EI «Alikhan Bokeikhan University»

Reviewed at the meeting of the Academic Council on Quality of the Faculty №. 1 dated 12.02.2020. reassigned №. 1 dated 21.09.2022

"I approve" ФBOKEIKHAN UNI
Dean of the Faculty of Information Technology and Economics
Bidelmanova M.A.
«___»_____ 2022 y.

DEVELOPMENT PLAN OF THE EDUCATIONAL PROGRAM
6B06124 "Computer engineering and software" for 2020-2025.

Reviewed at an expanded meeting of the Department of Information and Technical Sciences
Protocol no. _1_ of ___29.08.22 y._____
Head of the department. Kurmangalieva N.K. _____

Semey, 2022 y.

<center>**OP Development Plan**
6B06124 "Computer engineering and software"
for _2020-2025_ years</center>

1. General provisions

The educational program (OP) 6B06124 - Computer technology and software is compiled in accordance with the requirements of the State Mandatory Standard of Higher Education approved by the Order of the Ministry of Education and Science of the Republic of Kazakhstan dated July, 20, 2022 , the Rules for organizing the educational process for the credit system of education, methodological recommendations for the development of modular educational programs of educational specialties (bachelor's degree) (MP. 01.02/2018).

The OP is designed as a set of consecutive training courses for the entire period of study and is aimed at mastering the competencies necessary for awarding the academic degree Bachelor of Engineering and Technology in the specialty 6B06124- Computer Engineering and Software

Training of specialists is carried out on the basis of the State License series KZ04LAA00032042 dated 17.09.2021, issued by the Committee for Quality Assurance in Education and Ministry of Education and Science of the Republic of Kazakhstan .

Preparation of the educational program 6B06124- "Computer technology and software" is carried out on the basis of regulatory documents of the Ministry of Education and Science of the Republic of Kazakhstan, in accordance with the mission and internal regulatory documentation of «Alikhan Boleikhan University» EI.

In 2019, the Educational program was included in the Register of Educational Programs of the Unified Higher Education Management System of the Ministry of Education and Science of the Republic of Kazakhstan.

In February 2019, OP "5B070400- Computing Equipment and Software", passed specialized accreditation in the Independent Kazakhstan Agency for Quality Assurance in Education (accreditation certificate number No. HE-SA-000114 with validity from May 30, 2019 to May 29, 2024).

One of the quantitative indicators of achieving the goal of an educational program is its ranking in various ratings. Thus, according to the results of the 2019 ranking of the Independent Agency for Quality Assurance in Education 6B06124 - "Computer Technology and Software" ranks 21st among 45 universities.

According to the results of the 2020 ranking of the Independent Agency for Quality Assurance in Education 6B06124 - "Computer Technology and Software" ranks 28th among 50 universities.

The purpose of the educational program development plan is to carry out comprehensive measures that will contribute to the training of specialists who are competitive in the labor market, who have the skills to install, configure and maintain system, tool and application software, computer technology and computer systems, who speak programming languages such as PHP, MATLAB, C++, Java, JavaScript, Python.

Based on the learning objectives, the educational program has been developed taking into account the student-centered learning technology within the competence approach. External and internal stakeholders, social partners and students of various levels of education, leading university scientists, and other interested persons were involved in the formation of the educational program.

The composition of the developers was reviewed and approved at a meeting of the Academic Quality Council of the Faculty of ITE (Protocol No. 2 of 02/20/2020). The compilers were: Head of the Department of Information Technology Sciences, PhD Aukenov B. M., leading scientists and teachers of the department: Sagintaev S. S., Ph.D., Associate Professor, Urazbaeva K.T., Ph.D., Associate Professor social partners of the university - Khalilov Shamil Taufikovich - Technical Director of IMAS GROUP LLP, Dmitry Vladimirovich Stenin, Director of the Institute of Information Technologies, Mechanical Engineering and Motor Transport of the T.F. Gorbachev Kuzbass State Technical University, representatives of the student contingent - E. Sorinkin - student of the OP "Computer engineering and software".

