Concept of statistics and statistical data	2						2	4	Solving practical tasks, preparing a project in groups
2.2. Collection and processing of statistical data	2		2				4	9	
2.3. Numerical characteristics of data	4		2				6	9	
2.4. Elements of probability theory	2		2				4	9	
2.5. Probability distributions	6		2				8	9	
2.6. Sampling and sample calculation	2		2				4	9	
2.7. Consultation		1					1		
3. Digital Finance (5 ECTS)	32	2	16				50	80	
3.1. Big Data, Cloud, IoT	4		1				5	8	Solving practical tasks
3.2. Databases and their analysis	3		1				4	6	
3.3. Data calculations			1				1	6	
3.4. Data filtering	4		1				5	6	
3.5. Alternative data analysis and data sets	3		1				4	10	
3.6. Creating dynamic data using PivotTable	3		1				4	8	
3.7. Creating charts and graphs	4		1				5	2	
3.8. Automating repetitive tasks using macros	2		3				5	17	
3.9. Document sharing	3		1				4	2	
3.10. Power BI	3		3				6	10	
3.11. Information security using Excel and Power BI	3		2				5	5	
3.12. Preparation for mid-term and final assessment		2					2		
Total	64	4	32				100	160	

Assessment strategy	Weight %	Deadline	Assessment criteria
Project work	30	During the semester	The originality, creativity, accuracy of data interpretation, and overall quality of project assignments prepared by students and their presentations during seminars.
Test	30	During the semester	The test consists of open-ended and/or closed-ended questions and problem-solving tasks. Assessment is based on the number of correctly answered questions and solved problems.
Exam*	40	During the examination session	The exam consists of open-ended and/or closed-ended questions and problem-solving tasks. Assessment is based on the number of correctly answered questions and solved problems.

*The module is considered completed once all its components have been successfully passed. If one component of the module is failed, the entire module does not need to be retaken; however, the failed component must be retaken.

Author (-s)	Publishing year	Title	Issue of a periodical or volume of a publication	Publishing house or web link
Required reading				
Leonard J. Ledger	2022	Excel 2023: The most updated bible to master Microsoft Excel from scratch in less than 7 minutes a day Discover all the features & formulas with step-by-step tutorials		Leonard J. Ledger

Devin Knight, Mitchell Pearson, Bradley Schacht and Erin Ostrowsky	2020	Microsoft Power BI Quick Start Guide: Bring your data to life through data modeling, visualization, digital storytelling, and more, 2nd Edition 2nd ed. Edition		Packt, Birmingham
Jacques, I.	2018	Mathematics for Economics and Business	9th ed.	Pearson
Recommended reading				
Wayne Winston	2021	Microsoft Excel Data Analysis and Business Modeling (Office 2021 and Microsoft 365) (Business Skills) 7 th Edition		Microsoft Press
Taylor, R., Hawkins, S.	2008	Mathematics for Economics and Business		McGraw-Hill Higher Education
Bradley, T. and Patton, P.	2002	Essential Mathematics for Economics and Business	2nd ed.	John Wiley and Sons Ltd.