



COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Business Statistics	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: prof. dr. G. Kasnauskiene Other(s):	Faculty of Economics and Business Administration Sauletekio ave. 9, II building, LT 10222 Vilnius

Study cycle	Type of the course unit (module)
First	compulsory

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Remote, Face-to-face	2 nd semester	English

Requirements for students	
Prerequisites: Economics	Additional requirements (if any):

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	130	48	82

Purpose of the course unit (module): programme competences to be developed

Purpose of the course – to provide students with relevant knowledge and skills necessary for modern statistical business analysis. Emphasis is placed on applications; all topics are illustrated by the examples from Lithuanian and global business and economics reality. This subject aims to develop the ability to raise and address intercultural behaviour issues arising in global marketing and business environment, the ability to analyze and use information related to cultural differences in business and marketing and the ability to communicate and collaborate in multicultural teams.

Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
<p>On completion of the course students will be able to:</p> <ul style="list-style-type: none"> ● Know and understand the importance of modern statistical analysis for organizational development ● Collect, analyze and systematize data necessary for the organization, its environment and processes, and for making meaningful conclusions for business decisions. ● Independently find statistical information and analyse it ● Independently conduct empirical research and summarize the results. ● Carry out statistical calculations in MS Excel and IBM SPSS. ● Know the principles of teamwork and will be able to apply them in solving tasks in an international team. 	<p><i>Teaching methods:</i> traditional or interactive lecture, discussion, problem-based learning, collaborative learning, individual and group (team) project, written paper. Presentation of material during the lectures by linking with practical examples of statistical analysis.</p> <p>Lectures delivered by the social partners: Lithuanian Department of Statistics, E&Y.</p> <p><i>Learning methods:</i> readings, calculations (manual and using MS Excel or/and IBM SPSS), searching for information, preparation and presentation of the team project.</p>	<p>Written test (mid-term test - the closed type questions that require revealing the progress and results, and final test (formulae is allowable).</p> <p>Quality of Team project: problem-solving task (written report), oral illustrated report.</p> <p>Homework and in-class discussions</p>

Themes	Contact hours							Independent work assignments	
	Lectures	Consultations	Seminars	Practical classes	Lab works	Practice	Total contact hours	Independent work	Assignments
1. Introduction. STATISTICS, DATA, AND STATISTICAL THINKING? <i>Why a manager needs to know about statistics? Key definitions. Types of Data.</i>	2			1			3	4	Individual study of summaries of lecture and supplementary material, reading of corresponding chapter of Business Statistics textbooks. Statistical calculations in Excel and IBM SPSS.
2. Data collection. Data sources. Research steps. Designing of a survey questionnaire.	2			1			3	4	Individual study of summaries of lectures and supplementary material, reading of corresponding chapter of Business Statistics textbooks. Designing the individual questionnaire.
3. Presenting Data in Tables and Charts. The Ordered Array and Stem-Leaf Display. Frequency Distributions. Tabulating and Graphing Univariate and Bivariate Data.	2				1		3	4	Independent study of the summary of lectures and supplementary material, reading of corresponding chapter of Business Statistics textbooks. Discussion of the questionnaires designed and the solution of exercises.
4. Numerical Descriptive Measures. Measures of central tendency, variation, and shape. The empirical rule. Five number summary and box-and-whisker plots.	4			1	1		6	4	Independent study of the summary of lectures and supplementary material, reading of corresponding chapter of Business Statistics textbooks. Discussion of the solution of exercises.
5. Probability. Basic Concepts of Probability. Rules of Probability	2			1			3	4	Independent study of the summary of lectures and supplementary material, reading of corresponding chapter of Business Statistics textbook.
6. Preparation for the mid-term test								8	Independent study of the summary of lectures and supplementary material, reading of chapters 1-5 of Business Statistics textbook.
7. Probability Distributions. Discrete and continuous Distributions. Random Variables. Binomial Distribution. Poisson Distribution. The Standard Normal Distribution.	2			1			3	4	Independent study of the summary of lectures and supplementary material, discussion of the solution of exercises.
8. Sampling Distributions. The distribution of a sample's mean using the central limit theorem, correcting for a finite population if necessary. The distribution of a sample's proportion.	2						2	4	Independent study of the summary of lectures and supplementary material, discussion of the solution of exercises.

