Ministry of Agriculture of the Republic of Kazakhstan

Saken Seifullin Kazakh Agrotechnical Research University

Reviewed at the meeting
of the Energy Faculty
Council Protocol
№ 16
«28» 06 2024 year

Approved
Dean of the Energy Faculty
____
Issenov S.S.
«28» 06 2024 year

PLAN
FOR THE DEVELOPMENT OF THE EDUCATIONAL PROGRAM
7M06205– «Radioelectronic technologies and systems»

for 2024 – 2029

Reviewed at the extended meeting of the department of Radio Engineering, Electronics, and Telecommunications Protocol № 13 dated 24.06.24

Astana – 2024

Contents

1 Passport

7M06205– «Radioelectronic technologies and systems»

For the period of 2024–2029

1	Basis for the development of the EP plan	The implementation of the educational program 7M06205– «Radioelectronic technologies and systems» is carried out in accordance with **The mission** of the Saken Seifullin Kazakh Agrotechnical Research University – to become a leader in quality and accessible education, an interdisciplinary research center, and a hub of scientific development. The educational program is aimed at meeting the needs and demands of potential consumers of educational services in the labor market of the Republic of Kazakhstan in the field of telecommunications specialists training. **The vision**: to be a leading research university providing accessible education, combining the highest academic standards in training with research activities that generate cutting-edge knowledge, while also being responsible to the surrounding social, cultural, and environmental context. **The development program** for 2024-2029 was approved by the Academic Council of the university on January 25, 2024, Protocol №8.
2	Main developers of the EP development plan	The responsible department: «Radio Engineering, Electronics, and Telecommunications» Dunayev P.A., PhD, Associate Professor, head of department; Mukhamedrakhimov K.U., candidate of technical sciences, senior lecturer; Nogai A.S., Ph.D., Professor; Nabiev N.K., candidate of technical sciences, senior lecturer; Temirbayev M.D., Director of Information Security Department, «KAP Technology» LLP; Tukushev N.B., Chief Business Analyst, Corporate Business Division, «Kazakhtelecom» JSC; Myalo M.V., Head of Central Dispatching and Technological Management Service, «Akmola Electric Grid Distribution Company» JSC; Ivonin N.N., Senior Partner for Training and Development, Technical Academy, «Kazakhtelecom» JSC; Yerdenov A.J., 2nd year master student.
3	Implementation	2024 – 2029 years

	timeline of the EP development plan	
4	Scope and funding sources	Budgetary funds, internal funds of Saken Seifullin Kazakh Agrotechnical Research University, research and educational grants, as well as other sponsorship revenues in accordance with applicable law.
5	Expected final results of the EP development plan implementation	1. An open and accessible mechanism for creating and adjusting the educational process, criteria, and indicators of learning outcomes. 2. A modern student-centered EP aligned with the long-term priorities of potential employers and professional associations, as well as the university's mission and national priorities of the Republic of Kazakhstan. 3. A developed human resource potential capable of training highly qualified specialists who can compete at the national and international levels. 4. An advanced infrastructure meeting modern educational and production requirements, including research laboratories and dual centers for advanced specialist training.

2 Analytical justification of the EP

2.1 Information about the Educational Program

Training of highly qualified masters based on the integration of education and science in the field of radioelectronic technologies and systems. The educational program forms the readiness to conduct scientific research and experiments, to create models of services and resources of radioelectronic technologies and systems, to master the skills of an effective system for training scientific personnel of a new formation.

This educational program is developed in accordance with the following key regulatory documents:

- constitution of the Republic of Kazakhstan;
- law of the Republic of Kazakhstan «On Education» dated July 27, 2007, No. 319-III;
- law of the Republic of Kazakhstan «On Science» dated February 18, 2011, No. 407-IV;
- concept for the Development of Higher Education and Science in Kazakhstan for 2023–2029, dated March 28, 2023, No. 248;
- concept for the Development of the Agro-industrial Complex of the Republic of Kazakhstan for 2021–2030, dated December 30, 2021, No. 960;
- order of the Minister of Science and Higher Education of Kazakhstan dated July 20, 2022, No. 2 «On the Approval of State Compulsory Standards for Higher and Postgraduate Education»;
- order of the Minister of Science and Higher Education of Kazakhstan dated January 5, 2024, No. 4 «On the Approval of Qualification Requirements for Educational Activities in Organizations Providing Higher and (or) Postgraduate Education and the List of Documents Confirming Their Compliance».