1 . Analysis of the current situation and trends in the development of the labor market and educational services

Educational activities

Students of the educational program have the opportunity to acquire theoretical knowledge and practical skills, both in the course of lectures, and in practical and laboratory classes. For this purpose, the OP "Computing Machinery and Software" has a classroom fund equipped with modern technical training facilities; specialized classrooms equipped with modern equipment. They are: These are the audiences: 102, 206, 207, 207b, 207b, 211, 212, 216, 217, 313.

On the basis of the Department of Information and Technical Sciences, an IT LAB ACCELERATOR was launched for teaching staff and students in the IT direction. The purpose of the accelerator is to increase the intellectual potential of students and develop skills in the IT field for everyone. The latest equipment is designed for in-depth study of subjects included in the curriculum, as well as for creative work in the process of creating start-up projects. The total training area used corresponds to the normative indicators, the norms of the sanitary and fire service.

Innovative and interactive forms of education are widely used in the classroom, students' participation in research work and creative competitions in the specialty is achieved. Practitioners and foreign qualified lecturers are invited to give lectures and conduct seminars. Due to force majeure (quarantine restrictions in connection with the coronavirus pandemic), lectures on the disciplines of the OP "Computer Modeling" group I-314 Ivina Oksana Anatolyevna, Ph.D., Associate Professor, T.F. Gorbachev KuzSTU, Kemerovo, Russia are scheduled; "Software development technology" group I-414 Vaneev Oleg Nikolaevich, Candidate of Technical Sciences, Associate Professor. KuzSTU named after T.F.Gorbachev, Kemerovo, Russia in the 2020-2021 academic year was carried out in the online format.

Every year, on an ongoing basis, the content of educational programs and the catalog of elective disciplines is reviewed by social partners and potential employers.

Students have the opportunity to receive additional competencies in Minor programs for university students as part of the development of the Major basic educational program;

Strengths:

- the use of innovative training methods on an ongoing basis;
- attracting employees of enterprises to give lectures and conduct practical and laboratory classes;
- the demand for graduates of the educational program in the labor market both at the regional level and at the national level;
- the opportunity to continue studying at foreign partner universities under joint programs;
- ample opportunities to support talented youth at various levels.

For the strategic development of educational activities in the OP "Computer Technology and software", it is necessary to strengthen the following aspects:

- to increase the number of foreign students attracted to the educational program;
- to increase the level of teaching staff proficiency in foreign languages;
- to activate the work of scientific circles, workshops, laboratories for instilling SoftSkills and WorldSkills skills in children with further involvement of students of secondary general education and secondary vocational institutions in various university events and further admission to the OP;
- open new classrooms, including with the involvement of social partners and other stakeholders.

Research activities.

Research work is reflected: in the implementation of research projects carried out by the university and its scientific and structural units; in the organization and conduct of scientific and practical events that gather famous scientists and practitioners, young scientists, students within the walls of the university; in published scientific papers, the results of conferences and round tables. The scientific work of students is a continuation and deepening of the educational process and is organized directly at the departments, in student scientific and technical associations (scientific circles, centers, etc.). The OP "Computer Engineering and software" is provided with scientific infrastructure, within the department there are three scientific circles, including the circle "Programmer" with quantitative composition more than 30 students annually.

The circles are held according to a drawn-up plan, taking into account the interests of students, individual abilities and inclinations. The purpose of the work of the circles is to improve the quality of training of highly qualified specialists and the formation of students' scientific search skills. The result of the work of the circle is active participation in student scientific and practical conferences, according to the results of which participants take prizes.

The forms of attracting students to research activities are expressed in the form of students' participation in the implementation of research projects.

On the basis of the Department of "Information and Technical Sciences" in the IT LAB ACCELERATOR, advanced training courses are held for faculty staff in two areas: "Practical web programming: Modern standards and trends", "Practical Java programming".

