

Title of the Course		MATHEMATICS AND STATISTICS IN LOGISTICS	
Amount in credit points/ECTS)	2/3	Volume (in hours)	80
Prior knowledge	Basics of Logistics		
Science Sector	-		
Science Subsector	-		
Summary of academic hours		Amount (academic hours)	
Distance learning		40	
Contact hours / video lessons		8	
Exercises, self – assessment questions and tests		14	
Individual work/ discussions in distance		16	
Exams/tests		2	
1 st level professional study programme	Business Logistics		
Author(s) of the course	Bc.math. Kaspars Salenieks		
Lecturer(s) of the course	Bc.math. Kaspars Salenieks		
Goal of the course:	To develop students’ knowledge about the use of methods of mathematics and statistics in researching economic phenomenon. To understand the necessity, use and gained results of methods.		
Requirements for obtaining credit points (structure of course evaluation):	<u>The final evaluation is calculated:</u> Moodle discussion/tasks – 50% Exam – 50% <i>For obtaining final evaluation, both activities should hold successful evaluation – not below 4 points.</i> <i>Final evaluation is the average grade in 10-point system, in proportion of percentage distributed amongst both activities</i>		
Study Results			
1. Knowledge: 1.1.Students will be able to name basic math problems in logistics; 1.2.Students will be able to recognize the methods that need to be used in solving the task; 1.3.Students will be able to recognize the limitations described in the task and record it in a spreadsheet. 2. Skills: 2.1.Students will be able to prepare and use electronic spreadsheets for simplified calculations, data display and analysis; 2.2. Students will be able to use the calculation program Solver (or its alternative) to solve logistics tasks, i.e. to search for different types of answers and to define constraints; 2.3.Students will be able to calculate the optimal load of the truck, taking into account the set constraints; 2.4.Students will be able to compile the optimal delivery plan, taking into account the conditions of the transport task; 2.5.Students will be able to calculate the optimal route taking into account the set constraints; 2.6.Students will be able to use electronic spreadsheets, create linear time series forecasts. 3. Competences: 3.1. Students will be able to analyze the decision tree and use it to justify the chosen decision;			
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3.2. Students will be able to explain how tasks can be used in daily work planning in a logistics warehouse.

Content of the Course

No.	Subjects	Contact hours, video, audio lessons	Distance learning	Exercises, self-assessment questions and tests	Individual task – remote discussion. Description of the individual task is available in the E-studies	Exam
1.	Use of digital spreadsheets for calculations	8	2	2		2
2.	Data design and processing in electronic spreadsheets		2	2	4	
3.	Solving tasks using Solver		4	4		
4.	Filling of trucks		4	4	4	
5.	The classic transport task		4	4	4	
6.	Finding the optimal route		4	4		
7.	Compiling the decision tree		4	4		
8.	Linear forecasting		3	3	4	
TOTAL:		8	40	27	27	2
80						

Mastering the course and successfully passing examination, student is capable of (*knowledge, skills and competencies*)

Study Results:	Evaluation Criteria		
	(40-69%)	(70-89%)	(90-100%)
Knowledge	Name the discussed problems and their solution ideas during the course	Recognize and define necessary methods for task solutions	Understand the gained results of task solutions
Skills	Use MS Excel software and replace variables in the examples of problem solutions in order to modify the result	Make formulas for equation solutions, define and use variables in formulas	Check the result compliance with initial conditions, combine calculation methods

Competences	Explain the problem and name possible solution option to a team after the task completion	Independently make equation for solving problems, explain them and present to others	Assess the accuracy of gained solution and justify its significance in solving tasks
Acknowledgement of the obtained study results			
Study Results	1.	2.	3.
Evaluation Method			
Moodle discussions/tasks		X	X
Exam	X	X	

Core Literature	
1.	Bandeviča, L. (2009). Matemātiskā modelēšana ekonomikā un menedžmentā: teorija un prakse. Rīga: Izglītības soli.
2.	Kļaviņš, D. (2003). Optimizācijas metodes ekonomikā. I, II
3.	Newbold, P., Carlson, W.C., & Thorne, B.M. (2003). <i>Statistics for business and economics</i> . Prentice Hall
4.	Gong, S., & Cullinane, K. (2018). <i>Finance and risk management for international logistics and the supply chain</i> . Elsevier.
Additional Literature	
1.	Richards, Gwynne. Warehouse management : a complete guide to improving efficiency and minimizing costs in the modern warehouse. - London : Kogan Page Limited, 2015
2.	Lambert, Douglas M. (Fundamentals of logistics management», Boston: Irwin/McGraw-Hill, 1998
Recommended Periodicals	
1.	The International Journal of Logistics Management,