Subject code	ECTS credits
MAT6007	6

Course title in Lithuanian

RIZIKOS IR PATIKIMUMO ANALIZĖ

Course title in English

RISK AND RELIABILITY ANALYSIS

Short course annotation in Lithuanian (up to 500 characters)

Įgyjamos teorinės ir praktinės rizikos ir patikimumo analizės žinios. Kursas apima kiekybinį ir kokybinį rizikos apibrėžimus, rizikos vertinimo procedūrą, pavojų identifikavimo metodus, gedimų ir įvykių medžių analizes, sistemos patikimumą, pagrindinius tikimybinius skirstinius, naudojamus patikimumo analizėje, sistemų rezervavimą, sistemos komponentų svarbos nustatymą, gedimų duomenų analizę, Monte-Karlo metodą, jautrumo ir neapibrėžtumo analizę, Bajeso metodo taikymą patikimumo analizėje.

Short course annotation in English (up to 500 characters)

Acquired theoretical and practical knowledge on risk and reliability analysis: qualitative and quantitative definitions of risk, risk analysis procedure, hazard identification techniques, fault and event tree analyses, system reliability, main probabilistic distributions in reliability theory, system redundancy, component importance, failure data analysis, Monte-Carlo simulation, sensitivity and uncertainty analysis, Bayesian inference in reliability analysis.

Prerequisites for entering the course

Mathematical Analysis, Probability Theory, Mathematical Statistics.

Course aim

Course aim is to provide deeper knowledge of risk and reliability analysis.

Links between course outcomes, criteria of learning achievement evaluation, study methods and methods of learning achievement assessment

No	Course outcomes	Criteria of learning achievement evaluation	Study methods	Methods of learning achievement assessment
1	Knowledge and	Student knows the	Lectures,	Mid-term
	understanding of main	definitions of main concepts	practical works,	exam,
	concepts of risk analysis and	of systems risk analysis.	individual work,	assessment of
	risk assessment procedure.		consulting	homework
2	Provide knowledge on	Student demonstrates the	Lectures,	Mid-term
	hazard identification	ability to identify hazards in	practical works,	exam,
	techniques.	a particular case using hazard	individual work,	assessment of
		identification techniques.	consulting	homework
3	Provide knowledge on a fault	Student demonstrates the	Lectures,	Mid-term
	and event tree analyses	ability to construct a fault	practical works,	exam,
		and event trees in a particular	individual work,	assessment of
		case and perform their	consulting	homework
		analysis.		
4	Knowledge and	Student demonstrates the	Lectures,	Final exam
	understanding of system	ability to calculate reliability	practical works,	
	reliability analysis.	characteristics of a particular	individual work,	
		system based on failure data	consulting	
		analysis, taking into account		
		uncertainties of initial data.		
5	Ability to work in a group for	Student demonstrates the	Individual and team	Assessment of
	a common case study	ability to formulate task,	work, self-study of	practical work
	analysis.	present solution process,	literature,	
		justify received results,	discussions,	
		present research work.	consulting	

Running number of course outcome Note the new non-standard environment 1 2 3 4 5 3. Broaden and apply the knowledge of reliability analysis and statistical methods for data analysis + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +	Links	between stu	dy prograi	mme outco	mes and cours	se outcomes						
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2	1996	Lewis E.E., Introduction to Reliability Engineering (2 nd edition)	John Wiley & Sons Inc.		1	
3	2004	Rausand M. System Reliability Theory - Models and Statistical Methods and applications	John Wiley & Sons Inc.			Google books
4	2007	Zio E. An introduction to the basics of reliability and risk analysis	Singapure by World Scientific Papers		1	Google books
5	2001	Bedford T., Cooke R. Probabilistic Risk Analysis: Foundations and Methods	Cambridge University Press		1	
6	2003	Aven T. Foundations of Risk Analysis	John Wiley & Sons Inc.		1	
			Supplementa	ry materials		
1	2004	Haimes Y.Y. Risk modeling, Assessment, and Management	John Wiley & Sons Inc.	-		
2	2003	Cacusi D.G. Sensitivity and Uncertainty Analysis Theory	Chapman & Hall/CRC			
3	2002	Kalbfleisch J.D., Prentice R.L. The Statistical Analysis of Failure Time Data.	John Wiley & Sons, Inc.			
Course programme designed by						
Assoc. proi. Inga Zutautaite						