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MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
"NORTH CAUCASUS FEDERAL UNIVERSITY"

APPROVED BY

Educational and Methodological
Council of the University
Protocol No. 2 dated December 5, 2025

APPROVED BY

Chairman of the Academic Council of the
Institute of Advanced Engineering,
Candidate of Technical Sciences,
Associate Professor Porokhnya A.A.
Protocol No. 5 dated January 22, 2026

HIGHER EDUCATION EDUCATIONAL PROGRAM

Field of study	11.03.02 Infocommunication technologies and communication systems (code and name)
Profile	Intelligent data processing in infocommunication systems and networks (profile name)
Institute	Advanced Engineering (name of the institute)
Form of study	Full-time (full-time, part-time, part-time)
Year of start of training	2026

Stavropol, 2026

The EP HE has been developed:

Head of the educational program

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Minutes of the meeting

of the Educational and Methodological Commission of the Institute of Advanced Engineering

No. 3 dated December 5, 2025

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1 General Provisions

The educational program of higher education (hereinafter referred to as EP HE), implemented by the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" (NCFU) in the field of training 11.03.02 Infocommunication Technologies and Communication Systems (profile "Intelligent Data Processing in Infocommunication Systems and Networks") is a system of documents developed and APPROVED BY NCFU taking into account the needs of the regional labor market, the requirements of federal executive authorities and the relevant industry requirements based on the Federal State Educational Standard of Higher Education (FSES HE 3++) in the field of training 11.03.02 Infocommunication Technologies and Communication Systems (APPROVED BYd on 19.09.2017 No 930 as amended on 08.02.2021).

This OP HE regulates:

- goals and planned results of the development of the educational program - the competencies of students established by the educational standard;
- the content of training and the planned results in disciplines (modules) and practices are knowledge, skills, and (or) experience that characterize the stages of competence formation and ensure the achievement of the planned results of the development of the educational program.

Type of educational program – applied bachelor's degree. Profile – Intelligent data processing in info-communication systems and networks.

The qualification awarded is a bachelor. The form of study is full-time (with the possibility of using distance learning technologies). The language of the educational program is Russian.

Features of the development of the EP HE are a program project-oriented to standards, a modular principle of training and a partial structural inversion of the curriculum, which ensure the formation of a high level of training of students in the field of information technology in telecommunications, starting from the first year.

In the implementation of this educational program, it is possible to use e-learning, distance educational technologies. If there are students with disabilities, this educational program is adapted taking into account the recommendations of the psychological, medical and pedagogical commission, the individual rehabilitation program for the disabled. The educational process for persons with disabilities and people with disabilities is carried out in accordance with the "Regulations on the organization of the educational process for people with disabilities and people with disabilities at the North Caucasus Federal University". Each component of the EP is developed in the form of a single document or a set of documents in accordance with the Regulation on Educational and Methodological Support of Educational Programs of Higher Education at NCFU.

Planned results of mastering the educational program of higher education:

R1: Possess communication skills in the scientific, design, technological and socio-public spheres of activity in the state language of the Russian Federation, a foreign language to understand international standards and other regulatory documents in the field of information and communication technologies and communication systems.

R2: Be able to apply system analysis, computer and economic literacy, modern research methods and information and communication technologies to solve practical problems of professional activity in the context of the digital transformation of the economy and the need for import substitution.

R3: To be able to use in practice domestic and foreign experience, scientific and methodological foundations and principles of modern science and technology in the field of creation and development of domestic information and communication technologies and communication systems.

R4: Be able to conduct experiments according to a given methodology, including measurements and observations, analyze the results and make recommendations for improving the technical and economic indicators of information and communication equipment, draw up reports on research.

R5: Be able to collect and analyze initial data for the design of networks, infocommunication systems and their elements; develop technical projects for the implementation of innovative infocommunication equipment; monitor the compliance of the developed projects and technical documentation with technical regulations, national standards, communication standards, technical specifications and other regulatory documents.

R6: Be able to master the introduced information and communication equipment, its software, put them into operation, ensure uninterrupted and efficient operation, check the technical condition and maintain information and communication systems and software.

R7: Be able to administer network subsystems of infocommunication systems, network devices, remote access security tools, carry out routine maintenance on network devices and software of infocommunication systems.

1.1 List of regulatory documents for the development of an educational program of higher education

The regulatory legal framework for the development of bachelor's degree programs consists of:

- Federal Law of 29.12.2012 No273-FZ "On Education in the Russian Federation";
- Federal Law of 31.07.2020 No 304-FZ "On Amendments to the Federal Law "On Education in the Russian Federation" on the Education of Students";
- Order of the Ministry of Education and Science of Russia dated 19.09.2017 No 930 (as amended on 08.02.2021) "On Approval of the Federal State Educational Standard of Higher Education – Bachelor's Degree in the Field of Training 11.03.02 Infocommunication Technologies and Communication Systems" (Registered with the Ministry of Justice of Russia on 12.10.2017 No 48530, with amendments and additions, effective from 01.09.2021);

- Order of the Ministry of Education and Science of Russia No 885, Ministry of Education of Russia No 390 of 05.08.2020 "On Practical Training of Students" (together with the "Regulation on Practical Training of Students");
- Order of the Ministry of Education and Science of the Russian Federation dated 06.04.2021 No 245 "On Approval of the Procedure for the Organization and Implementation of Educational Activities in Educational Programs of Higher Education - Bachelor's Programs, Specialist Programs, Master's Programs";
- Decree of the Government of the Russian Federation dated 11.10.2023 No 1678 "On Approval of the Rules for the Application of E-Learning, Distance Educational Technologies by Organizations Engaged in Educational Activities in the Implementation of Educational Programs";
- Order of the Ministry of Education and Science of the Russian Federation of 12.09.2013. No1061 "On Approval of the Lists of Specialties and Areas of Training of Higher Education";
- Order of the Ministry of Education and Science of the Russian Federation dated 27.02.2023 No 208 "On Amendments to the Federal State Educational Standards of Higher Education";
- Order of the Ministry of Education and Science of Russia No 882, Ministry of Education of Russia No 391 of 05.08.2020 "On the organization and implementation of educational activities in the network form of implementation of educational programs";
- Regulations on the development of educational programs of higher education in the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University", APPROVED BY the Academic Council of NCFU, Minutes No 1 of 08/30/2021;
- Regulations on Educational and Methodological Support of Educational Programs of Higher Education, Bachelor's Programs, Specialist Programs, Master's Programs at the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University", APPROVED BY the Academic Council of NCFU, Minutes No 12 of 02/20/2023;
- The Regulation on the Head of the Educational Program of Higher Education - Bachelor's Program, Specialist's Program, Master's Program at the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" was APPROVED BY the Academic Council of NCFU, Minutes No 11 of 03/28/2022;
- The Regulation on the Organization of the Educational Process for Network Educational Programs in the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" (as amended) was APPROVED BY the Academic Council of NCFU, Minutes No 5 dated 11/27/2025;
- Charter of the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University", APPROVED BY the Order of the Ministry of Science and Higher Education of the Russian Federation dated 28.12.2018 No 1365 (as amended on 05.03.2021, Order No 163);

- Professional Standard 06.005 "Specialist in Maintenance and Repair of Radio-Electronic Equipment", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 22.11.2023 No 823n;
- Professional Standard 06.006 "Engineer for the Technical Operation of Station Communication Equipment", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 31.08.2021 No 614n;
- Professional Standard 06.007 "Information Systems Specialist", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 16.11.2020 No 785n;
- Professional Standard 06.015 "Design Engineer in the Field of Communications (Telecommunications)", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 13.07.2023 No 586n;
- Professional Standard 06.026 "System Administrator of Information and Communication Systems", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 29.09.2020 No 680n;
- Professional Standard 06.027 "Specialist in the Administration of Network Devices of Information and Communication Systems", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 05.10.2015 No 686n;
- Professional Standard 06.040 "Specialist in Quality Control of Information and Communication Systems and Services", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 29.09.2020 No 676n;
- Professional Standard 06.048 "Radio Electronics Engineer in the Field of Radio Engineering and Telecommunications", APPROVED BY the Order of the Ministry of Labor and Social Protection of the Russian Federation dated 31.08.2021 No 600n;
- other regulations of the Federal State Autonomous Educational Institution of Higher Education "NCFU".

