

## **Bachelor Degree Programme: Mathematics (60540100)**

### **Programme Educational Objectives**

The Bachelor Degree Programme in Mathematics aims to prepare highly qualified specialists with fundamental knowledge of pure and applied mathematics, analytical thinking, and practical skills necessary for solving scientific, technical, economic, and educational problems. The objectives of the educational program are:

- preparing graduates for professional activities in the fields of fundamental and applied mathematical research, data analysis, mathematical modeling, computational methods, and educational tasks related to the application of mathematical theories and methods;
- to satisfy the needs of scientific institutions, educational organizations, information technologies, financial structures, manufacturing enterprises, and other sectors of the economy for qualified personnel with a mathematics education;
- to create conditions for the development of students' sustainable skills in independent learning, logical and analytical thinking, mathematical reasoning, and readiness for professional and academic growth, including continuing their education in a master's degree program;
- to develop in graduates competencies that ensure their social and professional mobility, competitiveness in the labor market, and also contribute to the development of personal qualities such as responsibility, communication skills, teamwork, creativity, innovation, academic ethics, and civic responsibility.

### **Intended Learning Outcomes (Programme Learning Outcomes)**

After Upon completion of a Bachelor's degree in Mathematics, students can:

- LO1: Demonstrate a strong knowledge of the main areas of mathematics: mathematical analysis, linear algebra and analytic geometry, differential equations, probability theory and mathematical statistics, discrete mathematics, fundamentals of optimization and numerical methods.
- LO2: Master the methods of mathematical logic and proof techniques (direct proof, proof by contradiction, induction), and construct rigorous and consistent arguments.
- LO3: Formulate and analyze mathematical models of applied problems in the natural and socio-economic sciences; select appropriate solution methods and evaluate the reliability of the results obtained.
- LO4: Use computational tools and programming languages (e.g. Python with NumPy/SciPy libraries, MATLAB/Octave, R, Mathematica/Maple) for numerical calculations, visualization, and computer experiments.
- LO5: Develop and analyze algorithms, evaluate the complexity, accuracy, stability and convergence of numerical procedures.

- LO6: Possess basic data handling skills: collection, preprocessing, statistical analysis, and construction of regression and probabilistic models; adhere to information security and data ethics principles.

- LO7: Work with scientific literature and databases, critically evaluate sources, and present research results in accordance with academic standards (including the use of LaTeX).

- LO8: Conduct theoretical and computational research, interpret results, verify and validate models, and formulate scientifically sound conclusions.

- LO9: Integrate interdisciplinary knowledge (computer science, physics, economics, etc.) to solve applied problems and collaborate with specialists in related fields.

- LO10: Clearly and logically communicate mathematical concepts orally and in writing, including in a foreign language; prepare educational, methodological, and presentation materials.

- LO11: Work effectively in a team, take responsibility, show initiative and apply basic elements of project management in professional activities.

- LO12: Adhere to academic ethics and sustainable development principles; plan an individual trajectory for professional growth and continuous (lifelong) learning.