

RTU Course "Quantitative Methods for Economics"**22000 Faculty of Engineering Economics and Management****General data**

Code	IV0015
Course title	Quantitative Methods for Economics
Course status in the programme	Compulsory/Courses of Limited Choice; Courses of Free Choice
Responsible instructor	Astra Auziņa-Emsiņa
Academic staff	Māris Buiķis Velga Ozoliņa Vladimirs Ņikišins Una Pentjuša Evija Liepa-Hazeleja
Volume of the course: parts and credits points	1 part, 4.0 credits
Language of instruction	LV, EN
Annotation	The study course provides insight into economic - mathematical methods and models and decision making process. Within the course, students learn forecasting methods by using time series, models for examining economic relationships, models of linear programming, simulation and elements of the queuing theory.
Goals and objectives of the course in terms of competences and skills	The aim of the study course is to provide knowledge about important quantitative methods used in economics and their application in the analysis of economic situations and management problems and in the decision-making process. The tasks of the study course: 1) to create an understanding of the importance of quantitative methods in the decision-making process; 2) to teach how to choose the appropriate method for a specific situation, taking into account the available data and the characteristics of the situation; 3) to develop skills of creating a model for analysing the given situation; 4) to promote the ability to obtain a model solution using an appropriate computer program, to evaluate the quality of the created model; 5) to improve the ability to analyse and understand the obtained results and be able to apply them in decision-making; 6) to develop the ability to carry out solutions independently or in a group.
Structure and tasks of independent studies	Individual work is organised in the form of practical work, tests, quizzes and exercises. During practical assignments (practical works), students chose a model according to the given characterisation of the situation and data, form the model, solve it and describe the obtained results, including answers to the stated questions. Additionally, students can fill out quizzes and exercises, improving skills in applying quantitative methods.
Recommended literature	Obligātā / Obligatory: 1. Počs, R. (2003). Kvantitatīvās metodes ekonomikā un vadīšanā. Mācību līdzeklis. Rīga: RTU Izdevniecība. 148 lpp. 2. Bandeviča, L. (2009). Matemātiskā modelēšana ekonomikā un menedžmentā: teorija un prakse. Rīga: Izglītības solī. 443 lpp. 3. Curwin, J. (2013) Quantitative methods for business decisions / Jon Curwin, Roger Slater, David Eadson. 7th edition. Andover : Cengage Learning EMEA, 604 p. Papildu / Additional: 1. Paolo Brandimarte (2011) Quantitative Methods: An Introduction for Business Management. Hoboken, N.J.: Wiley. (EbscoHost e-book). 2. Adil H. Mouhammed (2015) Quantitative Methods for Business and Economics. London: Routledge. (EbscoHost e-book). 3. Kļaviņš, D. (2003). Optimizācijas metodes ekonomikā. I, II. Rīga: Datorzinību centrs. 271 lpp. 4. Krastiņš, O. (2003). Statistika. Mācību grāmata augstskolām. Rīga, Latvijas Republikas centrālā statistikas pārvalde. 267 lpp. 5. Krastiņš, O. (2003). Ekonometrija. Mācību grāmata augstskolām. Rīga: Latvijas Republikas centrālā statistikas pārvalde. 207 lpp.
Course prerequisites	Mathematics, information science, economics.

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Introduction – the most significant quantitative methods, the notion “model” and decision-making process.	6	4	2	8
Time series methods for analysis and forecasting.	6	8	3	10
Correlation-regression methods.	6	4	4	8
Statistical quality control.	4	2	4	4
Linear programming.	8	12	4	14

Simulation modelling.	6	4	3	8
Queuing theory.	6	4	2	8
Laboratory assignments.	18	22	8	30
Total:	60	60	30	90

Learning outcomes and assessment

Learning outcomes	Assessment methods
Is able to list and characterise the main quantitative methods, which are used in economics. Can name the method, which corresponds to characterisation or describes a particular method.	Quiz, exam questions. Activity, participation in practical works.
Knows what model is and is able to construct a model, which corresponds to a particular method. Can define a model, develop it in accordance with a particular method, using the given information and data.	Quiz, practical works tests, exam.
Is able to use the model for obtaining results. Can obtain results, using the appropriate algorithm and software.	Practical works, tests, exam.
Is able to analyse the obtained results and explain the meaning of the obtained results.	Quiz, practical works, tests, exam .
Is able to interpret the values of indicators, which are used for the characterisation of a particular model or situation. Can to evaluate the correspondence of a particular indicator to definite criteria.	Quiz, practical works, tests, exam.

Evaluation criteria of study results

Criterion	%
Quizzes. Tests	15
Practical works	20
Activity, participation in practical works	15
Exam	50
Total:	100

Study subject structure

Part	CP	Hours			Tests			Tests (free choice)		
		Lectures	Practical	Lab.	Test	Exam	Work	Test	Exam	Work
1.	4.0	40.0	20.0	0.0		*			*	