

## **Master's program 8.04020102 «Actuarial and financial mathematics»**

Master's program «Actuarial and financial mathematics» was included into the teaching direction "Mathematics" in 2010.

Graduate get qualification of "Actuary" and, according to the classification of professions DK003:2010 and Industry educational standards of specified speciality can hold listed primary positions:

- 2121.1 Junior research fellow(mathematics)
- 2121.2 Actuary
- 2121.2 Mathematician
- 2310.2 Assistant
- 2310.2 Teacher of the higher education institution

Master's with speciality "Actuarial and financial mathematics" can work actuaries, systems and financial analysts, experts in risk managers, researchers and teachers of statistics and mathematics in a variety of government and commercial organizations.

Normative term of study in magistracy is 2 years full-time education. The curriculum for master's of two years studying includes the following normative and special disciplines in four cycles:

### **1. Cycle of professionally oriented humanitarian and socio-economic training**

- Fundamentals of the legislation in the insurance (*126 hours, 3,5 credits ECTS, I semester*)
- Business Foreign Language (*144 hours, 4 credits ECTS, I semester*)
- Methodology and Organization of Research (*36 hours, 1 credit ECTS, I semester*)
- Professional ethics of actuary (*36 hours, 1 credit ECTS, I semester*)
- The Psychology of teaching (*72 hours, 2 credits ECTS, II semester*)
- The Pedagogy of Higher School (*72 hours, 2 credits ECTS, III semester*)
- Methods of teaching mathematics in high school (*72 hours, 2 credits ECTS, III semester*)

### **2. Cycle of professionally oriented mathematical and natural-scientific training**

- Sample surveys (*126 hours, 3,5 credits ECTS, II semester*)
- Mathematical foundations of life insurance (*126 hours, 3,5 credits ECTS, II and III semesters*)
- Mathematics of finance (*180 hours, 5 credits ECTS, I semecmp*)
- Statistical methods in risk insurance (*126 hours, 3, 5 credits ECTS, I and II semesters*)
- Financial economics (*144 hours, 4 credits ECTS, I semester*)

- Models of survival (*108 hours, 3 credits ECTS, II semester*)

### 3. Cycle of professional and practical training

- Mathematical economics (*144 hours, 4 credits ECTS, III semester*)
- Mathematical foundations of information security (*108 hours, 3 credits ECTS, I semester*)
- Computer statistics (*144 hours, 4 credits ECTS, III semester*)
- Finance and financial reporting (*144 hours, 4 credits ECTS, III semester*)

### 4. Cycle of student and higher education selection disciplines

- Nonparametric statistics (*126 hours, 3,5 credits ECTS, II semester*)
- Macroeconomic theory (*72 hours, 2 credits ECTS, III semester*)
- Fundamentals of risk management (*72 hours, 2 credits ECTS, III semester*)
- Financial analysis (*72 hours, 2 credits ECTS, I semester*)
- Regression analysis (*72 hours, 2 credits ECTS, I semester*)
- Statistics of random processes (*72 hours, 2 credits ECTS, II semester*)
- Applied theory of stochastic processes (*72 hours, 2 credits ECTS, II semester*)
- Operations research (*72 hours, 2 credits ECTS, II semester*)
- Markov processes in actuarial mathematics (*72 hours, 2 credits ECTS, II semester*)

### Block of special courses "Actuarial and financial mathematics" consists from:

- Calculations in reinsurance (*72 hours, 2 credits ECTS, I semester*)
- Simulation of stochastic processes and numerical methods (*144 hours, 4 credits ECTS, II semester*)
- Building a life expectancy tables (*90 hours, 2,5 credits ECTS, II semester*)
- Limit problems for the processes of risk (*144 hours, 4 credits ECTS, III semester*)
- The time series (*108 hours, 3 credits ECTS, I semester*)
- Scientific seminar on stochastic analysis (*72 hours, 2 credits ECTS, II semester*)
- Scientific seminar on actuarial and financial mathematics (*144 hours, 4 credits ECTS, III semester*)

Students of qualification level "Master of actuarial and financial mathematics" are teaching for six weeks and perform practical training for four weeks. Also, they take state exam in statistics, actuarial and financial mathematics and defend master's diploma.