The development and implementation of the program take into account the National Qualifications Framework, Sectoral Qualifications Framework, European Qualifications Framework, Professional Standards, and the Atlas of New Professions.

Professional Activity Areas

The fields of professional activity of the masters include research and development aimed at creating and ensuring the functioning of radio engineering and electronic devices and systems based on the use of physical laws, electric and magnetic fields, electromagnetic vibrations and waves, and designed to control and automate technological processes, transform and amplify signals, as well as transmit, receive and process information, obtaining information about the environment, natural and technical objects, as well as for influencing natural or technical objects in order to change and improve their properties.

Types of Professional Activities

- production and technological;

- service and operational;
- organizational and managerial;
- installation and commissioning;
- calculation and design;
- scientific research;
- scientific and pedagogical.

General Competencies

In the process of studying, the undergraduate acquires knowledge, skills and abilities in his future profession as a highly qualified specialist.

- the ability to improve and develop their intellectual level;
- the ability to independently learn new research methods, to change the scientific and scientific-industrial profile of their professional activities;
- the ability to use Russian and foreign languages fluently as a means of business communication;
- the ability to put into practice skills and abilities in the organization of research and design work, in team management;
- willingness to actively communicate with colleagues in scientific, industrial and socio-public spheres of activity;
- the ability to adapt to changing conditions, to overestimate the accumulated experience, to analyze their capabilities;
- the ability to positively influence others in terms of compliance with the norms and recommendations of a healthy lifestyle;
- willingness to use knowledge of legal and ethical norms in assessing the consequences of their professional activities, in the development and implementation of socially significant projects.

Basic Competencies

In the process of studying, the undergraduate acquires the following types of basic competencies – socio-political, informational, communicative, readiness for education through all work activities. As a result, the acquisition of basic competencies of the educational program, the undergraduate should be able to:

– use basic knowledge to solve problems of modeling, designing radio engineering and electronic systems and devices, programming technological processes of their operation;

– to identify the natural scientific essence of the problems that arise in the course of professional activity, to involve appropriate knowledge of basic competencies for their solution;

- to apply modern tools for the execution and preparation of design and technological documentation;

– to use basic techniques for processing and presenting experimental data;

– to search, process and analyze information from various sources and databases, to present it in the required format using information, computer and network technologies;

– to use modern trends in the development of radio engineering and electronics, measuring and computing equipment, information technology in their professional activities;

- to be guided in the choice of materials, elements and devices of electronics, taking into account their physical and operational characteristics in the design and creation of electronic systems and devices;

– to use computer skills, to master information technology methods, to comply with the basic requirements of information security.

Professional Competencies

As a result of mastering the professional competencies of the master's educational program, the undergraduate must have:

- the ability to use the results of mastering fundamental and applied disciplines of the Master's educational program;
- the ability to demonstrate work skills in research circles and teams, to generate new ideas;
- the ability to organize and conduct experimental research using modern tools and methods;
- the ability to understand the main problems in their subject area, to choose methods and means of solving them;
- the ability to independently acquire and use in practice new knowledge and skills, including related fields of knowledge, as well as in new areas not directly related to the field of activity;
- the ability to professionally operate modern equipment, devices and devices (in accordance with the objectives of the master's program);
- the ability to study and understand the principles of operation of radio engineering and electronic devices for various purposes and to carry out commissioning, operational, preventive and repair work;
- the ability to design, present and report the results of the work performed.
- the ability to conduct laboratory and practical classes with students, to lead the course design and execution of bachelor's final qualifying works;
- the ability to develop educational and methodological materials for students on certain types of educational activities.

2.2 Analysis of the student contingent

The formation of the student body is carried out in accordance with the Standard Rules for Admission to Educational Institutions Implementing Higher and Postgraduate Educational Programs, approved by the Government of the Republic of Kazakhstan on October 31, 2018, № 600.

