Master's program 8.04020501 «Statistics» («Theoretical and applied statistics»)

Speciality "Statistics" was included into the training direction "Mathematics" in 1996. It's allocated as a separate field since 2010.

This speciality is introduced by two specializations: "Financial and actuarial mathematics" and "Mathematical economy and econometrics". Graduates of master's program "Theoretical and applied statistics" get qualification of "Master's of statistics" after two years of study.

At the list of specialities it corresponding the qualification "Researcher and consultant(Statistics)". Graduates can hold listed primary positions:

- 2122.1 Researcher and consultant(Statistics)
- 2122.1 Junior research fellow(Statistics)
- 2310.2 Assistant
- 2310.2 Teacher of the higher education institution
- 3119 Intern researcher

In addition, master's of statistics can work statisticians, systems analysts, experts in risk, researchers and teachers of statistics, probability and math courses in a variety of government and commercial organizations.

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**

   - Philosophical problems of natural science (*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*)
   - Intellectual property (*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**

   - Nonparametric statistics (*144 hours, 4 credits ECTS, II semester*)
   - Differential equations with partial derivatives (*126 hours, 3,5 credits ECTS, II and III semesters*)

- Financial mathematics of stock market (*180 hours, 5 credits ECTS, I semester*)
- Dynamical Systems (*126 hours, 3,5 credits ECTS, I and II semesters*)
- Nonsmooth analysis and optimization (*144 hours, 4 credits ECTS, I semester*)
- Modern topology (*108 hours, 3 credits ECTS, II semester*)

3. **Cycle of professional and practical training**

- Mathematical economics (*144 hours, 4 credits ECTS, III semester*)
- Survey statistics (*144 hours, 4 credits ECTS, III semester*)
- Computer statistics (*144 hours, 4 credits ECTS, III semester*)

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

- The theory of random matrices over finite field (*126 hours, 3,5 credits ECTS, II semester*)
- Mathematical foundations of information security (*108 hours, 3 credits ECTS, I semester*)
- Statistics of random processes (*72 hours, 2 credits ECTS, I semester*)
- Stationary random processes (*72 hours, 2 credits ECTS, II semester*)
- Markov processes in actuarial mathematics (*72 hours, 2 credits ECTS, I semester*)
- Nonlinear dynamical systems (*72 hours, 2 credits ECTS, II semester*)
- Harmonious analysis (*72 hours, 2 credits ECTS, II semester*)
- Bonding method in the theory of Markov chains (*72 hours, 2 credits ECTS, II semester*)
- Spline functions in statistics (*72 hours, 2 credits ECTS, II semester*)

Block of special courses "Actuarial and financial mathematics"(the department of probability theory, statistics and actuarial mathematics lets out this masters and provides educational process) consists from:

- Wavelet analysis and its applications in statistics (*72 hours, 2 credits ECTS, I semester*)
- Simulation of stochastic processes and stochastic differential equations (*144 hours, 4 credits ECTS, II semester*)
- Limit theorems in the theory of stochastic processes (*90 hours, 2,5 credits ECTS, II semester*)
- Fractional and multifractional processes (*144 hours, 4 credits ECTS, III semester*)
- Systems theory of random Boolean equations (*144 hours, 4 credits ECTS, III semester*)
- Scientific seminar on statistics of random processes (*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*)

Block of special courses "Mathematical economics"(the department of integral and differential equations lets out this masters and provides educational process) consists from:

- Macroeconomic models
- Dynamic models of mathematical economics, the theory of differential inclusions and problems of equilibrium pricing
- Nonlinear and multivalued analysis
- Elements of game theory and the theory of economic equilibrium
- Financial mathematics
- Scientific seminar on the optimal management of the economy
- Scientific seminar on insurance mathematics
- Scientific seminar on mathematical economics

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