RUDN university

FACULTY OF SCIENCE

INFORMATION COMMUNICATION MANAGEMENT AND INTELLIGENT SYSTEMS

MASTER'S DEGREE PROGRAMME

PROGRAM ADVANTAGES

- Knowledge of the mathematical apparatus for solving modern problems of professional activity.
- Ability to apply modern mathematical and algorithmic methods, as well as modern information technologies to solve relevant research problems of professional activities.
- Involving students in issues both in the field of managing IT processes, developing and implementing IT strategies for developing and improving the efficiency of corporate information systems, and in solving theoretical and applied problems using mathematical models and information and communication technologies.
- The peculiarity of training is the ability to participate in research projects under the guidance of leading scientists, the possibility of a wide selection of areas of own research activities.
- Regular lectures and master classes by invited foreign and domestic scientists and practitioners, organization of international and all-Russian conferences.
- The opportunity to participate in academic international mobility programs, including internships in foreign partner universities.

STUDYING PROCCESS

120 credits
Lectures, practical and laboratory studies, independent research work, educational and undergraduate practices.

ANALYSIS OF INFORMATION TECHNOLOGY

- 5G network architecture.
- 5G NR access networks.
- General methodology for evaluating service characteristics, system maintenance parameters.
- Assessment of the basic characteristics of 5G wireless networks.

DISTRIBUTED OBJECT TECHNOLOGY

- Theoretical foundations and standards of distributed object technologies.
- Analysis of various technologies: MessagePack, XML, JSON, BSON, Google Protocol Buffers standards; DCOM CORBA; SOA general information about web services; XML-RPC standard Java RMI JSON-RPC standard; REST architecture; grid technology; synchronization of PBC nodes; data harmonization; Technology Overview SAAS, PAAS, IAAS.

OBJECT DATABASES

- Object-oriented DBMS design.
- The concept of transaction. Crash recovery.

MATHEMATICAL FOUNDATIONS OF INFORMATION SECURITY AND CYBER SECURITY

- Analysis and classification of the regulatory framework in the field of information security.
- Security models of operating systems.
- Encryption.
- Key exchange algorithms and authentication protocols.
- Object Databases.

ALGORITHMIC BASICS OF MULTIMEDIA TECHNOLOGIES

- General data compression algorithms.
- Algorithmic principles of image processing and coding.
- Algorithmic basics of processing and coding audio data.
- Algorithmic fundamentals of video processing and coding.

DISCRETE AND PROBABILISTIC MODELS

- Markov models of queueing systems in discrete time.
- Non-Markov models of queueing systems in discrete time.
- Discrete-time queueing systems with special service disciplines.

MATHEMATICAL THEORY OF TELETRAFFIC

- Classic monoservice models of Erlang and Engset.
- Erlang multiservice model with obvious losses.
- Engset multiservice models with clear losses.

QUALITY MANAGEMENT AND PROBABILISTIC MODELS OF THE NEXT GENERATION COMMUNICATION NETWORKS

- Queuing Networks.
- Mathematical models of telecommunication systems of complex structure.
- Access control for multiservice queuing systems.

OBJECT ORIENTED CASE TECHNOLOGIES

- Elements of the life cycle of a software product.
- CASE-tools for the analysis phase.
- CASE-tools for the design phase.

PARALLEL AND DISTRIBUTED PROGRAMMING

- Configure access to the cluster.
- Learning the basics of MPI technology.
- The study of parallel generators of uniformly distributed pseudorandom numbers.

THE LANGUAGE OF CATEGORY THEORY IN ARTIFICIAL INTELLIGENCE

- Patterns, products and juxtaposition in algebraic terms.
- A categorical approach to sample systems.
- Examples of systems.

INTERACTIVE SYSTEMS DESIGN

- Methods of modeling the behavior of users of interactive systems.
- Design methods for interactive systems.
- Methods for assessing the quality of interactive systems.

STUDENTS FEEDBACK

ANNA GAIDAMAKA, RUSSIAN FEDERATION

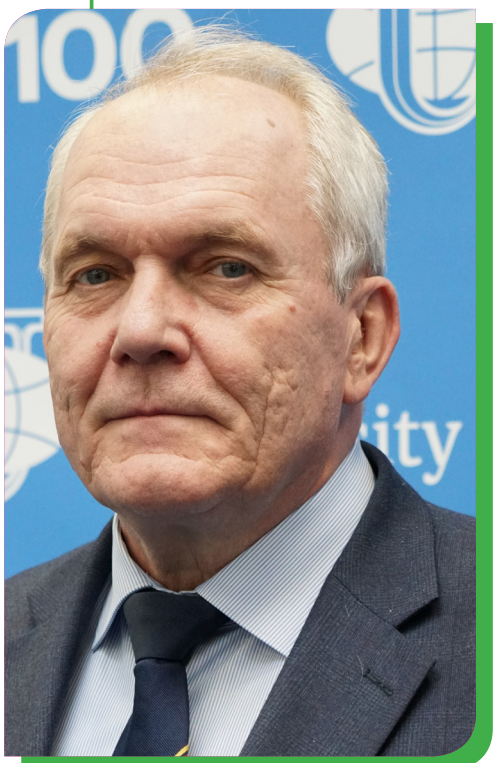
Studying at the master's program gave me the opportunity to take an active part in scientific projects, speak at scientific conferences, take part in the program of international academic mobility, and receive the scholarship of the President of the Russian Federation based on the results of my research. The gained knowledge will allow me to undertake postgraduate study.

ADOU KPANGNI YVES BERENGET, REPUBLIC OF CÔTE D'IVOIRE

Studying on the program, I gained a lot of knowledge in the field of applying mathematical methods to solve modern problems in the field of information and communication technologies. Many disciplines have a practical orientation, which allowed me to obtain useful skills for continuing studies in the postgraduate training program and in my future professional activity. I took a direct part in several scientific conferences and according to the results of my research activities I was awarded RUDN scholarship of S.V. Rumyantsev.

HEAD OF THE PROGRAMME

KONSTANTIN SAMOUYLOV



Doctor of Technical Sciences, Professor, Head of the Department of Applied Probability and Informatics.

FIELDS OF SCIENTIFIC INTERESTS:

mathematical theory of teletraffic of multiservice networks and communication networks, 5G wireless networks, Internet of things, modeling of business processes.

Deputy Chairman of the Dissertation Council of the RUDN University on specialties 05.13.17 “Theoretical Foundations of Informatics”, 05.13.18 “Mathematical Modeling, Numerical Methods and Program Complexes”.

He is a member of the editorial boards of scientific journals Discrete and Continuous Models and Applied Computational Science, Automatic Control and Computer Sciences, Large Systems Management, Tomsk State University Bulletin, Information Technology and Telecommunications, Modern Information Technology and IT Education, and a member of program committees of many international conferences on mathematics and information technology. Head and co-executor of scientific projects under the grants of Russian and foreign scientific foundations. The author of scientific articles in peer-reviewed Russian and foreign scientific journals (Higher Attestation Commission, Scopus, Web of Science), regularly makes presentations at international and national conferences.