The recruitment of students is carried out through the allocation of the state educational order for training specialists with higher education, as well as through tuition payment by citizens or other sources.

The student recruitment in Saken Seifullin Kazakh Agrotechnical Research University follows the principles of equal access to the university's educational programs for all categories of citizens of Kazakhstan and foreign countries, using various teaching technologies, including traditional, distance, and blended learning.

The educational program 7M06205 – «Radioelectronic technologies and systems» belongs to the group of educational programs M096 – Communications and Communication Technologies, in the area of education 7M06 – «Information and Communication Technologies».

Information about admission to the S. Seifullin University is available on the website https://kazatu.edu.kz/pages/abiturientu/poslevuzovskoe-obrazovanie.

Admission Data for the last three years

Grant/ contract	**2021-2022**	**2022-2023**	**2023-2024**
Master's Program	11/9	11/0	7/0

Current Student Performance

Academic performance, %			Grade point average (GPA)		
2021-2022	2022-2023	2023-2024	2021-2022	2022-2023	2023-2024
95	93	98	3,5	3,42	3,77

2.3 Internal environment analysis of the EP

The implementation of the educational program is interconnected with various administrative, economic, organizational, and cultural activities.

Saken Seifullin Kazakh Agrotechnical Research University is located in the administrative and cultural center of Astana, in the Saryarka district, providing opportunities for interaction with telecommunication institutions in both cultural and industrial sectors.

The university has a well-developed infrastructure, including educational buildings, dormitories, scientific and production facilities, and centers all compactly located on one campus.

Each dormitory and educational building is equipped with canteens, study rooms, laundry facilities, and sports halls, catering to all the socially significant needs of students, creating favorable learning conditions. Around the campus, there are stores and educational centers for additional skills development, such as driving, foreign languages, singing, and dancing.

The Department of Radio Engineering, Electronics, and Telecommunications is located on the 2nd floor of the main building, which houses classrooms for lectures, laboratories, seminar rooms, a library, a canteen, a coworking zone, computer labs, an assembly hall, and conference rooms.

The teaching process for the master's students in this program is supported by the faculty of the Energy Department, which includes the following classrooms and laboratories:

classrooms №	Name
№ 1203	Lecture and Practical Classroom
№ 1205	Computer Lab
№ 1206	Lecture and Practical Classroom
№ 1207	«Analog and Digital Electronics» Laboratory
№ 1208	Faculty Room of the Department of RET
№ 1209	Computer Lab
№ 1210	Professors' Room of the Department of RET
№ 1212	«Electronics and Prototyping» Research Lab
№ 1213	Computer Lab
№ 1225	Lecture Classroom
№ 1233	Computer Lab
№ 1234	Head of the RET Department's Office
№ 1235	Faculty Room of the Department of RET

Educational processes are carried out within the framework of regulatory documents.

The development and formation of educational programs at Saken Seifullin Kazakh Agrotechnical Research University involve all interested participants in the educational process (teachers, students, employers), following the principles of market demand, compliance with national qualifications frameworks, and professional standards.

The educational programs are designed to:

- Be in demand in the labor market and meet the requirements of potential consumers;
- Consider the possibilities of international student exchange;
- Comply with the national qualifications framework and professional standards;
- Contain precise descriptions of programs leading to a degree, including descriptions of learning outcomes, workload (academic credits), teaching methods, and criteria for assessing student achievements;
- Ensure flexibility in the program structure to allow students to choose an individual learning path and engage in additional learning activities;
- Maintain a clear relationship between expected learning outcomes, learning activities, and the assessment of achievements to integrate the competence-based approach into the educational process;
- Utilize digital technologies in teaching methods.

The university operates a mechanism for monitoring and evaluating the quality of the educational program, which is described in the «Regulation on the

Procedure for Developing, Approving, and Updating Educational Programs» dated April 25, 2024. Regular surveys of stakeholders are conducted to assess the quality of the EP. For internal evaluation, students and faculty members are involved in analyzing the educational, methodological, material, technical, and pedagogical aspects. Based on these results, corrective measures are developed.

