

The annotation of the bachelor's degree program «Fundamentals of research activities in the field of mathematics and computing sciences»

Training direction: 02.03.01 Mathematics

Faculty: Mechanical and mathematical

Training form: Full-time education

Duration of the program: 4 years

Language of education: Russian

Program concept

The essence of the concept is to combine fundamental and applied knowledge to train specialists who are capable of independently solving complex tasks by using methods of mathematical modeling, a cloud computing and to develop distributed information systems, to design information networks and information security systems.

This program prepares bachelors who are able to solve tasks related to use mathematical analysis methods and computers:

1. a development of a research method using a computer
2. a creation of a new software product, an adaptation of the finished software product for a specific consumer
3. a possession of methods of mathematical and algorithmic modeling in the analysis problems of business, financial and actuarial mathematics, a computer processing of information, a data protection, a creation and an application of specialized software systems.

Program mission

Fundamental training of specialists for scientific and research work in the development of computing, software, information and computer technologies using parallel supercomputer computing and cloud computing, in design of information networks, telematic services and information security systems. Successful completion of the program ensures the participation of graduates in international projects, work in large state corporations, development companies system and application software.

Brief description of the program's content

Students of this direction study mathematical disciplines (mathematical analysis, algebra, geometry, equations of mathematical physics), and disciplines of the computer cycle (computer science, databases, computer algebra, parallel programming, computer graphics, mathematical models of logistics, Internet technologies).

The state final certification takes place in the form of defense of the final works.

Program resources

The training process uses the resources of the training and computing laboratory, consisting of 3 modern computer classes equipped with electronic boards, projectors, powerful computers equipped with the latest licensed software: Microsoft Windows 10 OS, GNU/Linux SLES 10, GNU/Linux CentOS 6; office and publishing packages Microsoft Office 2010, MikTeX 2.9; application development tools and DBMS Microsoft Visual Studio 2010, Delphi 2006 (for working with databases - Borland Database Engine, Database Desktop), Lazarus, Borland Pascal, PascalABC.NET, Intel Fortran Compiler 12, CUDA Toolkit 4; mathematical packages PTC Mathcad 13.15, Mathematica 8, Maple 15, Matlab R2011b; packages of mathematical and graphic data processing Golden Software Grapher, Golden Software Surfer; packages for solving computational fluid dynamics problems Ansys CFD 14, Fluent Flowlab. In addition, the training uses the resources of the TSU supercomputer center and a computing cluster of TSU «Cyberia» with a performance of 100 Teraflops.

At present TSU has a high quality and continuous developing teaching personnel in mathematics, mathematical modeling and computer science. There are a number of recognized authoritative scientific and pedagogical schools, which carry out educational and scientific activities at the world level:

1. School of Mathematical Analysis (Department of Mathematical Analysis and Function theory of Mechanical and mathematical faculty, Candidate of Physical and Mathematical Sciences, Kolesnikov I.S.)
2. School of Algebra (Department of Algebra of Mechanical and mathematical faculty, professor Krylov P.A.)
3. School of Functional Analysis (Department of Mathematical Analysis and Function theory of Mechanical and mathematical faculty, professor Gulko S.P.)
4. School of probabilistic and statistical methods and their applications (Chair of Mathematical Analysis of Mechanical and mathematical faculty, TSU - University of Rouen (France), Federal Professor of Mathematics, professor Pergamenschikov S.M.)
5. School of Engineering Mechanics and Thermal Physics (Department of Theoretical mechanics MMF, prof. Sheremet M.A.)

Prospects for employment, professional and scientific activities

Graduates of the program have the possibility of employment in partner organizations of the Mechanical and mathematical faculty or to continue education within the framework of training in master's and postgraduate studies:

1. Master's and postgraduate study of TSU
2. Company "SIAM" (Tomsk) - mathematical modeling of transportation problems and oil and gas production
3. Tomsklab LLC (Tomsk) - development of mathematical methods and software for image recognition
4. Research Institute for Monitoring Climatic and Environmental systems (the Tomsk Science Center of Siberian Branch of Russian Academy of Sciences) – development of mathematical models in subject areas
5. Research Institute of Atmospheric Optics (the Tomsk Science Center of Siberian Branch of Russian Academy of Sciences) – development of mathematical models in subject areas
6. Company Econophysica LTD (Tomsk, Moscow, London) – mathematical modeling of financial activity

Admission conditions:

Minimal scores: abiturient.tsu.ru/

Entrance tests: abiturient.tsu.ru/

Documents for admission: abiturient.tsu.ru/

Program leader:

Genze Leonid Vladimirovich,

Ph.D. of Phys. and Math. Sciences, Associate Professor,

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Location address:

634050, Russia, Tomsk, Lenin's avenue, Tomsk State University, Mechanical and mathematical faculty, 2-nd learning campus, room 417 (dean's office)

Link to the page of the educational program on the website of the university/faculty/institute:

<http://www.math.tsu.ru/node/785>