Division: *School of Electronic Engineering and Computer Science*

Academic programme: *12.04.01 Instrumentation Engineering, Digital Industry*

Mode of study: *full-time*

Programme length: *2 years*

Programme level: *Master's degree*

Language of instruction: *Russian*

Programme description:

This Master's degree programme incorporates the latest developments in digital industry and provides fundamental education in measurement technologies and information technology.

Students who successfully complete the Master's programme have knowledge on information acquisition, collection, and processing technologies; methods of interfacing electronic equipment with computer networks; and means of organizing measurement systems and complexes. This combination of knowledge and skills are fundamental in various spheres of engineering and societal governance in conditions of digital transformations in industry.

This programme has been internationally accredited by the Agency for Quality Assurance in Higher Education and Career Development (AKKORK) and the Russian Engineering Union and has received 4-year certifications.

The Master's degree programme in Digital Industry is a launch pad for further research in the digital transformation of industrial enterprises and the industrial Internet of things. Students study the key elements of digital transformation: high-fidelity digital twins of technological processes, digital analytics for equipment, BigData analytics, predictive intelligence, neural networks, fuzzy logic, mobile applications and devices, and advanced diagnostics of field equipment.

The information passed on in the relevant classes and the large amount of research work prepares graduates for research within major projects to create measurement information systems in digital industry, information collection and processing systems, electronic communications technology, and more.

The Master's degree programme also employs project-based learning. The aim of these programmes is to adapt the educational programme to solve a specific problem and create an innovative product. The idea and topic are presented by industrial or academic partners. Students obtain the competencies and necessary

knowledge for project implementation, teamwork skills, and practical experience in development.

Main programme-specific classes:

- *Information Technologies in Instrument Engineering;*
- *Neural Network Technologies;*
- *Intelligent Distributed Computer-Aided Process Control Systems;*
- *Mathematical Methods for Predicting the State of Technological Processes;*
- *Supercomputer Modelling of Technical Devices and Processes;*
- *Digital Twins of Production Machinery;*
- *Wireless Technologies for Transmitting Measurements and Data;*
- *Digital Signal Processing;*
- *Statistical Quality Control Methods;*
- *Project Management.*

Programme manager: *Marina N. Samodurova, Doctor of Sciences (Engineering), Professor of the Department of Informational and Measuring Technology*