1.2 General Characteristics of the Educational Program of Higher Education

1.2.1 Mission of the Higher Education Educational Program

The mission of the Bachelor's Office of Higher Education is to create favorable social and educational conditions for the comprehensive development of the personality of students, the implementation of the principles of higher education for the training of highly qualified bachelors of information and communication technologies and communication systems, including according to WorldSkills standards, competitive in the regional labor market in the modern digital economy and the need for import substitution in the field of information and communication technologies and communication systems.

1.2.2 The purpose of the educational program of higher education

The purpose of the EP HE is the comprehensive professional training of the graduate in accordance with the current and future level of development of information and communication technologies and communication systems, the formation of a technically competent, psychologically stable, socially responsible person who meets the requirements of the labor market and is able to carry out professional activities in

the digital economy and the need for import substitution in the field of information and communication technologies and communication systems. In the field of education, the objectives of the EP are the formation of universal, general professional and professional competencies in accordance with the requirements of the Federal State Educational Standards of Higher Education in this area of training and the standards that allow the graduate to work in the chosen field and (or) field of professional activity and be successful in the labor market.

In the field of education, the tasks of the EP are the development of students' personal qualities that contribute to their creative activity, general cultural growth and social mobility, such as: purposefulness, perseverance in achieving goals, organization, diligence, responsibility, independence, citizenship, patriotism, commitment to ethical values, communication and tolerance.

1.2.3 Term of higher education under the educational program

The period of obtaining higher education under an educational program in accordance with the educational standard in this area of training is 4 years.

When studying according to an individual curriculum for people with disabilities and persons with disabilities, the period of study may be increased at their request by no more than 1 year compared to the period of education established for the relevant form of education.

1.2.4 The labor intensity of the educational program of higher education In the case of the

The labor intensity of the development of EP HE is indicated in weeks and credit units.

for the entire period of study, in accordance with the educational standard in this area of training.

Table of Contents	Labor intensity in weeks
Theoretical training	118
Exam sessions	23
practice, <i>including</i>	28
<i>Educational practice</i>	6
<i>Practical training</i>	4
<i>Pre-graduation practice</i>	18
final (state final) certification, <i>including</i>	4
<i>preparation for defense and defense of the final qualification work</i>	2
<i>Preparation for passing and passing the state exam</i>	2
Holidays	35
Total:	208

Table of Contents	Labor intensity in credits
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Theoretical training	192
Exam sessions	
practice, <i>including</i>	42
<i>Educational practice</i>	9
<i>Practical training</i>	6
<i>Pre-graduation practice</i>	27
final (state final) certification, <i>incl.</i>	6
<i>preparation for the defense and defense of the final qualification work</i>	3
<i>Preparation for passing and passing the state exam</i>	3
Total:	240

1.3 Requirements for the level of training required to master the educational program of higher education

The applicant must:

- 1) Have a state-recognized document on secondary (complete) general education or secondary vocational education.
- 2) Successfully pass the entrance exams.

Enrollment is carried out on the basis of competitive selection in accordance with the Rules for admission to NCFU.

1.4 Field of professional activity of graduates/ areas and areas of professional activity of graduates, objects of professional activity of graduates, types of professional activity of graduates/ types of professional activity

The field of professional activity and the field of professional activity in which graduates who have mastered the bachelor's program can carry out professional activities is (according to the register of the Ministry of Labor): 06 Communications, information and communication technologies (in the field of development, design, research and operation of radio-electronic facilities and radio-electronic systems for various purposes, as well as in the field of defense and security of the state and law enforcement).

The objects of professional activity of graduates who have mastered the bachelor's program are:

- infocommunication networks and systems that make up them;
- switching subsystems and network platforms;
- data transmission networks;
- information and communication network management systems;
- contact centers, IP telephony of unified telecommunications from various manufacturers;
- communication equipment (telecommunications); communication centers, line cable and station facilities, telecommunication system at the communication facility;
- broadband access networks;

- radio-electronic equipment;
- data transmission systems and devices, their software;
- multi-channel telecommunication systems;
- telecommunication optical systems and networks;
- radio communication systems and devices;
- intelligent networks and communication systems;
- means of information protection in information and communication systems;
- design documentation and working documentation in the process of construction of communication and telecommunications facilities (systems)

The types of professional activities for which bachelors are trained under the educational program are:

- technological;
- Project.

1.5 Tasks of the professional activity of graduates

A graduate of the bachelor's degree in the field of training 11.03.02 Infocommunication Technologies and Communication Systems is ready to solve the following professional tasks in accordance with the types of professional activity:

Technological:

- acceptance and development of the introduced information and communication equipment
- ;
- Installation, commissioning, testing and commissioning of prototypes products, assemblies and systems;
- implementation and operation of information and communication systems;
- ensuring the protection of information and informatization objects;
- development of norms, rules and requirements for technological processes of information exchange at a distance;
- organization of measures for labor protection and safety in the process of commissioning, maintenance and repair of information and communication equipment;
- bringing information and communication services to users;
- adjustment, adjustment, testing and testing of equipment;
- configuration and maintenance of hardware and software;
- carrying out all types of measurements of equipment parameters of through channels and paths (tuning, acceptance, operational);
- checking the technical condition and residual life of the equipment.

Project:

- study of scientific and technical information, domestic and foreign experience on the subject of the project; collection and analysis of initial data for the design of communication facilities, intelligent information and communication networks and their elements;
- development of technical projects for the introduction of innovative information and communication equipment;

- control of compliance of developed projects and technical documentation with technical regulations, national standards, communication standards, technical specifications and other regulatory documents;
- conducting a preliminary feasibility study of design calculations;
- assessment of innovative risks of commercialization of projects;
- monitoring compliance and ensuring environmental safety;
- conducting experiments according to a given methodology, analyzing the results and drawing up recommendations for improving the technical and economic indicators of information and communication equipment;
- Taking measurements and observations, describing studies, preparing data for reviews, reports and scientific publications;
- mathematical modeling of information and communication processes and objects on the basis of both standard computer-aided design and research packages, and independently created original programs;
- drawing up a report on the completed task, participation in the implementation of the results of research and development.

1.6 Graduate's competencies formed as a result of mastering the educational program of higher education

As a result of mastering the bachelor's program, the graduate must have the following competencies:

UK-1. Able to search, critically analyze and synthesize information, apply a systematic approach to solving problems;

UK-2. Is able to determine the range of tasks within the framework of the goal and choose the best ways to solve them, based on the current legal norms, available resources and restrictions;

UK-3. Able to carry out social interaction and realize his role in the team;

UK-4. Able to carry out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s);

UK-5. Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts;

UK-6. Is able to manage his time, build and implement a trajectory of self-development based on the principles of lifelong learning;

UK-7. Is able to maintain the proper level of physical fitness to ensure full-fledged social and professional activities;

UK-8. Able to create and maintain safe living conditions in everyday life and in professional activities to preserve the natural environment, ensure the sustainable development of society, including in the threat and occurrence of emergencies and military conflicts;

UK-9. Able to make informed economic decisions in various areas of life;

UK-10. Is able to form an intolerant attitude to manifestations of extremism, terrorism, corrupt behavior and counteract them in professional activities;

OPK-1. Able to use the provisions, laws and methods of natural sciences and mathematics to solve problems of engineering activities;

OPK-2. Is able to independently conduct experimental research and use the basic

methods of processing and presenting the data obtained;

OPK-3. Able to apply methods of search, storage, processing, analysis and presentation of information from various sources and databases in the required format, while observing the basic requirements of information security;

OPK-4. Able to understand the principles of modern information technologies and use them to solve problems of professional activity;

OPK-5. Able to develop algorithms and computer programs suitable for practical application;

PC-1. Capable of developing switching subsystems and network platforms, data transmission networks, transport networks and radio access networks, satellite communication systems;

PC-2. Able to apply modern theoretical and experimental research methods in order to create new promising means of infocommunications, use and implementation of research results;

PC-3. Able to carry out calculations on the design of networks, structures and infocommunication tools in accordance with the terms of reference using both standard methods, techniques and design automation tools, and independently created original programs;

PC-4. Able to prepare standard technical projects and primary control of the compliance of developed projects and technical documentation for various information and communication facilities with national and international standards and technical regulations;

PC-5. Ability to carry out installation, configuration, adjustment, testing of equipment, development of operating modes, control of design parameters of operation and testing of communication equipment, ensuring compliance of technical parameters of information and communication systems and / or their components, established operational and technical standards;

PC-6. Able to administer network subsystems of infocommunication systems and/or their components;

PC-7. Capable of administering remote access security tools (operating systems and specialized protocols);

PC-8. It is capable of carrying out routine maintenance on network devices and software of the information and communication system.