The Department of "ITN" conducts active research work of teachers and students. Research work is a mandatory, integral part of the training of qualified specialists at the university, as an inseparable component of a single process: educational and scientific-innovative.

Work is underway on the initiative topics of the department, registered in the National Center of NTI RK:

- "Research of algorithms for the development of a smart mobile application for testing based on the Kotlin programming language" scientific supervisor PhD Karipzhanova A.Zh. (Department of Information Technology Sciences);

- Modern problems and prospects for the development of digital technologies (0119RKI0174) - scientific supervisor Candidate of Physical and Mathematical Sciences Kurmanbaev E.A. (Department of Information Technology Sciences);

-Residents of "Abai IT-Valley" took the second place at the hackathon in Karaganda. Scientific supervisor senior lecturer Nauryzbayev Bauyrzhan Amangazievich. (Department of Information Technology Sciences)

For the period 2017-2020 . The teaching staff of the department published 39 articles in journals recommended in the KKSON of the Ministry of Education and Science of the Republic of Kazakhstan - 2, articles in international rating journals – 2, 2 textbooks with a volume of 18.25 pp.

According to the Department of "Information and Technical Sciences" on 15.02.2020 at the Gumilev Eurasian National University, Nur-Sultan, the defense of the doctoral dissertation of Karipzhanova A.Zh. in the direction "6D070300-Information technologies" on the topic "Methods and algorithms for creating distributed databases of an information system" took place.

At the Department of Information and Technical Sciences received 3 copyright certificates: Marat M.A., Karipzhanova A.Zh., Nauryzbayev B.A. - photographic work: "3Dtour «Alikhan Boleikhan University» EI (No. 7626 dated January 20, 2020); Omarbekov E.D., Nauryzbayev B.A. - computer program: "Crowdsourcing platform "MY BIG IDEA"" (No. 9276 dated April 15, 2020); Malikov N.T., Nauryzbayev B.A., Kudaibergenova B.S. - computer program: "Vi 2019-nCoV" (No. 8090 dated February 11, 2020)

In December 2020, an IT LAB ACCELERATOR for teaching staff and students in the IT field was launched on the basis of the Department of Information and Technical Sciences. The purpose of the accelerator is to increase the intellectual potential of students and develop skills in the IT field for everyone. The latest equipment is designed for in-depth study of subjects included in the curriculum, as well as for creative work in the process of creating start-up projects.

On February 28-29, 2020, ITEF students Sorinkin E., VT-902, Duisek B., I-417, Telagisov D., VT –214, Marat M.A., MI-221 were awarded letters of thanks for participating in the Hackathon "Yassawi SmartTech" on IT technologies, organized by the International Kazakh-Turkish University named after A.Yassawi.

With the positive dynamics of improving the quality of scientific research, searching for opportunities to commercialize the results of scientific activity, increasing the scientific activity of teaching staff and students, the following points remain relevant:

- decrease in the share of teachers who have completed scientific training, advanced training in research centers, far and near abroad, at enterprises

- there is a lack of involvement of students in research work;

- weak participation in republican student subject Olympiads and R & D competitions;
- insufficient connection of science, education and production, low level of implementation of research results in production;
- insufficient level of research effectiveness and citation of scientists and the university.

Educational and social activities.

The priority task of the state and the university is to create conditions for the intellectual, spiritual, moral and physical development of students.

Educational work at the Department of "Information and Technical Sciences" is carried out according to the approved plans of educational work. The goal-setting basis of educational work at the department is the creation of conditions for the active life of students, for civil self-determination and self-realization, for maximum satisfaction of the needs of students in intellectual, cultural and moral development.