2.4 External environment analysis of the EP

The 7M06205 – «Radioelectronic technologies and systems» educational program covers the full master's educational cycle. The content of the EP is developed based on the principles of continuity and succession, considering modern scientific and technical achievements as well as production requirements. The EP is formed based on the list of qualifications and job positions in «Multiservice Telecommunication Technologies» and the corresponding qualification characteristics. The content aligns with the National Qualifications Framework, the Dublin Descriptors, and the European Qualifications Framework, ensuring its relevance to the labor market.

The key requirements for the content of the EP are the expected learning outcomes that meet the demands of employers and stakeholders.

The university website features a blog where stakeholders can share their opinions, suggestions, and complaints regarding the educational programs and other issues. All incoming information is thoroughly analyzed by the EP management, and appropriate measures are taken.

Each year, guest lectures for master's students are given by international experts when possible.

Additionally, social partners and potential employers regularly review the content of educational programs and elective course catalogs.

Graduates of the Saken Seifullin Kazakh Agrotechnical Research University are free to choose their profession and workplace in accordance with their professional training, inclinations, and abilities. Graduates trained by the university, based on contracts with enterprises and organizations, are directed to work according to these agreements.

Department heads (deans) and faculty coordinators are required to inform graduates about job vacancies in the regions of Kazakhstan. The Department for Academic Development (DAD) collects information from employers on vacant positions and uses this data for graduate placement.

On the university's official website, in the «Employment» section, potential employers can submit job requests, which are available to students. Graduates can submit resumes or contact employers directly through the information provided.

2.5 Analysis of teaching staff implementing the educational program

The formation of the faculty, administrative, and support staff at Saken Seifullin Kazakh Agrotechnical Research University is based on the following principles:

- Competitive selection of faculty and staff through a fair and transparent hiring process, with subsequent opportunities for professional growth;
- Engagement of highly qualified specialists who meet the qualification requirements of the university's educational programs;
- Support for young teachers and the development of their professional growth;
- Creating conditions for faculty, administrative, and support staff to participate in educational, research, public, and academic activities;
- Creating opportunities for faculty and staff to develop and improve their professional qualifications;
- Functioning of motivation and incentive mechanisms, adaptation of new employees, attestation, and disciplinary measures, including dismissal.

The implementation of the master's degree program 7M06205 – «Radioelectronic technologies and systems» in the field of telecommunications is carried out by 10 faculty members, all of whom hold academic degrees, including: 1 Doctor of Science, 4 Candidates of Science, 5 PhD holders. The degree of the faculty implementing the EP is 100%.

2.6 EP achievements analysis

1. Saken Seifullin Kazakh Agrotechnical Research University participates in various rankings, including the national ranking of the demand for universities in the Republic of Kazakhstan, where the quality of educational programs is assessed at different levels and specialties (NAAR), and the rating of the Republican Ranking Agency «Kazakhstan 2050» – a national ranking for innovation and academic excellence. The successful implementation of educational programs is ensured through systematic and effective efforts, involving all stakeholders, analyzing student and faculty satisfaction, and assessing the available resources, including material and technical bases.

Level	EP	Prizes		
		2022 y.	2023 y.	2024 y.
«Independent Agency of accreditation and rating» NU				
Master’s Program	M096 Communications and communication technologies	2	2	

3 Analysis of the problems that the development plan of the EP is aimed at solving, and justification of the need to solve them

The educational programs are aimed at training specialists to carry out professional activities in the following areas: determining optimal production and technological modes of operation for telecommunication networks and multiservice technologies, developing prospective projects for telecommunication networks of various purposes, performing technological calculations for the preparation and adjustment of telecommunication networks and systems, choosing operational modes and standardizing technological processes, managing the operation modes of telecommunication systems, performing diagnostics and creating maintenance plans for telecommunication systems, performing diagnostics, servicing, and current repairs of telecommunication equipment and devices.

Strengths	Weaknesses
The presence of up-to-date courses in the EP, as well as the timely update and relevance of the program	Insufficient number of lecture hours. Imbalance in teaching activities across different credit loads
Opportunities	**Threats**
Selection and provision of places for scientific internships	Increased competition with existing EPs in other universities

4 Main goals and objectives of the EP development plan, including timelines and stages of implementation

Main Goals of the Development Plan

Systematize measures and actions to qualitatively and quantitatively improve educational programs, their implementation, and evaluation, ensuring stability in the market of educational services, considering the requirements and conditions of stakeholders.