Universal Competencies (GC) of graduates and indicators of their achievement

Category of universal competence	Code and name of universal competence	Code and name of the indicator for achieving universal competence
Systems and critical thinking	UK-1. Able to search, critically analyze and synthesize information, apply a systematic approach to solving problems	ID-1 UK-1 identifies a problem situation, carries out its multivariate analysis and diagnosis based on a systematic approach; ID-2 UK-1 searches, selects and systematizes information to determine alternative options for strategic solutions in a problem situation;

Category of universal competence	Code and name of universal competence	Code and name of the indicator for achieving universal competence
		ID-3 UK-1determines and evaluates the risks of possible solutions to a problem situation, chooses the best option for its solution.
Development and implementation of projects	UK-2. Is able to determine the range of tasks within the framework of the goal and choose the best ways to solve them, based on the current legal norms, available resources and constraints	ID-1 UK-2formulates the goal of the project, determines a set of interrelated tasks that ensure its achievement and determines the expected results of solving problems; ID-2 UK-2develops an action plan to solve the tasks of the project, choosing the best way to solve them, based on the current legal norms and available resources and restrictions; ID-3 UK-2ensures the implementation of the project in accordance with the established goals, deadlines and costs, based on the current legal regulations, available resources and constraints, including the use of digital tools.
Teamwork and leadership	UK-3. Able to carry out social interaction and realize his role in the team	ID-1 UK-3participates in interpersonal and group interaction, using an inclusive approach, effective communication, methods of team building and team interaction when working together within the framework of the task; ID-2 UK-3ensures the work of the team to obtain optimal results of joint work, taking into account the individual capabilities of its members, the use of the methodology for achieving success, methods, information technologies and foresight technologies; ID-3 UK-3ensures the fulfillment of tasks based on monitoring teamwork and timely response to significant deviations.
Communication	UK-4. Able to carry out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s)	ID-1 UK-4chooses an acceptable style of business communication in the state and foreign languages, verbal and non-verbal means of interaction with partners in oral and written forms; ID-2 UK-4uses information and communication technologies to increase the efficiency of professional interaction, search for the necessary information in the process of solving standard communicative tasks in the state and foreign languages; ID-3 UK-4evaluates the effectiveness of the applied communication technologies in

Category of universal competence	Code and name of universal competence	Code and name of the indicator for achieving universal competence
		professional interaction in the state and foreign languages, makes a choice of optimal ones.
Intercultural interaction	UK-5. Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	ID-1 UK-5identifies, compares and analyzes information about the cultural characteristics and traditions of various social groups, to choose a strategy for interaction with their carriers; ID-2 UK-5demonstrates a respectful attitude to the historical heritage and socio-cultural traditions of various social groups, based on knowledge of the stages of historical development of Russia (including the main events, the main historical figures) in the context of world history and a number of cultural traditions of the world (depending on the environment and the objectives of education), including world religions, philosophical and ethical teachings; ID-3 UK-5chooses ways of constructive interaction with people, taking into account their socio-cultural characteristics in order to successfully perform professional tasks and strengthen social integration; ID-4 UK-5analyzes various socio-cultural trends, facts and phenomena on the basis of a holistic view of the foundations of the universe and the prospects for its development, understands the relationship between the diversity of worldviews and the course of development of history, science, man's ideas about nature, society, cognition and himself.
Self-organization and self-development (including health preservation)	UK-6. Is able to manage his time, build and implement a trajectory of self-development based on the principles of lifelong education	ID-1 UK-6sets personal and professional goals in accordance with the level of his/her resources and priorities for action, for successful development in the chosen field of professional activity; ID-2 UK-6implements and adjusts the strategy of personal and professional development, taking into account the conditions, means, personal capabilities, stages of career growth, the time perspective of the development of activities and the requirements of the labor market; ID-3 UK-6critically evaluates the

Category of universal competence	Code and name of universal competence	Code and name of the indicator for achieving universal competence
		effectiveness of the use of time and other resources in solving tasks in the chosen field of professional activity.
	UK-7. Able to maintain the proper level of physical fitness to ensure full-fledged social and professional activities	ID-1 UK-7 knows the basics of physical education, health-saving technologies to ensure full-fledged social and professional activities, taking into account the physiological characteristics of the body and living conditions; ID-2 UK-7 plans his working and free time for the optimal combination of physical and mental load and ensuring efficiency in professional activities; ID-3 UK-7 maintains the proper level of physical fitness to ensure full-fledged social and professional activities and observes the norms of a healthy lifestyle.
Life safety	UK-8. Able to create and maintain safe living conditions in everyday life and in professional activities to preserve the natural environment, ensure the sustainable development of society, including in the threat and occurrence of emergencies and military conflicts	ID-1 UK-8 is familiar with the general characteristics of ensuring security and sustainable development in various spheres of life; classification of military emergencies, principles and methods of organizing the protection of the population from dangers arising in peacetime and during military operations; ID-2 UK-8 assesses the probability of potential danger in everyday life and professional activities and takes measures to prevent it; ID-3 UK-8 applies the basic methods of protection in the event of a threat and the occurrence of emergencies and military conflicts in everyday life and professional activities.
Economic culture, including financial literacy	UK-9. Able to make informed economic decisions in various areas of life	ID-1 UK-9 understands the basic principles of the functioning of the economy and economic development, the goals and forms of state participation in the economy; ID-2 UK-9 applies methods of personal economic and financial planning to achieve current and long-term financial goals; ID-3 UK-9 uses financial instruments to manage personal finances, controls its own economic and financial risks.
Civic Position	UK-10. Is able to form	ID-1 UK-10 is familiar with the current legal

Category of universal competence	Code and name of universal competence	Code and name of the indicator for achieving universal competence
	an intolerant attitude to manifestations of extremism, terrorism, corrupt behavior and counteract them in professional activities	norms that ensure the fight against manifestations of extremism, terrorism in various areas of life, with ways to prevent corruption and form an intolerant attitude towards it; ID-2 UK-10 prevents possible manifestations of extremism, terrorism, corruption risks in professional activities; excludes interference in his/her professional activities in cases of inducement to corruption offenses; ID-3 UK-10 interacts in society on the basis of an intolerant attitude to manifestations of extremism, terrorism, corrupt behavior and counteracts them in professional activities.

General Professional Competencies (GPC) of Graduates and Indicators of Their Achievement

Category of general professional competence	Code and name of general professional competence	Code and name of the indicator of achievement of general professional competence
Scientific Thinking	OPK-1. Able to use the provisions, laws and methods of natural sciences and mathematics to solve problems of engineering activities	ID-1 OPK-1 understands the fundamental laws of nature and the basic physical mathematical laws and methods of accumulating, transmitting and processing information; ID-2 OPK-1 applies physical laws and mathematical methods to solve problems of a theoretical and applied nature; ID-3 OPK-1 uses knowledge of physics and mathematics in solving practical problems.
Research activities	OPK-2. Able to independently conduct experimental research and use the basic methods of processing and presenting the data obtained	ID-1 OPK-2 finds and critically analyzes the information necessary to solve the problem; ID-2 OPK-2 develops a solution to a specific problem, choosing the best option, evaluating its advantages and disadvantages; ID-3 OPK-2 understands the main methods and means of conducting experimental research, standardization and certification systems; ID-4 OPK-2 selects methods and means of measurement and conducts experimental research; ID-5 OPK-2 knows the methods of processing and presenting the data obtained and assessing the error of measurement results.