Patriotic education, its urgent need is recognized in any state and is one of the main directions of education in «Alikhan Boleikhan University» EI. The curators of the groups conducted curatorial hours in the following areas: ideological-political and civil-patriotic education; ideological and moral education, measures for the formation of a healthy lifestyle. Students of the department participated in city (intra-university) clean-up days, gardening, in the actions "Students against AIDS", "Youth without drugs".

Assessment of the level of involvement of students in creative activity is a priority indicator of evaluating the effectiveness of the organization of educational work. The main indicator of involvement is the increase in students involved in the organization of educational activities in the OP "Computer technology and software".

The system for assessing the level of involvement is based on the monitoring and reporting mechanisms of faculties. The main performance indicators are: information about the achievements of students who are participants of city, regional, republican and international competitions, competitions, festivals; information about the involvement of students in the work of the Youth Affairs Committee. The level of involvement is monitored at the end of each half-year and the final report is submitted to the educational department of the university at the end of each academic year. So, an example of the indicators of involvement, taking an active part in the implementation of activities in the field of creative and personal development of students: in 2018 – 81%, in 2019 - 84%. In 2020, due to the pandemic, the number of participants decreased and amounted to 72%.

The university has an incentive system, expressed in the approval of the annual budget for conducting educational work by students.

But at the same time, some issues require further improvement:
- weak participation in regional, republican student competitions and sports events;
- decrease in the proportion of students employed in youth organizations and creative associations associated with restrictive measures;
- reduction of the number of students participating in city, regional, national and international creative competitions.

International activities.

The results of international cooperation in the field of scientific research of the department and the international department of «Alikhan Boleikhan University» EI with partner universities are reflected in the signed cooperation agreements with other educational organizations.

The Department of Information and Technical Sciences cooperates with the following universities of the near and far abroad:
1. University of Economics and Management (Czech Republic, Prague)
2. Irkutsk State Agricultural Academy
3. University of Nebraska at Omaha
4. Kuzbass State Technical University named after T.F. Gorbachev
5. KNOW HPE "Siberian Academy of Finance and Banking" Novosibirsk, Russia
6. Novosibirsk State Technical University
7. Financial University under the Government of the Russian Federation, Barnaul branch
8. Novosibirsk State University of Economics and Management

9. Kharkiv National University
10. Pamukkale University
11. Non-governmental educational institution "Moscow Institute of Technology" (Moscow, Russia)
12. Tomsk State University of Control Systems and Radioelectronics (Tomsk, Russia)
13. Sofia University named after Clement of Orchids
14. Novosibirsk State University of Architecture and Civil Engineering (Sibstrin), Novosibirsk, Russia
15. Sofia Technical University (Bulgaria, Sofia)
16. International University of Kyrgyzstan
17. New Bulgarian University (Bulgaria, Sofia)
18. International University Final (Turkish Republic of Northern Cyprus)
19. Moscow City Pedagogical University (Russian Federation, Moscow)
20. Varna Free University (Bulgaria, Varna)

Within the framework of academic mobility, the ITN Department cooperates with three universities of the near and far abroad: Sofia Technical University (Bulgaria, Sofia), Kuzbass State Technical University named after T.F. Gorbachev, Novosibirsk State University of Architecture and Civil Engineering (Sibstrin) (Novosibirsk, Russia).

Despite the achievements in this area, some issues require urgent solutions, in particular:

- insufficient knowledge of a foreign language by students of the OP, as well as teaching staff, for the implementation of academic mobility;
- insufficient funding for the development of academic mobility programs for students.
- low motivation of teaching staff to improve language competencies.
- a low proportion of attracting foreign students to study under the OP;

Resource support of the educational program.

The difference and uniqueness of the OP is that there is a good material and technical base that meets modern requirements. This is the availability of specialized offices and laboratories, further work is underway to purchase modern computers and special equipment for laboratories.