Main Objectives of the Development Plan

1. Improve the planning and organization mechanism of the educational process, learning outcomes, and control over their achievement. Implementation timeline: 2024-2029.
2. Ensure the content of educational programs aligns with modern trends in education and technology, considering the requirements of authorized bodies, students, and potential employers. Implementation timeline: 2024-2029.
3. Provide a qualified teaching staff and conditions for the development of their professional, pedagogical, scientific, and creative potential. Implementation timeline: 2024-2028.
4. Develop the material and technical base, as well as resource opportunities, for the effective and high-quality educational process. Implementation timeline: 2024-2029.

5 Risk mitigation activities for the EP

The risks in educational activities include:

1 Reduction in the percentage of faculty with academic degrees;

2 Insufficient enrollment of applicants;
3 Insufficient funding for educational activities;
4 Shortage of qualified teaching staff;
5 Changes in the market for educational services;
6 Increase in the cost of educational services.

Risk analysis is aimed at understanding the risks. It provides data for risk assessment and decision-making on how to address risks and the most appropriate strategies and methods for handling them. Based on reports on the EP development plan and feedback from leaders, a risk management plan is developed. Risk monitoring involves controlling the level of risk. This is achieved by regularly (annually) updating information on risks, risk management measures, and the status of these measures, as well as tracking the degree of impact and probability of identified risks.

№	Risk	Mitigation Measures
1	Reduction in faculty academic degrees	Faculty training in PhD programs
2	Insufficient enrollment	Conducting career guidance work
3	Insufficient funding	Attracting additional funding sources through scientific projects and sponsorship
4	Shortage of qualified teachers	Faculty training through PhD programs, qualification courses, and internships
5	Market changes in education	Regular updating and actualization of educational programs
6	Increase in the cost of education	Developing agreements for industry-sponsored specialist training and payment for education through programs such as KazEnergy, etc.

6 Educational program development activities plan

№	Activity Title	Implementation Period	Responsible Parties	Expected Results	Resource Support
1.	Developing, updating, and revising the EP according to state standards for master's programs,	2024-2029	Dunayev P.A., Nogai A.S., Nabiev N.K.	Development and revision of the EP. Inclusion in the EPVO	State standards, laws of Kazakhstan, Atlas of New Professions, expert reports

	considering the changes in current state standards, expert opinions, and entry into the EPVO Registry			Registry	from employers, department meeting protocols
2.	Updating the content of the EP in line with current trends and the requirements of authorized bodies in the labor market and real industrial sector for master's training	2024-2029	Dunayev P.A., Mukhamedrakhimov K.U., Nogai A.S.	Updating the content of individual courses and the curriculum as a whole	Materials from meetings with representatives of professional organizations and associations
3.	Improving the process for assessing learning outcomes	2024-2029	Dunayev P.A., Nogai A.S., Nabiev N.K.	Criteria for assessing learning outcomes	Quality management system (ESG), organizational standards: Knowledge control and final certification of students
4.	Developing new educational and methodological materials in Kazakh, Russian, and English for the master's program	2024-2029	Faculty members with academic degrees	Published educational materials (including electronic versions in the university repository)	Quality management system (ESG), regulations on plagiarism in written work
5.	Developing distance learning technologies on various platforms	2024-2029	Faculty members with academic degrees	Electronic courses in department subjects	Moodle platform and others
6.	Involving domestic and foreign experts, as well as industry representatives, to conduct lectures, masterclasses, and participate in the	2024-2029	Dunayev P.A., faculty members with academic degrees	Guest lectures and masterclasses, updated course content and elective	Materials from meetings with professional organizations and associations