Knowledge of information technology	OPK-3. Able to apply methods of search, storage, processing, analysis and presentation of information from various sources and databases in the required format, while observing the basic requirements of information security	ID-1 OPK-3 understands the basic patterns of information transmission in information and communication systems, the main types of signals used in telecommunication systems, the features of the transmission of various signals through channels and paths of telecommunication systems; ID-2 OPK-3 understands the principles, basic algorithms and devices of digital signal processing; the principles of building telecommunication systems of various types and methods of information distribution in communication networks; ID-3 OPK-3 solves the problems of data processing using computer technology; ID-4 OPK-3 builds probabilistic models for specific processes, conducts the necessary calculations within the framework of the built model; ID-5 OPK-3 owns methods and skills for ensuring information security.
Computer literacy	OPK-4. Able to understand the principles of modern information technologies and use them to solve problems of professional activity	ID-1 OPK-4 uses information and communication technologies when searching for the necessary information; ID-2 OPK-4 designs a solution to a specific project task, choosing the best way to solve it, based on the current legal norms and available resources and restrictions; ID-3 OPK-4 understands modern interactive software systems and basic methods of processing experimental data, including the use of standard software, general-purpose and special-purpose software packages; ID-4 OPK-4 uses the capabilities of computer technology and software to solve problems of control and algorithmization of information processing processes; ID-5 OPK-4 He is proficient in methods of computer modeling of physical processes in the transmission of information, engineering and computer graphics techniques.
	OPK-5. Able to develop algorithms and computer programs suitable for practical application	ID-1 OPK-5 chooses programming languages and languages for working with databases, environments for the development of information systems and technologies, based on the existing tasks; ID-2 OPK-5 reads the codes of software products written in mastered programming languages and makes the required changes; ID-3 OPK-5 develops original algorithms and computer programs suitable for practical application.

Selection of professional standards that correspond to the professional activities of graduates

Professional competencies are determined by the university on the basis of professional standards (<http://profstandart.rosmintrud.ru>) corresponding to the professional activities of graduates.

Professional Standard		Generalized labor Features		Labor functions	Competencies
Index	Name	Name	Level of qualification.	Name	
6.005	Specialist in the maintenance and repair of radio-electronic equipment	A. Operation of complex functional units of radio-electronic equipment	6	Maintenance of complex functional units of electronic equipment	PC-1, PC-5
			6	Current repair and acceptance after repair of complex functional units of electronic equipment	
		B. Operation of electronic equipment	6	Maintenance of electronic equipment	PC-1, PC-5
			6	Current repair and acceptance after repair of electronic equipment	
		C. Operation of radio-electronic complexes	6	Organizational and Methodological Support of Technical Operation of Radio-Electronic Complexes	PC-1, PC-5
			6	Commissioning, maintenance and current repair of radio-electronic complexes	
06.006	Engineer for the technical operation of communication station equipment	Elimination of technical problems, technological and organizational support for the technical operation of station	6	Elimination of technical problems on station communication equipment	PC-5
			6	Technological and organizational	

		communication equipment		support of technical operation of station communication equipment	
06.00 7	Design Engineer in the Field of Communications (Telecommunications)	Survey of facilities, collection of data, information and documentation for the development of design and working documentation for communication facilities (systems)	6	Collection and analysis of initial data for the design of communication nodes, line cable and station structures, radio communication systems and distribution networks	PC-1, PC-2, PC-4
			6	Pre-design preparation, measurement work at communication facilities	
		Development of design and working documentation for equipping facilities with communication systems, telecommunication systems and mobile radio systems	6	Development of a communication scheme for an object, telecommunication system	PC-1, PC-2, PC-3, PC-4
			6	Development of design documentation for a communication facility (system), telecommunication system	
			6	Development of working documentation for a communication facility (system), telecommunication system	
			6	Performing special calculations	
			6	Organization of the work of performers, control and verification of the work performed	

06.01 5	Information Systems Specialist	C. Creation (modification) and maintenance of information systems that automate organizational management tasks and business processes	6	Design of mobile radio station systems	
			6	Design of a mobile radio transport network	
			6	Development of IC prototypes based on a standard IC	PC-1, PC-3, PC-7
			6	Coding in programming languages	
			6	Unit testing of information systems (verification)	
			6	Deployment of the server part of the IS at the customer's site	
			6	Installation and configuration of system and application software required for the functioning of the IS	
			6	Setting up the equipment required for the operation of the IC	
			6	Integration of IS with existing IS of the customer	
		C. Performance of work and management of work on the creation (modification) and maintenance of information systems that automate organizational management tasks and business processes	6	Identification and analysis of IP requirements	PC-1, PC-3, PC-7
			6	IC architecture development	
			6	IC design and engineering	
			6	Development of IP databases	
			6	Organizational and technological support of unit and integration testing of IS (verification)	

			6	Deployment of ICS at the customer's site	
			6	Optimization of IS operation	
06.02 6	Information and Communication Systems System Administrator	Maintenance of the information and communication technology system	6	Ensuring the operation of ICS hardware and software	PC-6
			6	Implementation of the scheme of backup, archiving and restoration of configurations of hardware and software of ICS according to the APPROVED BYd plans	
			6	Updating the software of the ICS hardware according to the instructions of the manufacturers	
			6	Diagnostics of the exhaustion of typical ICS resources using software and control tools	
			6	Conducting preliminary tests during work with possible risks of interruptions in the provision of ICS services	
		C. Maintenance of information and communication technology network devices	6	Analyze and identify root causes of complex problems that occur on ICS network devices	PC-7
			6	Development of plans for backup, archiving and restoration of configurations of ICS network devices	

			6	Performing a software update for ICS network devices	
			6	Forecasting the need to change the amount of resources required to ensure the uninterrupted operation of ICS network devices	
			6	Identification of Acquisition Needs for Specialized Tools for Monitoring and Testing of ICS Network Devices	
		D. Maintenance of information and communication technology server operating systems	6	Analyze and identify the root causes of complex problems that occur on servers and server OSes	PC-8
			6	Perform backup, archiving, and recovery planning for server and server OS configurations	
			6	Planning changes to server and server operating system settings	
			6	Perform a server OS software update	
			6	Predict the need for changes in the amount of resources required to ensure the smooth operation of servers and server operating systems	
			6	Identify your needs for specialized server and server OS monitoring and testing tools	

06.02 7	Information and Communication Systems Network Device Administration Specialist	C. Administration of the network device and software configuration process	6	Configuring the settings of network devices and software according to the technological policy of the organization	PC-6
			6	Inventory of parameters and functional diagrams of network devices of the administered network	
			6	Evaluate the effectiveness of network device configuration in terms of network performance and protection against unauthorized access	
		C. Administration of the process of monitoring the performance of network devices and software	6	Evaluating the performance of network devices and software	PC-8
			6	Monitor the use of network devices and software	
			6	Managing Network Resource Billing Tools	
			6	Correction of the performance of the network infocommunication system	
		D. Administering the security management process for network devices and software	6	Define security and software protection settings for network devices	PC-7
			6	Install custom security controls for the managed network	
			6	Administration of remote access	

				security tools (operating systems and specialized protocols)	
		E. Maintenance of network devices and information and communication system software	6	Performance of routine maintenance to support the OS of ICS network devices	PC-8
			6	Planning for Network ICS Recovery	
			6	Restoring Network Device Software Settings	
			6	Planning for Network Device Modernization	
06.04 0	Quality Control Specialist for Information and Communication Systems and Services	Quality control of the functioning of ICS and the services provided on its basis	6	Monitoring and control of ICS functioning	PC-5, PC-8
			6	Monitoring and quality control of communication services provided using ICS	
		Analysis of the results of quality control of the functioning of the ICS and the services provided on their basis	6	Organization of monitoring and control of the functioning of information and communication systems and services	PC-5, PC-8
			6	Analysis of the results of monitoring and control of the functioning of information and communication systems and services	
06.04 8	Radio Electronics Engineer in the Field of Radio Engineering and Telecommunications	C. Development of electrical diagrams and technical documentation for radio-	6	Development of electrical diagrams of radio-electronic facilities and their components	PC-3

		electronic facilities for various purposes	6	Development of operational documentation for radio-electronic facilities	
		D. Development of working design documentation for radio-electronic facilities for various purposes	6	Development of working design documentation for radio-electronic equipment	PC-4
			6	Adjustment of Design, Software and Operational Documentation Based on the Results of Manufacturing and Testing of Prototypes of Radio-Electronic Facilities	
		F. Conducting experimental developments and research during the modernization of components of radio-electronic facilities for various purposes	6	Development of innovative circuit design solutions for components of radio-electronic facilities	PC-2
			6	Selection of the element base for the development of circuit solutions	
			6	Hardware prototyping and experimental work to check the technical characteristics of modernized radio-electronic facilities	

