Division: *Institute of Natural Sciences and Mathematics, Department of Mathematical and Computer Modelling*

Academic programme: *01.03.04 Applied Mathematics, Mathematical and Computer Methods for Modern Digital Technologies*

Programme length: *4 years*

Programme level: *Bachelor's degree*

Language of instruction: *Russian*

Programme description: *Graduates have unique skills in applying the mathematical apparatus in modern conditions. Students receive competencies in marketing, actuarial calculations, software development, mathematical optimization and analytics and their applicability in the e-economy.*

Graduates acquire the following skills: conducting expert financial and economic analysis using mathematical methods and modern information technologies in planning, accounting and controlling production; construction of mathematical models and algorithms for the operation of complex production and economic facilities; development of necessary software for mathematical models and algorithms; development and administration of modern information systems; implementation of accounting and its automation based on such systems as 1C, BI, etc.; ability to understand the mathematical foundations and information technologies of stock exchange and currency trading; conducting marketing research; conducting research in economic and mathematical modelling.

Analysts, especially marketing analysts, are trained in many specialties, but all their knowledge in analysis is based on expert assessments or on a very poor mathematical apparatus, which does not provide a clear justification for market trends, competitiveness, forecast values of costs and revenues. This does not meet the current needs of large companies.

Computer Methods for Modern Digital Technologies specifies the content of the programme by focusing on the areas of professional activity of graduates; research, production and technological types of tasks. Objects of professional activity: mathematical models, methods and high technology software designed for analysis and decision making in various fields, including interdisciplinary ones.

Main programme-specific classes:

- *Theory of Graphs*
- *Fundamentals of Fuzzy Logic*
- *Introduction to the Professional Activity of an Analyst*

- *Introduction to Modern Scientific and Engineering Computing Packages*
- *Fundamentals of BI Systems*
- *Mathematical Methods and Models in Logistics Systems*
- *Analysis of Financial Markets*
- *Mathematical Fundamentals of Neoclassical Political Economy*
- *Theory and Methods of Experiment Planning*
- *Office Applications and Technologies*
- *Practical Course on Object-oriented Programming*
- *Interactive Graphic Systems*
- *Web Programming*
- *Administration and Design of Data Warehouses*
- *Technologies and Models of Project Management in Information (Software) Systems*
- *Practical Course on the Fundamentals of Computer Modelling*
- *Practical Course on the Fundamentals of Geometric Modelling*
- *Information Technology in Business Planning*
- *E-commerce*
- *Financial and Actuarial Mathematics*
- *Theory of Queuing Systems*
- *Econometrics*
- *Sampling Methods*
- *Simulation*
- *Visualization Software*
- *Artificial Intelligence and Neural Networks*
- *Neuromathematics*

Programme manager: *Minzilia A. Sagadeeva, Candidate of Science (Physics and Mathematics), Associate Professor, Associate Professor at the Head of the Department of Mathematical and Computer Modelling*