	development of curricula and elective course catalogs			catalogs	
7.	Collaborating with leading domestic and foreign production, scientific, and project organizations to develop student competencies and organize practical training with elements of dual education	2024-2029	Dunayev P.A., Nabiev N.K., Nogai A.S., Mukhamedrakhimov K.U., faculty members with academic degrees	Practical training agreements, dual education elements	Methodical instructions, guidelines for organizing and conducting practical training and internships
8.	Improving faculty qualifications through additional training and obtaining academic degrees (master's, PhD)	2024-2029	Faculty members with academic degrees	New knowledge and skills for faculty to apply in scientific and educational activities	Training courses, internships, PhD programs, and grants
9.	Increasing the proportion of faculty proficient in English	2024-2029	Faculty members with academic degrees	Development of course materials in English, creation of multilingual groups	English language courses
10.	Creating a research and creative environment to enhance the publication activity of master's students and faculty in top domestic and foreign journals indexed in KINC, RINC, Web of Science, and	2024-2029	Faculty members with academic degrees	Articles published in Web of Science or Scopus journals in Q1-Q3 categories	Conferences, forums, competitions, and grants

	Scopus				
11	Academic mobility and internships for master's students and faculty in leading research, educational, and production organizations	2024-2029	Students and faculty members with academic degrees	Internships lasting at least 2 weeks	Academic mobility programs
12	Participation of master's students and faculty in scientific, educational, and creative competitions at the national and international levels	2024-2029	Students and faculty members with academic degrees	Prizes in international, national, and city-level events	Conferences, forums, competitions, and grants
13	Equipping teaching and research laboratories with modern equipment, accrediting and licensing centers and laboratories	2024-2029	Dunayev P.A., faculty members with academic degrees	Well-equipped laboratories and centers	Sponsorship, grants, and contracts

List of target indicators of the OP development plan

№	Indicator Name	Unit of meansurement	Implementation period				
			24-25	25-26	26-27	24-25	28-29
	Quantitative indicators						
1	Total student body	peop.	5	6	6	7	8
2	Number of students admitted on state grants	peop.	3	4	4	5	7
3	Proportion of students with «Altyn Belgi» and international academic competition winners in the last three years, winners of the presidential, republican Olympiads and competitions of scientific projects of the current academic year (awarded diplomas of 1,2,3 degrees) from their total number	%	-	-	1	1	1
4	Number of international students		-	-	-	1	1
5	Employment rate of graduates within 1 year	%	87	89	89	90	96
6	Number of students participating in external academic mobility programs	peop.	-	-	1	1	1

7	Number of students participating in internal academic mobility programs	peop.	-	-	1	1	1
8	Number of students in dual-degree programs	peop	-	-	-	1	2
9	Number of students studying in English	unit	-	-	-	-	1
Direction 1 Improvement of academic activities/improvement of the content of the OP							
10	Number of updated programs based on professional standards with employer participation	unit	-	1	1	1	1
11	Passage of specialized accreditation/post-accreditation in agencies that are full members of international European networks for ensuring the quality of education and included in the register of the authorized body in the field of education	number of EP	-	1	-	-	1
12	Development of joint and dual-degree educational programs	number of EP	-	-	1	-	1
13	Program positions in rankings (Atameken, NAAR, QS, etc.)	prize	2	2	2	1	1
14	Introduction of innovative teaching methods	unit (act of implementation)	-	1	2	2	3
15	Number of textbooks and teaching aids	unit	-	1	1	2	2
16	Number of employer contracts for internships	unit	1	1	1	2	3
Direction 2 Development of human resources							
17	The number of teaching staff who have completed advanced training in the profile of the disciplines taught (72 hours)	unit	Depending on the number of disciplines	Depending on the number of disciplines	Depending on the number of disciplines	Depending on the number of disciplines	Depending on the number of disciplines
18	Number of teaching staff who have completed advanced training/internships in inclusive education (72 hours)	number of teaching staff	Depending on the admission of these persons to the OP (if possible, all)	Depending on the admission of these persons to the OP (if possible, all)	Depending on the admission of these persons to the OP (if possible, all)	Depending on the admission of these persons to the OP (if possible, all)	Depending on the admission of these persons to the OP (if possible, all)