Professional Competencies (PC) of Graduates and Indicators of Their Achievement

Objectives of professional activity	Code and name of professional competence	Code and name of the indicator of professional competence achievement	Basis (PS)
Project type of tasks of professional activity:			
Project type of tasks: study of scientific and	PC-1. It is capable of developing switching	ID-1 PC-1 understands and is guided by the principles of	06.005 Specialist in

technical information, domestic and foreign experience on the subject of the project; collection and analysis of initial data for the design of communication facilities, intelligent information and communication networks and their elements; development of technical projects for the implementation of innovative information and communication equipment; control of compliance of developed projects and technical documentation with technical regulations, national standards, communication standards, technical specifications and other regulatory documents; conducting a preliminary feasibility study of project calculations; assessment of innovative risks of commercialization of projects; control of compliance and ensuring environmental safety; conducting experiments according to a given methodology, analysis of results and preparation of recommendations for improving the technical and economic indicators of information and communication equipment; measurements and observations, preparation of a description of ongoing research, preparation of data for the preparation of reviews, reports and scientific publications; mathematical modeling	subsystems and network platforms, data transmission networks, transport networks and radio access networks, satellite communication systems.	construction and operation of communication networks, including their constituent subsystems, and signaling protocols, standards for the quality of data, voice and video transmission used in communication networks, in the legislation of the Russian Federation in the field of communications. ID-2 PC-1 analyzes the statistical parameters of traffic, develops solutions for the operational reconfiguration of the network, changing the parameters of the switching subsystem, network platforms, for the use of equipment of new technologies; changing and adjusting the parameters of the switching subsystem, transport networks and data transmission networks, for organizing new and expanding existing communication directions. ID-3 PC-1 analyzes the statistics of the main performance indicators of radio systems and data transmission systems, develops measures to maintain them at the required level, and calculates the capacity of telecommunications networks. ID-4 PC-1 develops schemes for the organization of communication and integration of new network elements, builds and expands the switching subsystem and network platforms; performs work on switching equipment, deploys equipment of service platforms, equipment of new technologies on the network, fulfills plans for the expansion of existing equipment of	Maintenance and Repair of Radio-Electronic Equipment; 06.007 Design Engineer in the Field of Communications (Telecommunications); 06.015 Information Systems Specialist
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of information and communication processes and objects on the basis of both standard computer-aided design and research packages, and independently created original programs; preparation of a report on the completed task, participation in the implementation of research and development results		network platforms and new technologies.	
	PC-2. Able to apply modern theoretical and experimental research methods in order to create new promising means of infocommunications, use and implementation of research results.	ID-1 PC-2 understands the basics of electrical engineering, network technologies, principles of operation, indicators of the use and functioning of telecommunication equipment, the requirements of technical regulations, international and national standards and other regulatory documents in the field of assessing the quality indicators of information and communication equipment. ID-2 PC-2 complies with the requirements of programs and methods for conducting experimental tests of communication facilities and systems (information and communication equipment). ID-3 PC-2 works with software used in the processing of information from infocommunication systems and their components, technical means of data collection and processing, with various information systems and databases. ID-4 PK-2 controls the quality indicators of the operation of information and communication equipment in accordance with their regulatory indicators. ID-5 PC-2 conducts experimental studies on the existing programs and methods of testing objects and communication systems (information and communication equipment) in order to assess their quality performance.	06.007 Design Engineer in the Field of Communications (Telecommunications); 06.048 Radio Electronics Engineer in Radio Engineering and Telecommunications
	PC-3. Able to carry out calculations on the design of networks, structures and infocommunication	ID-1 PC-3 understands regulatory, regulatory, technical, organizational and methodological documents that regulate the design	06.007 Design Engineer in the Field of Communications

	facilities in accordance with the terms of reference using both standard methods, techniques and design automation tools, and independently created original programs.	preparation, implementation and operation of communication systems (telecommunication systems), the construction of facilities and communication lines. ID-2 PC-3 operates with technologies used in the transport network, modern requirements for performance, availability, security, scalability, technology integration, manageability of communication systems (telecommunications); principles of planning the capacity of radio access networks. ID-3 PC-3 calculates the parameters and characteristics of the network and infocommunication facilities, analyzes their qualitative indicators based on statistics and radio measurements, and uses specialized design software. ID-4 PC-3 identifies and analyzes the advantages and disadvantages of design solutions, assesses the risks associated with the implementation of the project. ID-5 PC-3 collects initial data for the design of the network and infocommunication tools, determines the optimal configuration and topology of the transport network; develops technical solutions for the implementation of the communication system (telecommunication system) and its components. ID-6 PC-3 develops circuit design solutions for the components of radio-electronic facilities, selects the element base for the development of circuit solutions, conducts automated modeling and experimental work to check the technical	(Telecommunications); 06.015 Information Systems Specialist; 06.048 Radio Electronics Engineer in Radio Engineering and Telecommunications
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		characteristics of the upgraded radio-electronic facilities.	
	PC-4. Able to prepare standard technical projects and primary control of the compliance of developed projects and technical documentation for various information and communication facilities with national and international standards and technical regulations.	ID-1 PC-4. It is capable of developing switching subsystems and network platforms, data transmission networks, transport networks and radio access networks, satellite communication systems. ID-2 PC-4. Able to apply modern theoretical and experimental research methods in order to create new promising means of infocommunications, use and implementation of research results ID-3 PC-4. Able to carry out calculations on the design of networks, structures and infocommunication facilities in accordance with the terms of reference using both standard methods, techniques and design automation tools, and independently created original programs. ID-4 PC-4 Works on developing technical solutions when creating a communication system (telecommunication system) and its components; preparing the communication organization scheme, equipment placement plan, routing diagram, and other necessary documents; and estimating the costs for creating (or upgrading) the communication system (telecommunication system).	06.007 Design Engineer in the Field of Communications (Telecommunications); 06.048 Radio Electronics Engineer in Radio Engineering and Telecommunications
Technological type of tasks of professional activity:			
Technological type of tasks: acceptance and mastering of the commissioned information and communication equipment; installation, adjustment, testing and	PC-5. Ability to carry out installation, adjustment, testing of equipment, development of operating modes, control of design	ID-1 PC-5 understands the current industry standards that determine the requirements for the parameters of the operation of equipment, channels and paths; methods for checking the technical	06.005 Specialist in Maintenance and Repair of Radio-Electronic Equipment; 06.006

commissioning of prototypes of products, units and systems; implementation and operation of information and communication systems; ensuring the protection of information and informatization objects; development of norms, rules and requirements for technological processes of information exchange at a distance; organization of measures for labor protection and safety in the process of commissioning, maintenance and repair of information and communication equipment; bringing information and communication services to users; setting, adjustment, testing and testing of equipment; configuration and maintenance of hardware and software; carrying out all types of measurements of equipment parameters of through channels and paths (tuning, acceptance, operational); checking the technical condition and residual life of equipment.	parameters of operation and testing of communication equipment, ensuring compliance of technical parameters of information and communication systems and / or their components with the established operational and technical standards. PC-6. Able to administer network subsystems of infocommunication systems and/or their components.	condition of equipment, paths and transmission channels. ID-2 PC-5 complies with the technologies for setting up, adjusting and testing communication (telecommunications) equipment, operating rules and methods of using measuring and testing equipment. ID-3 PC-5 performs settings, adjustments and tests of communication equipment (telecommunications) using technical and technological documentation; maintains technical and technological documentation in accordance with the established forms; checks the quality of equipment and communication facilities. ID-4 PC-5 carries out incoming inspection of equipment, preparation of test equipment, measuring equipment, devices; testing of equipment and development of equipment operating modes. ID-5 PC-5 selects and uses the appropriate test and measurement equipment, uses the equipment software when setting it up. ID-1 PC-6 understands the architecture and general principles of operation of hardware, software and software and hardware of the administered network, the procedure for configuring network elements of the information and communication system. ID-2 PC-6 uses modern standards in the administration of devices and software; uses standard and external software and hardware to monitor the performance of the network	Engineer for the Technical Operation of Station Communication Equipment; 06.040 Quality Control Specialist for Information and Communication Systems and Services 06.026 System Administrator of Information and Communication Systems; 06.027 Information and Communication Systems Network Devices Administration Specialist
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		infrastructure of the administered network. ID-3 PC-6 diagnoses failures and errors of network devices and software. ID-4 PK-6 carries out routine maintenance on network devices and software of the infocommunication system. ID-5 PC-6 installs and configures the system and application software necessary for the functioning of the IS in accordance with the work assignment, carries out standard design and parameterization of the IS in accordance with the regulations of the organization.	
	PC-7. Capable of administering remote access security tools (operating systems and specialized protocols).	ID-1 PC-7 understands and uses the basic principles, protocols and software cryptographic tools for ensuring the information security of network devices. ID-2 PC-7 understands the general principles of operation and architecture of hardware, software and software and hardware of the administered network; protocols of the channel, network, transport and application layers of the open systems interaction model. ID-3 PK-7 uses software, hardware and software and hardware to protect network devices from unauthorized access; configures the parameters of modern software and hardware firewalls. ID-4 PC-7 connects and configures modern remote access security tools (operating systems and specialized protocols); works with control and measurement hardware and software. ID-5 PC-7 installs additional software products to ensure	06.026 System Administrator of Information and Communication Systems; 06.027 Information and Communication Systems Network Devices Administration Specialist

