Course unit title	Course unit code
STATISTICS	

Lecturer (s)	Department where course unit is delivered
prof. Virgilijus Sakalauskas	**Department of Informatics**

Cycle	Level of course unit	Type of the course unit
Bachelor	1/1	Obligatory

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Lectures/Seminars	5 Semester	Lithuanian

Prerequisites and corequisites	
Prerequisites: Advanced mathematics, Informatics	**Corequisites:** English

Number of ECTS credits allocated	Student's workload	Contact work hours	Individual work hours
5	133	64	69

Purpose of the course unit: programme competences to be developed
The purpose of the course is to introduce students with the applications of mathematical statistics methods in economic decision-making and informatic. Students have to learn various statistical techniques and should be capable to apply these techniques and algorithms for business data. During the tutorials the practical test of all methods and statistical problems we evaluate with special computer program STATISTICA for Windows.

Learning outcomes of course unit	Teaching and learning methods	Assessment methods
The student will know the statistical technique and algorithms for evaluation and analysis of business data. The student will be able to choose adequate statistical methods to analyse the economical time series. The student will be able to perform statistical analysis using modern statistical software. The student will be able to formulate the problems and find the solution with Statistica for Windows program	Lectures Practical exercise Intermediate assessment, practical exercise Analyse of statistical methods Research of practical application in business	Exam Intermediate assessment of practical exercise Discussion during the lectures and seminars

Course content: breakdown of the topics	Contact work hours							Individual work hours and tasks	
	Lectures	Consultations	Seminars	Practice classes	Laboratory	Practice	All contact work	Individual work	Tasks
Descriptive statistics	8		8			16	16	8	Literature studies;

									Methods
The research, surveys, experiments Population and sample. Graphical presentation of data Frequency table The parameter estimates Location and variation characteristics									Exercise tasks; Practical work training and preparing for the defense of practical work.
Hypothesis testing Point and interval estimates of the parameters Hypothesis testing Parametric criteria one and two unpaired t-test, ξ^2-test Applications of multivariate analysis	10		10			20	20	10	Literature studies; Exercise tasks; Practical work training and preparing for the defense of practical work.
Correlation and regression analysis Simple linear regression and correlation. Determination (R-square) and correlation coefficients. Multi-linear and nonlinear regression	4		4			8	6	4	Literature studies; Exercise tasks; Practical work training and preparing for the defense of practical work.
Time series Time series components. Trend. Seasonal decomposition. Time series forecasting methods: Exponential smoothing, ARIMA, autoregressive forecasting.	10		10			20	16	10	Literature studies; Exercise tasks; Practical work training and preparing for the defense of practical work.
Exam preparation							11		
Total	**32**		**32**			**64**	**69**	**32**	

Assesment strategy	Comparative weight percentage	Date of examination	Assesment criteria
Practical exercises	30%	The provided time,	Three assessments of practical works including all the theoretical thematic. Overall evaluation is average of all exercises.
Theoretical test	20%	The provided time,	Three test consists of 20 questions involving all the theory and there are few answers with only one correct. Students need to find the correct one.
Exam	40%	End of the semester	The exam consists of specific tasks for the entire course material. Exam s conducted in writing form. Students need to solve the practical task from analysis of statistical data using STATISTICA. Evaluated as follows: 5: Excellent knowledge and skills. Evaluation level. 90-100% correct answers.

			4: Good knowledge and skills may be minor errors. Synthesis level. 70-89% of correct answers. 3: The average knowledge and skills, there are errors. Level of analysis. 50-69% of correct answers. 2: Knowledge and skills are below average, the (material) errors. Knowledge application level. 30-49% of correct answers. 1: Knowledge and skills to satisfy the minimum requirements. Lots of errors. Knowledge and understanding. 10-29% of correct answers. 0: Does not meet minimum requirements. 0-9% of correct answers.

Author	Year	Title	Number of periodical publication or publication Volume	The place of publication and publisher or online link
Required reading				
Sakalauskas V. Statistika su STATISTICA.Vilnius: "Margi raštai", 1998, 227p.				
Sakalauskas V. Duomenų analizė su STATISTICA.Vilnius: "Margi raštai", 2003, 240p.				
Čekanavičius V., Murauskas G. Statistika ir jos taikymai.- Vilnius, TEV, I-III, 2011				
Pfaffenberger Roger C., Patterson Jamer H. Statistical methods for business and economics.- Richard D. Irvin, INC., 2008- 828 s.				
5. Becker William E., Harnett Donald L. Business and Economics statistics with computer Application.- Addison-Wesley Publishing Company, 1997-739 s.				
Recommended reading				
Aksomaitis A. Tikimybių teorija ir statistika/ vadovėlis aukštųjų mokyklų studentams. Kaunas: Technologija, 2001, 347p.				
Lawrence John A., Pasternack Barry A. Quantitative methods for business.- West Publishing Company, 1983-534 s.				
Andrew F. Siegel Practical Business Statistics. - McGraw-Hill, 2000, 1051 s.				
Borovikov V.P., Borovikov I.P. STATISTICA, Moskva, Filin,1998.				