9. Estimates and Sample Sizes. <i>Estimates and Sample Sizes of Means. Estimates and Sample Sizes of Proportions.</i>	2			1	1		4	4	Independent study of the summary of lectures and supplementary material, discussion of the solution of exercises.
10. Testing Hypothesis. <i>Null and Alternative Hypotheses. Type I and Type II Errors. Testing a Claim about a Mean. Testing a Claim about a Proportion. Inferences from Two Samples. Inferences about Two Means. Inferences about Two Proportions.</i>	4			1	1		6	4	Independent study of the summary of lectures and supplementary material, reading of corresponding chapter of Business Statistics textbooks. Discussion of the team project and solution of exercises
11. Linear Regression and Correlation. <i>Calculation and interpretation of the simple correlation between two variables. Regression analysis and its applications for purposes of prediction and description. Multiple Regression. The Multiple Regression Equation. Making Predictions</i>	4			1	1		6	4	Discussing the progress of the project and solution of exercises
12. Analyzing and Forecasting Time-Series Data. <i>The components present in a time series. Smoothing-based forecasting models, including single and double exponential smoothing. Trend-based forecasting models</i>	4			1	1		6	4	Discussing solution of exercises..
13. Project presentation				1				14	Team work (see project description)
14. Index Numbers. <i>Construction and interpretation of indexes. The Consumer Price Index.</i>	2						3	4	Assessment of knowledge and activeness demonstrated by students. Solution of exercises. Pre-exam test
15. Preparation for the final exam								12	Independent study of the summaries of lectures and supplementary material
Total:	32			10	6		48	82	

Assessment strategy	Share in %	Time of assessment	Criteria of assessment
Homework and in-class discussions	10	During the semester	The quality of the mathematical content, organization, development, and presentation of your work on time. Active discussions during seminars.
Mid-term test	20	Middle of the semester	Quality of answers to the closed type questions of the course. Topics 1-5.
Team project	20	During the semester	Project performance quality: - factual analysis of the analysed problem (according to the detailed project description); - the suitability and originality of proposed solutions; - ability to work in team by applying statistical methods in business using MS Excel (or/and IBM SPSS); - ability to write a report and present the project, answer the project-related questions (requirements for academic written works are met, all required work sections are present, work possesses appropriate structure and content, work is written in academic language). The members of one team can receive different grades. <i>Note:</i> To pass the final exam is allowed only in case of a positive evaluation of the team project.

			The best team will receive 1 extra point (divided by the number or group members).
Final test	50	Exam session	Quality of answers to the open-type questions of the course and solving set of exercises (all topics; formulae's and tables allowable). <i>Note:</i> In case of fully remote studies: quality of answers to the closed-type questions of the course (open book exam). The final grade is determined on the basis of the given weighing and marks. 4.9 or lower is a failing grade, a 5 (or higher) is a passing grade. The final grade is rounded off to whole grade arithmetically (e.g. from 6.5 to 7.4 = 7; from 7.5 to 8.4 = 8 etc.) <i>Note:</i> Only the final exam is considered when awarding you a grade for this course. In order to pass this course, you will need to earn a 25% or higher on the final exam.
equivalency examination			Individually prepared project – 40% (to be presented and defended at least one week before exam); final test - 60%.

Author	Year of publication	Title	Issue of a periodical or Volume of a publication	Publishing place and house, or web link
Compulsory reading				
Kasnauskiene G.	2022	Manual of Business Statistics		VU
Argyrous G.	2011	Statistics for research with a guide to SPSS	3rd ed.	Sage
Groebner, D. F.	2008	Business statistics: a decision-making approach	7th. ed.	Prentice Hall Inc.
	2022	IBM SPSS Statistics 28 Brief Guide		https://www.ibm.com/docs/en/SSLVMB_28.0.0/pdf/IBM_SPSS_Statistics_Brief_Guide.pdf
Optional reading				
McClave J.T., Benson P.G., Sincich T.	2008	Statistics for Business and Economics	10th ed.	Prentice-Hall, Inc.
Holmes, L., Illowsky, B., Dean, S.	2017	Introductory Business Statistics		https://open.umn.edu/opentextbooks/textbooks/509