All buildings are equipped with the necessary number of lecture halls, many of which are equipped with projectors and interactive whiteboards, which gives teachers ample opportunities for high-quality classes. Practical and seminar classes are also held in specialized classrooms. There are educational and scientific laboratories, the equipment of which is reviewed and improved annually. So, to ensure the quality of the educational process within the framework of the OP "Computer Technology and Software" in building No. 2, classrooms 212, 102 are equipped with multimedia projectors.

Acting within the framework of the credit system of education, favorable conditions have been created for students to master all disciplines of the educational program and obtain an academic degree in accordance with the requirements of the SES and has modern information and communication bases (AIS University, broadband Internet access, electronic library), contributing to the intensification of the educational process and the conduct of the educational process and research.

Teaching staff of the ITN department use innovative educational technologies and modern teaching technologies. Specialized classrooms such as 102, 212, 210a, 210b are used for the application of these technologies in the educational process of the OP. For information and technical support of the main production processes (educational, scientific, managerial, etc.), the university has a sufficient fleet of computers located in structural divisions, in computer classes, laboratories and classrooms.

At annual meetings with employers and social partners, questions are raised about the use of various software products that are used in practice, as well as graduates in their questionnaires indicated the need to use various software tools in the educational process.

Strengths:
- good material and technical base used in the educational process;
- availability of specialized classrooms and laboratories for the formation of additional competencies in OP;

- modern information and communication bases contributing to the educational process.

But at the same time, it is necessary to supplement the educational process with software products, similar to those used in production

3. Directions of the OP development plan, purpose, objectives, expected results, target indicators, implementation measures

- Strategic directions of the OP development plan:

Strategic direction 1 . Improving the quality of educational activities. The direction corresponds to the adopted "State Program for the development of education and science of the Republic of Kazakhstan for 2020-2025".

Strategic direction 2. Development and improvement of the quality of research and innovation activities. This direction affects the main objectives of the state program "Digital Kazakhstan", as amended by the Decree of the Government of the Republic of Kazakhstan dated 20.12.2019 No. 949.

Strategic direction 3. Improvement of educational and social work of students. The principles and main provisions in this area are implemented within the framework of the National Program "Rukhani Zhangyru" – a look into the future.

Strategic direction 4. Expansion of international cooperation.

The purpose of the development plan of OP 6B06124 "Computer technology and software" is to train specialists who are competitive in the labor market, have the skills to install, configure and maintain system, tool and application software, computer technology and computer systems with programming languages such as PHP, MATLAB, C++, Java, JavaScript, Python.

The main objectives of the implementation of the development plan of the OP "Computer technology and software":

- training of in-demand personnel with higher education that meets the needs of the modern labor market;
- providing practice-oriented training and the final result;
- involvement of students in research activities with subsequent publication of research results in scientific publications, development of a software product in demand in various spheres of society;
- increasing the publication activity of teaching staff in order to focus scientific research on the current needs of the economy and society, increasing the potential for commercialization of scientific results;
- increasing the proportion of students participating in regional, national and international scientific and creative competitions;
- graduation of competitive specialists with knowledge of a professional foreign language and software products used in practice.

Expected results of the OP "6B061 Information and Communication Technologies"

- increase of satisfaction of internal and external stakeholders with the quality of professional training of graduates;
- increasing the share of the dual training system (up to 2-3 disciplines) at the leading enterprises and organizations of the region;
- successful employment of at least 80% of graduates during the first year after graduation;
- increase in the number of students taking part in various competitions and publishing scientific results to 60% of the total number of students in the OP "6B061 Information and Communication Technologies";
- an increase in the publication of the teaching staff of the OP "6B061 Information and Communication Technologies" in rating publications (based on information resources on the Web of Science (Clarivate Analytics) and Scopus (Elsevier), etc.);
- an increase in the share of teaching staff who have completed language competence improvement courses (from full-time teaching staff);
- participation in scientific projects and programs focused on the needs of the real market. - -

Target indicators and measures for their implementation in the framework of OP 6B07125 "Electric Power Industry"

