Specialties and specialization. Faculty of Physics and Mathematics

1. Specialty **111 Mathematics**

1.1. Specialization **Insurance and Financial Mathematics**

Students study classical mathematical disciplines: probability theory and mathematical statistics, insurance and financial mathematics, analysis of market risks, development of mathematical algorithmic provision of insurance information systems, mathematical physics, differential equations, computer graphics, analysis and forecasting of economic activity of market players Economy, self-organization of complex systems of dynamic chaos, theory of nonlinear phenomena, geometric modeling of objects.

Career Opportunities: Graduates work as scholars and lecturers (research institutes, higher education institutions), actuaries, risk experts in banks and other commercial institutions, system and financial analysts.

Students have the opportunity to receive double degrees at universities in Berne and Basel (Switzerland), Oslo (Norway), Paderborn, Cologne and the city of Ulm (Germany), Paris (France).

1.2. Specialization **Mathematical and computer methods in modeling of dynamic systems**

Students study modern methods of construction and optimization of mathematical and computer models, analytical and computer methods of research of dynamic systems, regular and deterministic chaotic processes of dynamic systems, mathematical theory of control, modeling of problems of mathematical physics.

Masters of specialization "Mathematical and Computer Methods in Modeling Dynamic Systems" are engaged in the development of new technologies for the construction of complex mathematical and computer methods and algorithms for studying and solving complex problems of optimization of dynamic systems and complicated problems of mathematical physics.

Career opportunities: studying the program of academic mobility in the EU countries, employment in research structures, public and private institutions engaged in the production of science-intensive products, obtaining an educational qualification of a doctor of philosophy.

2. Specialty **104 Physics**

2.1. Specialization **Computer simulation of physical processes**

Students study the basic directions of modern physics: solid-state physics, the physics of magnetic phenomena, the physics of phase transformations, the study of nuclear physics and elementary particles using mathematical and computer modeling methods, methods and means of scientific experiment, mathematical and computer simulation of physical and biomedical Processes, methods of computational physics, synergetics, catastrophe theory. The training is conducted on the modern equipment of the Institute and the Academy of Sciences.

Career opportunities: Graduates work in the fields of nanotechnology, solid state physics, chaos theory and nonlinear phenomena, astrophysics, development of programs for the description of biomedical processes, information technologies in physics, development of methods of quantum chemistry; As well as scholars, university lecturers, system analysts from state and commercial institutions.