		remote access security and parameterization.	
	PC-8. It is capable of carrying out routine maintenance on network devices and software of the information and communication system.	ID-1 PC-8 complies with the instructions for the installation and operation of the administered network devices and software; the regulations for preventive maintenance on the administered information and communication system. ID-2 PC-8 installs operating systems of network devices; monitors administered network devices; uses standard data recovery procedures, works with archiving servers and operating system management tools; schedules backup of operating systems of network devices; disassembles and assembles administered network devices. ID-3 PC-8 uses modern means of monitoring the performance of the administered network; uses regulatory and technical documentation in the field of information and communication technologies to solve problems. ID-4 PC-8 performs work on rebooting the operating systems of network devices, planning the schedule for copying the software of the network infocommunication system, restoring parameters using archiving servers and management tools of specialized operating systems of network equipment. ID-5 PK-8 carries out routine maintenance of equipment in accordance with the manufacturer's recommendations.	06.026 System Administrator of Information and Communication Systems; 06.027 Information and Communication Systems Network Device Administration Specialist; 06.040 Quality Control Specialist for Information and Communication Systems and Services

List of planned learning outcomes and their constituent competencies

Learning outcome code	Learning outcome	Competencies formed within the framework of achieving learning outcomes
R1	Possess communication skills in the scientific, design, technological and socio-public spheres of activity in the state language of the Russian Federation, a foreign language to understand international standards and other regulatory documents in the field of information and communication technologies and communication systems.	UK-1, UK-2, UK-3, UK-4, UK-5, UK-6, UK-7, UK-9, UK-10
R2	Be able to apply system analysis, computer and economic literacy, modern research methods and information and communication technologies to solve practical problems of professional activity in the context of the digital transformation of the economy and the need for import substitution.	UK-1, UK-2, UK-9, OPK-1, OPK-2, OPK-3, OPK-4, OPK-5
R3	Be able to use in practice domestic and foreign experience, scientific and methodological foundations and principles of modern science and technology in the field of creation and development of domestic information and communication technologies and communication systems.	PC-1, OPK-1
R4	Be able to conduct experiments according to a given methodology, including measurements and observations, analyze the results and make recommendations for improving the technical and economic indicators of information and communication equipment, draw up reports on ongoing research.	PC-2, OPK-2
R5	Be able to collect and analyze initial data for the design of networks, infocommunication systems and their elements; develop technical projects for the implementation of innovative infocommunication equipment; monitor the compliance of the developed projects and technical documentation with technical regulations, national standards, communication standards, technical specifications and other regulatory documents.	PC-3, PC-4, UK-2, OPK-3, OPK-4
R6	Be able to master the introduced information and communication equipment, its software, put them into operation, ensure uninterrupted and efficient operation, check the technical condition and maintain information and communication systems and software.	PC-5, PC-1, UK-8

R7	Be able to administer network subsystems of infocommunication systems, network devices, remote access security tools, carry out routine maintenance on network devices and software of infocommunication systems.	PC-6, PC-7, PC-8, OPK-5
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1.7 Documents regulating the content and organization of the educational process in the implementation of the educational program of higher education

1.7.1 Academic calendar

The calendar curriculum establishes the sequence and duration of theoretical training, examination sessions, internships, state final certification, vacations. The schedule is developed in accordance with the requirements of the educational standard.

1.7.2 Curriculum

The curriculum indicates a list of disciplines (modules), practices, forms of intermediate certification, state final certification of students, other types of educational activities with an indication of their volume in astronomical hours and credits, sequence and distribution by periods of study. The curriculum highlights the amount of work of students in interaction with the teacher (contact work of students with the teacher) (by types of training sessions) and independent work of students in astronomical hours and credits. For each discipline (module) and practice, the form of intermediate certification of students is indicated. Optional disciplines (modules) are reflected in the curriculum, but are not included in the scope of the educational program.

1.7.3 Work programs of disciplines (modules), including funds of assessment tools

The EP HE includes the work programs of all academic disciplines (modules) provided for by the curriculum, including disciplines of the student's choice. Work programs for optional disciplines are developed, but are not included in the educational program.

The work program of each discipline (module) should clearly formulate the final results of training with a competency-based approach in strict accordance with the acquired knowledge, skills, and abilities in general in the EP HE, taking into account the direction (profile).

For the certification of students for the compliance of their personal achievements with the step-by-step requirements of the relevant EP HE, the departments create funds of assessment tools for current monitoring of progress and intermediate certification. These funds may include: control questions and standard tasks for practical classes, laboratory and control work, colloquiums, exams; tests and computer testing programs; approximate topics of term papers (projects), essays, etc., as well as other forms of control that allow you to assess the degree of formation of students' competencies.

1.7.4 Internship Programs

They are developed taking into account the types, types, methods and forms of internships specified in the curriculum. Internship programs indicate a list of planned

learning outcomes during the internship, correlated with the planned results of mastering the educational program of higher education and professional standards.

The fund of assessment tools for the practice provided by the educational program reflects questions and tasks that allow assessing the degree of formation of competencies and achievements of students in the process of internship.

II. Other components developed by the decision of the Department

In accordance with the Federal State Educational Standards of Higher Education in the field of training 11.03.02 Infocommunication Technologies and Communication Systems, the assessment of the quality of students' development of the educational program includes current monitoring of progress, intermediate and final (state final) certification.

2.1. Fund of assessment tools for current monitoring of progress and intermediate certification

In accordance with the requirements of the Federal State Educational Standards of Higher Education in the field of training

11.03.02 Infocommunication technologies and communication systems for certification of students for compliance of their personal achievements with the step-by-step requirements of the relevant EP departments create funds of assessment tools for current monitoring of progress and intermediate certification. These funds may include: control questions and standard tasks for practical classes, laboratory and control work, colloquia, tests and exams; tests and computer testing programs; approximate topics of term papers, essays, etc., as well as other forms of control that allow assessing the degree of formation of students' competencies.

Assessment tools accompanying the implementation of EP are developed to check the quality of competence formation and are an effective tool not only for assessment, but mainly for training.

The system of assessments during the current monitoring of progress and interim certification of students, the forms, procedure and frequency of conducting are specified in the Regulation on the current monitoring of progress and interim certification at NCFU.

Students at NCFU with intermediate certification pass no more than 10 exams and 12 tests during the academic year. This number does not include tests in physical education and optional disciplines.

The department has created funds of assessment tools for current monitoring of progress and intermediate certification. They are placed in working curricula and teaching aids and include:

- control questions and standard tasks for practical classes, laboratory and test work, colloquiums, tests and exams;
- banks of test tasks and computer testing programs;
- approximate topics of course projects/works, essays, etc.;
- other forms of control that allow you to assess the degree of formation of students' competencies.

NCFU has introduced a rating system for assessing students' knowledge, which involves the mandatory organization of current and intermediate control for each discipline of the curriculum (Regulation on the organization of the educational process based on the rating system for assessing the knowledge of NCFU students).