19	Number of teaching staff/ percentage of teaching staff who have completed advanced training in foreign universities, research institutes	peop/ %	Depending on the situation (at whose expense, Bolashak, etc.)	Depending on the situation (at whose expense, Bolashak, etc.)	Depending on the situation (at whose expense, Bolashak, etc.)	Depending on the situation (at whose expense, Bolashak, etc.)	Depending on the situation (at whose expense, Bolashak, etc.)
20	Number of teaching staff/ percentage of teaching staff who have completed internships	peop/ %	5	5	10	10	15
21	The number of practitioners involved in lectures	peop.	4	4	4	4	4
22	The number of attracted domestic teachers within the framework of internal academic mobility	peop.	-	1	1	1	2
23	The number of attracted teaching staff from abroad	peop	-	1	1	1	2
24	Number of teaching staff/ percentage of teaching staff teaching in English	peop/ %					
25	Number of teaching staff/ percentage of teaching staff with international certificates confirming proficiency in a foreign language	peop/ %					
	Direction 3. Development of research potential						
26	The share of citations of scientists' publications according to the Scopus database of the total number of citations of scientists in the Republic of Kazakhstan	%					
27	The number of publications in rating publications according to information resources on the Web of Science platform	unit					
28	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	26	30	30	30	35
29	The number of startup projects implemented by teaching staff and students	unit	-	-	1	1	2
30	The number of scientists who have completed internships in the world's leading scientific centers within the framework of the «500 Scientists» program	unit	-	-	-	1	1
31	The number of patents obtained within the framework of research and implemented at the expense of the state budget	unit	1	1	1	1	1
32	The share of projects carried out jointly with OHPE and research organizations of the Republic of Kazakhstan from the total number of scientific projects	%	-	1	-	1	-
33	Number of publications to the CQAEME	unit	2	2	4	5	6

34	The share of income received from innovative developments and commercialized projects of the university	numbers	-	-	1	-	1
35	Number of copyright certificates, patents	numbers	1	2	2	2	4
36	The number of students who have won Olympiads, research competitions, etc.	unit	2	2	3	3	4
37	The proportion of undergraduates and doctoral students involved in research activities	%	-	10	10	10	15
Direction 4. Improvement of infrastructure and material and technical base							
38	The number of laboratories introduced (updated)	unit	Depending on the financing	Depending on the financing	Depending on the financing	Depending on the financing	Depending on the financing
39	Number/share of disciplines in which online courses have been developed (MOOCs)	unit/ %	-	1	1	1	1
40	Number/share of updated scientific equipment	unit / %	Depending on the financing	Depending on the financing	Depending on the financing	Depending on the financing	Depending on the financing
41	Replenishment of the library fund	unit / %	5	5	10	10	15

The resource provision of the OP development plan is due to the availability of existing and the development of new regulatory documents for a specific field of activity, as well as consistency with the strategy and mission of the S.Seifullin KATI for the long term, as well as national programs for the development of education, science and technology.

7 Mechanism for implementing the EP development plan

The educational program development plan is a document defining the strategy and tactics of improving the educational program, the directions of development of the educational program.

To develop an OP development plan, an analysis of the needs of the educational services market, the role of the university in this market, the preferences of applicants and their parents, survey data from employers, teaching staff and students, an analysis of the contingent and the main characteristics of the contingent of students, an analysis of student satisfaction and teaching staff is carried out.

The Faculty of Energy and the Department of Radio Engineering, Electronics and Telecommunications analyze the available resources: intellectual (personnel), financial, information, material and technical base, their sufficiency for the implementation of the OP development plan.

The OP development plan is drawn up with the involvement of representatives of employers, students, teachers and interested persons. The OP development plan should be as transparent as possible, accessible to employers, students, teachers, and other interested parties.

The OP development plan reflects the quality assurance policy of the OP, including the link between scientific research, teaching and learning.

The development plan and objectives of the OP are developed in accordance with national development priorities. The OP development plan promotes the development of professional competencies among masters in accordance with the requirements of the standard in the field of preparation of educational programs and the formation of professional competencies.

The author's team of the educational program in the development plan determines the frequency of monitoring the implementation of this plan, but at least once a year at an extended meeting of the Department of RET. The report on the implementation, effectiveness and efficiency of the OP development plan is developed by the OP team of authors and reviewed by the Academic Council of the Faculty of Energy.

Head of the department of «RET» Dunayev P.A.