Subject code	Credits
MAT1013	6

Course title in Lithuanian

TIKIMYBIŲ TEORIJA IR MATEMATINĖ STATISTIKA

Course title in English

PROBABILITY THEORY AND MATHEMATICAL STATISTICS

Short course annotation in Lithuanian (up to 500 characters)

Įgyjamos esminės tikimybių teorijos matematinės statistikos žinios, įsisavinami pagrindiniai tikimybinių modelių sudarymo ir statistinių metodų naudojimo principai, gebama taikyti turimas žinias ir gebėjimus analizuojant įvairias sistemas ir procesus: identifikuoti analizei reikalingus duomenis, parinkti tinkamą duomenų analizės metodą, sudaryti nagrinėjamų sistemų ar procesų matematinius modelius, aprašyti tyrimų rezultatus, pateikti rezultatų interpretacijas ir išvadas.

Short course annotation in English (up to 500 characters)

Acquired fundamental knowledge of probability theory and mathematical statistics, the basic principles of application of probability models and statistical methods, ability to apply knowledge and skills in implementation of analytical researches of various system and processes: collect data and information about the problematic phenomenon select and ground the methods of analysis, present obtained results and make decision based on it.

Prerequisites for entering the course

Undergraduate course: mathematics.

Course aim

To provide the basic knowledge of application of probability theory and mathematical statistics in informatics.

Content

No	Content (topics)
1.	Random events. Classical and statistical definition of probability.
2.	Conditional probability and independent events.
3.	Total probability formula. Bayes formula. Bernoulli trial.
4.	Random variable. Probability distributions. Characteristics of random variables.
5.	Main classical probability distributions (with applications).
6.	Statistical samples.
7.	Descriptive statistics.
8.	Point estimates of parameters.
9.	Interval estimates of parameters: confidence intervals, forecast intervals.
10.	Parametric hypothesis testing.
11.	Non-parametric hypothesis testing.
12.	Introduction to correlation analysis.
13.	Introduction to regression analysis.

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

Lectures	**45 hours**
Practical work	**12 hours**
Laboratory work	**18 hours**
Individual students work	**85 hours**
Total:	**160 hours**

Structure of cumulative score and value of its constituent parts

Mid-term exam (colloquium) – 25 %, practical work – 10%, laboratory work – 15%, final exam – 50 %.

Recommended reference materials

No.	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				University library	*Self-study rooms*	*Other libraries*
Basic materials						
1.	2000	Čekanavičius V., Murauskas G. *Statistika ir jos taikymai.*, I ir II dalys.	TEV	50		
2.	2000, 2002	Aksomaitis A. *Tikimybių teorija ir statistika*.	Technologija	14		

3.	2001, 2004	Bačinskas A., Janilionis V., Jokimaitis A. *Tikimybių teorijos ir statistikos praktikumas*.	Technologija	14		
Supplementary materials						
1.	2003	Brase C. H. *Understandable statistics : concepts and method*s.	Brooks Cole			

Course programme designed by

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