2.2. Fund of Assessment Tools for Final (State Final) Certification

The fund of assessment tools for the final (state final) certification is intended to establish during the state attestation tests of graduates the fact of compliance (or non-compliance) of the level of their training with the requirements of the educational standard.

The final (state final) certification of a graduate of a higher educational institution is mandatory and is carried out after the development of the educational program in full.

The final (state final) certification includes the final state exam in the field of training and the defense of the final qualification work.

The fund of assessment tools for the state final certification includes:

- a list of competencies that students must master as a result of mastering the educational program;
- description of indicators and criteria for assessing competencies, as well as assessment scales;
- standard control tasks or other materials necessary to assess the results of mastering the educational program;
- methodological materials that determine the procedures for assessing the results of the development of the educational program.

2.3 Actual Resource Support of the Educational Program of Higher Education

Resource support for the bachelor's degree program is formed on the basis of the requirements for the conditions for the implementation of educational programs determined by the Federal State Educational Standards of Higher Education in the field of training 11.03.02 Information and Communication Technologies and Communication Systems. Resource support includes:

- system-wide support;
- staffing;
- material and technical and educational support;
- a mechanism for assessing the quality of educational activities and training of students under the bachelor's program.

The University has a material and technical base that meets the current sanitary and fire safety rules and standards, providing all types of disciplinary and interdisciplinary training, practical and laboratory work of students provided for by the curriculum in the direction 11.03.02 Infocommunication Technologies and Communication Systems.

The University has material and technical support for educational activities (premises and equipment) for the implementation of the Bachelor's program in Block 1 "Disciplines (Modules)" and Block 3 "State Final Certification" in accordance with the curriculum.

During the entire period of study, each student is provided with individual unlimited access to the electronic information and educational environment from any point where there is access to the information and telecommunication network "Internet", both on the territory of the university and outside it.

The electronic information and educational environment of the university provides:

- access to curricula, work programs of disciplines (modules), practices, electronic educational publications and electronic educational resources specified in the work programs of disciplines (modules), practices;
- formation of an electronic portfolio of the student, including the saving of his work and grades for these works.

The functioning of the electronic information and educational environment is provided by the appropriate means of information and communication technologies and the qualifications of employees who use and maintain it.

2.4. Staffing of the Civic Chamber of Higher Education

The implementation of the bachelor's program is provided by teaching staff, as well as persons involved by the university in the implementation of the bachelor's program on other terms.

The qualification of teaching staff meets the qualification requirements specified in qualification reference books and (or) professional standards.

At least 60 percent of the number of teaching staff participating in the implementation of the Bachelor's program and persons involved in the implementation of the Bachelor's program on other terms (based on the number of substituted rates reduced to integer values) conduct scientific, educational, methodological and (or) practical work corresponding to the profile of the discipline (module) taught.

At least 5 percent of the number of teaching staff participating in the implementation of the Bachelor's degree program and persons involved in the implementation of the Bachelor's program on other terms (based on the number of substituted rates reduced to integer values) are managers and (or) employees of other organizations engaged in labor activities in the professional field corresponding to the professional activity for which graduates are being trained (have at least 3 years of work experience in this professional field).

At least 50 percent of the number of teaching staff and persons involved in educational activities on other terms (based on the number of substituted rates reduced to integer values) have an academic degree (including an academic degree obtained in a foreign state and recognized in the Russian Federation) and (or) an academic title.

2.5. Information and educational support

The university premises are classrooms for classes provided for by the bachelor's program, equipped with equipment and technical means of training, the composition of which is determined in the work programs of disciplines (modules).

Rooms for independent work of students are equipped with computer equipment with the ability to connect to the Internet and provide access to the electronic information and educational environment of the Organization.

The university is provided with the necessary set of licensed and freely distributed software, including domestic production (the composition is determined in the work programs of disciplines (modules) and is subject to updating if necessary).

The library fund is equipped with printed publications at the rate of at least 0.25 copies of each of the publications specified in the work programs of disciplines (modules), practices, per student from among the persons simultaneously mastering the relevant discipline (module), undergoing the corresponding practice.

Students with disabilities are provided with printed and (or) electronic educational resources in forms adapted to their health limitations.

2.6. Financial security

Financial support for the implementation of the Bachelor's program is carried out in the amount not lower than the values of the basic standards of costs for the provision of public services for the implementation of educational programs of higher education of Bachelor's programs and the values of adjustment factors to the basic standards of costs determined by the Ministry of Education and Science of the Russian Federation.

2.7. Mechanism for assessing the quality of educational activities and training of students under the bachelor's program

The quality of educational activities and training of students under the Bachelor's program is determined within the framework of the internal assessment system, as well as the external evaluation system.

In order to improve the Bachelor's program, employers and (or) their associations, other legal entities and (or) individuals, including teachers, are involved in the regular internal assessment of the quality of educational activities and training of students under the Bachelor's program.

Within the framework of the internal system for assessing the quality of educational activities under the bachelor's program, students are given the opportunity to assess the conditions, content, organization and quality of the educational process as a whole and individual disciplines (modules) and practices.

External assessment of the quality of educational activities under the Bachelor's program within the framework of the state accreditation procedure is carried out in order to confirm the compliance of educational activities under the Bachelor's program with the requirements of the Federal State Educational Standards of Higher Education.

External assessment of the quality of educational activities and training of students under the Bachelor's program is carried out within the framework of professional and public accreditation carried out by employers, their associations, as well as organizations authorized by them, including foreign organizations, or authorized national professional public organizations that are part of international structures, in order to recognize the quality and level of training of graduates who have mastered the Bachelor's program as meeting the requirements of professional standards (if any), the requirements of the labor market for specialists in the relevant field.

3 EDUCATIONAL PROGRAM AND CALENDAR PLAN OF EDUCATIONAL WORK

3.1 The Purpose and Objectives of the Educational Program in the Development of the Educational Program

The purpose of the program is to ensure the personal development of students on the basis of basic social values, which is manifested in:

- the development of a positive attitude to social values, i.e. the development of their socially significant relations;
- acquisition of experience of behavior corresponding to these values, experience of applying the formed knowledge and relations in practice, acquisition of experience in the implementation of socially significant affairs;
- environment, the development of educational and research that contributes to the formation of patriotic consciousness, citizenship, respect for the memory of the defenders of the Fatherland and the exploits of the heroes of the Fatherland, and intelligence among students.

Objectives of the program:

- development of a worldview and actualization of the system of basic values of the individual;
- familiarization of students with universal norms of morality, national foundations and academic traditions;
- fostering respect for the law, the norms of collective life, the development of civil and social responsibility; fostering a culture of interethnic communication among young people;
- prevention of the manifestation of national and religious extremism and national intolerance in the student environment;
- raising the level of the culture of safe behavior; forming a culture of interaction between Cossack societies and associations of the region and student associations of NCFU and attracting the Cossacks to participate in creative activities aimed at strengthening unity, harmonizing interethnic relations, preventing extremism and conflicts on national and religious grounds among the youth of NCFU;
- development of a system of social support for students;
- fostering a culture of financial literacy, developing a system for protecting social rights and ensuring social guarantees for students from those belonging to the preferential category;
- fostering a positive attitude to work, fostering socially significant purposefulness and responsibility in business relations;
- ensuring the development of the personality and its socio-psychological support, the formation of personal qualities necessary for effective professional activity;
- identification and support of talented youth, the formation of organizational skills, creative potential, the involvement of students in the processes of self-development and self-realization; the formation of a culture and ethics of professional communication; the education of the inner need of the individual for a healthy lifestyle, a responsible attitude to the natural and socio-cultural environment;
- development of personal qualities and attitudes (responsibility, discipline, self-management), social skills (emotional intelligence, orientation in the information space, speed of adaptation, communication; ability to work in a team) and managerial abilities

(skills to make decisions in conditions of uncertainty and change, time management, leadership, critical thinking).

The educational program is developed in accordance with:

- the Constitution of the Russian Federation; Federal Law No. 273-FZ of 29.12.2012 "On Education in the Russian Federation";
- NCFU Charter;
- Federal State Educational Standard of Higher Education in the field of training 11.03.02 Infocommunication Technologies and Communication Systems.
- The Education Program in the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" (APPROVED BY the decision of the Academic Council of NCFU, protocol No 14 of 05/27/2021)
- The Program for the Development of the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" for 2025-2036", APPROVED BY the Ministry of Science and Higher Education of the Russian Federation on 01.10.2025.
- other regulatory legal acts of the university in the field of education and educational policy.

