

## **ABSTRACT**

Thesis: 86 pages, 15 figures, 6 tables, 2 appendices, 16 sources.

The object of research – methods and applications of actuarial mathematics.

Subject of research – insurance process risk model, mathematical modeling methods.

The method of research – theory of probability and mathematical statistics; mathematical models of stochastic processes and elements of actuarial mathematics.

The research depicts a study of the problem of modeling and optimization of the insurance company activity using imitational methods.

The research includes a review of the existing insurance model. A modified model has been developed and implemented, based on which Monte Carlo method was used to estimate the probability of bankruptcy of an automobile insurance company.

In scope of the research an application was developed for estimating the probability of insurance company going bankrupt. Based on the results obtained from this application this company was optimized.

**MONTE-CARLO METHOD, INSURANCE, CRAMER-LUNDBERG MODEL, BANKRUPTCY**