Brief Description of the Program

Career

The master's program "Computer Mathematics" is focused on training specialists, whose professional activities are related to solving scientific and applied problems arising from the use of computer systems involved in the implementation of cloud technologies; or activities related to the development and implementation of parallel symbolic and numerical algorithms and the introduction of appropriate software packages aimed at solving fundamental problems as well as solving applied problems in such areas as electronics, management, physics and biology. Graduates of the program Computer Mathematics are taught to solve the following problems of professional activity: pedagogical; research; organizational and managerial; and project. Having successfully completed the educational program, graduates can carry out teaching and research activities. They can also work as analysts in IT companies, in the banking sector, in management structures, and in research and development.

Educational process

The compulsory part of the master's degree program includes fundamental training in computer mathematics, the study of modern algorithms and mathematical computational methods, as well as active research work. Mathematical subjects are taught by professors of the Functional Analysis Department. Classes are held in the form of classical lectures, seminars and laboratory classes. Starting from the first year of their studies, students are intensively immersed in the profession. They focus on such sections of mathematics that form the foundation of modern parallel programming, such as computational and parallel computer algebra, coding theory, parallel rings, and algorithms. The fact that the teaching staff of the Functional Analysis Department do their own world-class research and have strong personal contacts with the international mathematical community, allow students to be involved in research from the first year of study. There is an opportunity to cooperate with leading mathematicians from Russia, Greece, Germany, France and other countries.

Thematic discussions, master classes conducted by leading specialists, participation in contests and olympiads, international competitions and contacts with potential employers contribute to the formation of professional competencies of future specialists.

Disciplines
- ✓ Foreign language
- ✓ History and methodology of mathematics
- ✓ Natural science courses
- ✓ Philosophy and methodology of scientific knowledge
- ✓ Computer technologies in science and education
- ✓ Matrix calculations
- ✓ Matrix algorithms
- ✓ Parallel computer algebra
- ✓ Parallel computing
- ✓ Polynomial calculations
- ✓ Computer commutative algebra
- ✓ Algorithms and data structures
- ✓ Polynomial algorithms
- ✓ Coding Theory
- ✓ Theory of finite fields
- ✓ Computational geometry
- ✓ Polynomial rings
- ✓ Current problems of mathematics

Practical training

Students do five types of practical training.

1. Practice in obtaining primary professional skills. This practice is conducted in structural units of the University. The purpose of the practice is to deepen and consolidate the scientific and theoretical knowledge of students in the field of mathematics and programming, contributing to the integrated

formation of professional competencies in the area of training (01.04.01 Mathematics), as well as to develop the skills of research work.

2. Practical training aimed at obtaining professional skills and professional experience. The purpose of the practice is to consolidate and deepen the theoretical knowledge gained during studies, as well as to gain experience in the implementation of projects in a specific area of activity, to develop the skills for independently solving technical, organizational and managerial tasks arising in production processes. The practical training is held in the TSU Laboratory of Algebraic Calculations.

3. Pedagogical practice. The purpose of the practice is the acquisition of skills and abilities of a teacher - a mathematics teacher in a general secondary school or college, who owns modern tools of science for searching and interpreting information material with a view to its use in educational activities. Students do this practice in schools.

4. Research work. Its goal is to form research skills. The practice is based on the knowledge gained in theoretical classes, and provides the opportunity and conditions for their practical application, consolidation, updating and concretization, and the formation of research experience. During the practice, students have the opportunity to get acquainted with the latest theoretical, methodological and technological achievements of domestic and foreign science.

5. Pre-diploma practice. The purpose of the pre-diploma practice is the acquisition of practical skills and competencies in the field of professional activity, the consolidation, deepening and systematization of theoretical knowledge obtained in class, and the selection of the necessary material to complete the final qualifying work (master's degree work).

Career

Mathematical education provided by the master's degree program "Computer Mathematics" of the areas of training 01.04.01 "Mathematics", allows graduates to make an academic career. After graduation, they can continue their education and research in the field of computer science, programming, mathematics, economics, as well as in applied fields (financial analytics, actuarial mathematics, computer science, and information technology), they can also do their doctoral studies. In addition, they are in demand in institutions of mathematics education: they can work as teachers of secondary schools, teachers of colleges and universities. The graduates can work in knowledge-intensive areas that are not always associated with the exact sciences, such as insurance, analytics, IT, etc., both in Russia and abroad.