

Subject code	Credits
INF5020	6

Course title in Lithuanian

SISTEMŲ ANALIZĖ IR MODELIAVIMAS

Course title in English

SYSTEM ANALYSIS AND MODELLING

Short course annotation in Lithuanian (up to 500 characters)

Šis dalykas suteikia studentams žinias apie sistemų analizę ir modeliavimą. Dalykas apima šiuos klausimus: sistemų analizės metodai; tiesinių ir netiesinių sistemų dinaminiai modeliai; diskrečiųjų signalų modeliai; neuroniniai tinklai; neraiškios logikos ir semantiniai modeliai; modelių struktūros ir parametų identifikavimas; modelių adekvatiškumo patikrinimas; prognozavimas ir sprendimų priėmimas. Išklause šį dalyką studentai gebės analizuoti sistemas, jas modeliuoti ir priimti sprendimus.

Short course annotation in English (up to 500 characters)

This course aims to develop understanding in system analysis and modelling. The content includes: system analysis methods; linear and nonlinear dynamic models; discrete-time signal models; neural networks; fuzzy logic and semantic models; model structure and parameter identification; model validation; prediction; decision making. On completion of this subject students should: understand the concept and importance of system analysis and decision making.

Prerequisites for entering the course

Theory of probability and mathematical statistics

Course aim

This course aims to develop understanding in system analysis and modelling.

Content

No	Content (topics)
1.	Systems and their models
2.	Linear system models
3.	Nonlinear system models
4.	State space models
5.	Neural networks
6.	Fuzzy logic and semantic models
7.	Disturbance models
8.	Model structure selection
9.	Identifiability
10.	Parameter estimation methods
11.	Model order determination
12.	Model validation
13.	Prediction and decision making

Distribution of workload for students (contact and independent work hours)

Lectures	45 hours
Laboratory work	15 hours
Individual students work	100 hours
Total:	160 hours

Structure of cumulative score and value of its constituent parts

Final written exam (50%), mid-term written exam (17%), and assessments of laboratory (practical) work (33%).

Recommended reference materials

No.	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				University library	Self-study rooms	Other libraries
<i>Basic materials</i>						
1.	1999	Ljung, L. System identification: theory for the user	Prentice Hall, Upper Saddle River, New York	1	1	

2.	2008	Verikas, A., Gelžinis, A. Neuroniniai tinklai ir neuroniniai skaičiavimai	Kauno technologijos universitetas	1	1	
<i>Supplementary materials</i>						
3.	1994	Soderstrom, T. Discrete- time Stochastic Systems	Prentice Hall, New York	1	1	
4.	2001	Chen, G., Pham, T. Introduction to fuzzy sets fuzzy logic, and fuzzy control systems,	CRC Press, Boca Raton, London		1	

Course programme designed by

Prof. habil. dr. Vytautas Kaminskas, dr. Gediminas Liaučius, Systems Analysis Department
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