3.2 The program of education in the structure of the educational program

The Work Program of Education and the Calendar Plan of Educational Work are part of the basic professional educational program developed and implemented in accordance with the current Federal State Educational Standard (hereinafter referred to as the Federal State Educational Standard).

Educational work programs as part of the main educational programs (BRI) implemented by the OVOE (developed for the period of implementation of the educational program and determines a set of key characteristics of the system of educational work of the OVO (principles, methodological approaches, goal, objectives, directions, forms, means and methods of education, planned results, etc.)).

3.3 The content of the educational program

In accordance with the main goals, objectives, principles of education, the directions of educational activities implemented at the university are combined and divided into five Modules (or Blocks), which are included at all levels of educational and extracurricular work: at lectures, seminars, industrial practice, in the work of curators with students, in the activities of student public organizations, etc.

The components of the five Modules (or Blocks), the implementation of which is the formation and development of the graduate's professional and supra-professional competencies provided for by the Federal State Educational Standards of Higher Education, are presented in the work program of education.

3.4 Calendar plan of educational work in the development of the educational program

The calendar plan of educational work is presented in the appendix to the work program of education.

3.5 List of resources necessary for the implementation of the educational process

Resource provision

Resource provision that allows the full implementation of the Education Program at NCFU and the content of educational activities includes the following types:

- regulatory and legal support; staffing;
- financial support; information support;
- scientific and methodological and educational support;
- material and technical support.

Regulatory support

The regulatory support of the educational program in the direction of 09.03.01 Informatics and Computer Engineering is the Education Program in the Federal State Autonomous Educational Institution of Higher Education "North Caucasus Federal University" (APPROVED BY the decision of the Academic Council of NCFU, protocol No 14 of 05/27/2021)

Staffing

The key component of the structure of the educational system is the personnel potential of educational activities at the university, which includes teachers, workers of culture and art, employees of the sports community, professional psychologists and teachers, leaders and managers, organizers.

Financial security

The education program is implemented through the purposeful conduct of cultural, physical education, sports, and health work with students and applies equally to all students, regardless of the sources of funding for educational programs.

Financial support for the implementation of the educational program in the educational program in the direction of 09.03.01 Informatics and Computer Engineering in terms of cost financing is formed taking into account the requirements of federal regulations and local acts of the university.

Information support

The content of information support as a type of resource support for the implementation of the work program of education includes:

- informing students, teachers and staff of the graduating department about planned and past educational activities and events on the official website of the university - in the sections "News of student life", "Student events of the graduating department", etc., as well as on pages in social networks;
- other information – NCFU announcements, NCFU announcements.

Scientific and methodological and educational support

The content of the scientific-methodical and educational-methodical support of the educational program under the educational program 09.03.01 Informatics and Computer Engineering is represented by educational and methodological manuals and recommendations for the organization of educational work with students.

Logistics

The content of material and technical support as a type of resource support for the implementation of the educational program includes:

- Educational and classroom fund for conducting training sessions, equipped with multimedia and specialized equipment, technical training aids, visual aids, simulation technological equipment;
- Rooms for independent work of students, equipped with computer equipment with the ability to connect to the Internet and providing access to the electronic information and educational environment of NCFU;
- Library collection of printed publications, electronic educational resources, professional databases, information and reference systems;
- Unhindered access, specialized portable equipment adapted to health limitations, special needs of students with disabilities and persons with disabilities;
- Material and technical base and resources of partner organizations, employers, representatives of the professional community.

3.6 Infrastructure of NCFU that ensures the implementation of the work program of education.

The infrastructure of NCFU that ensures the implementation of the "Education Program" includes:

- educational space (classrooms, computer classes, training laboratories, specialized classrooms, computer and language classes, gypsum workshop);
- Scientific and educational centers (RECs);
- Problem Research Laboratories (CRL);
- research laboratories;
- support services (transport, communication, catering service, etc.).

On the territory of NCFU there are a number of sports facilities, namely: a gymnastics sports hall, a game sports hall, a gym, a wrestling sports hall, a sports hall for physical therapy, a swimming pool.

Also, in the buildings of the university there are: concert halls, a museum of archaeology, a scientific and educational center "Museum of Regional Literature and Literary Local History", a geological museum, a zoological museum, a museum of NCFU, a museum center.

In addition, the university has named centers: the Integrated Center for Training and Innovation in the Field of Energy Efficiency named after A.I. Ilchenko, the interactive platform "Territory of Mutual Understanding", the collective work space "Boiling Point of the North Caucasus Federal University", a specialized competence center.

"Young Professionals" in the competence "Electronics", Resource Training and Methodological Center for Training People with Disabilities and Persons with Disabilities, Student Innovation Center "GranIT", Center for Linguistic Expertise and Testing in the Russian Language, Center for Psychological Support of Personal and Professional Development, Mass Media Center, Training Laboratory "Technical Means of Customs Control", Center for Business Games, Laboratory "Shooting Range", Youth Center for Innovative Technologies of Territorial Design, Scientific and Educational Center Laboratory "Technologies of Customs and Logistics Service", Service, Forensic

Training Ground, Forensic Laboratory, Courtroom Study Room, Scientific and Educational Laboratory "Ecoanalytical Laboratory", International Research Laboratory "Electro and Baromembrane Technologies", Educational Center "Virtual Worlds", Educational and Scientific Laboratory "Robotic Systems", ensuring the implementation of the Education Program.

The university provides ample opportunities for the effective self-realization of students:

- through the activities of student and youth associations, creative teams and sports sections;
- through the development of infrastructure for student design and modeling;
- through harmonious integration into existing practices of innovative forms of educational work.

Strengthening of event educational activities at the university contributes to the creation of a socio-cultural environment that allows the formation of a corporate culture, the implementation of innovative directions and forms of educational work with young people, focused on the maximum number of students involved in the extracurricular process and educational activities, through effective, methodologically sound and coordinated joint work of the administrative structures of the University and student self-government bodies, building a trajectory of partnerships based on mutual cooperation.

Socio-cultural space

As a socio-cultural space as a space developed by society for the spread of a certain area of culture, used in the education of NCFU students, there are: the Stavropol Palace of Culture and Sports, the Palace of Children's Creativity, the Stavropol State Historical, Cultural and Natural Landscape Museum-Reserve named after G.N. Prozritelev and G.K. Prave, the Stavropol Regional Museum of Fine Arts, the Museum and Exhibition Complex "Russia - My History", the Picture Gallery of landscapes of the Honored Artist of Russia P.M. Grechishkin, Art Gallery "Parshin", Museum of the History of the Cossacks, monuments, historical and architectural objects (temples), Stavropol Academic Order of the Badge of Honor Theater named after M.Y. Lermontov, Cinema "SALYUT", Cinema Park Cosmos, cinema "Etazhi", Stavropol Scientific Library named after M.Y. Lermontov, Central Library of the Stavropol Central Library System, Stavropol swimming pool "Yunost", Sports and Recreation Building of NCFU, ice the Victoria skating rink, the Stavropol Arena ice rink, the Dynamo stadium, the Spartak Sports Complex, etc., which has a certain level of involvement of students in active public relations.

Network interaction with institutions and subjects of education, organizations, social

The purpose of network interaction of NCFU with social partners is conscious and successful personal self-determination and self-realization of students and graduates of the university in accordance with their individual inclinations, capabilities and needs, as well as the objective situation in the labor market; expanding the opportunities for students to build individual educational routes and activate their cognitive interests to achieve successful personal results, including through participation in innovative projects.

List of social partners:

- At the federal level: autonomous non-profit organization "Russia – the Land of Opportunities"; Federal Agency for Youth Affairs; All-Russian public organization "Russian Union of Youth"; Association of Student Sports Clubs of Russia; All-Russian Public Youth Movement "Association of Students and Student Associations of Russia"; Russian Student Sports Union;

- at the regional level: the Department for Youth Policy of the Government of the Stavropol Territory; the Committee for Culture and Youth Policy of the Administration of the City of Stavropol; other public organizations and associations.