Target indicators	Unit of measurement	in the planned period					
		2021	2022	2023	2024	2025	2026
1	2	3	4	5	6	7	8
Increase in the share of graduates who studied under the University's Bachelor's degree program, employed in the first year after graduation	%	50	55	60	65	70	80
Number of dual programs within the framework of memorandums of cooperation with external stakeholders	Qty	-	1	1	2	2	3
The percentage of teaching staff who have completed advanced training courses on new teaching methods to improve and master new competencies according to the OP.	%	20	40	50	60	70	100
Coverage of students participating in research from the total contingent of full-time students (without distance learning)	%	30	30	40	50	50	60
Growth of university publications in rating publications (based on information resources on the Web of Science (ClarivateAnalytics) and Scopus (Elsevier), jStore, etc.)	%	5	10	10	15	20	20
Percentage of teaching staff who have completed language competence improvement courses (from full-time teaching staff);	%	-	5	10	15	15	20
Number of joint educational programs with partner universities	Qty	-	1	1	2	2	3
The share of students covered by participation in public organizations of	%	-	5	5	10	10	15

the university and the region						
Measures to achieve the target indicators	2020	2021	2022	2023	2024	2025
Implementation of dual education programs for students		X	X	X	X	X
Conclusion of agreements and memoranda on creative cooperation within the framework of the OP	X	X	X	X	X	X
Allocation of financial resources for the University teaching staff to take advanced training courses on new digital technologies to improve and master new knowledge	X	X	X	X	X	X
Involvement of students, undergraduates and doctoral students in research	X	X	X	X	X	X
Participation of scientists in joint research projects with universities of Kazakhstan and abroad		X	X	X	X	X
Conclusion of agreements and memoranda on joint programs	-	X	X	X	X	X
Participation of students and young personnel in various events of the university, city and region		X	X	X	X	X
Improvement of the OP based on a competent approach and the introduction of modern educational technologies and methods into the educational process. Coordination and development of educational standards in accordance with the needs of employers and social partners. Creation of new OP adapted to modern conditions, taking into account new achievements in science, technology and industry, as well as the requirements of employers.						
Improving the rating of the department and establishing contacts with employers. Conclusion of agreements on interaction and cooperation with leading IT companies. Annual participation in the job fair with the invitation of business representatives to employ graduates in priority sectors of the economy of the Republic of Kazakhstan						
Monitoring of customer satisfaction with the quality of educational services provided. Annual survey: former graduates, last-year students who have completed practical training. Monitoring of employers' satisfaction with						

the quality of training of faculty specialists with positive feedback on the quality of training of specialists						
Development of continuing education at the university. Carrying out activities aimed at the continuity of education levels in the context of continuity: bachelor's degree- Master's degree. Orientation of trainees to the values of continuing education: personal meanings, readiness, interests, etc. Formation of a qualitative contingent of students at the department						
Activation of scientific activity of trainees. Attracting students to work on research projects Participation in student conferences, creative work competitions, in the presentation of the results of their own research at interuniversity conferences. Involvement of trainees in the performance of cathedral scientific research. Organization of annual student conferences, Olympiads, contests, round tables, business and role-playing games.						
Strengthening and expanding the department's interaction with external organizations. Support of business contacts with scientists from other cities of the Republic of Kazakhstan in the following areas: reviewing and opposing dissertations, scientific articles, methodological manuals. preparation and publication of articles, joint textbooks, collective monographic publications, conducting joint scientific research and scientific events, examination of documents, projects, problem situations, participation in the work of editorial boards of scientific publications, participation in conferences, Olympiads, round tables, congresses						
Qualitative restructuring of the teaching staff of the department. Development and approval of the professional development plan of the teaching staff of the department. Participation of teaching staff in international summer schools and seminars on IT technologies						
Updating the personnel potential of the department. Conducting competitions to fill vacant positions of the department on the basis of competitive selection and an						

objective approach to evaluating the activities of employees. Updating the staff of the teaching staff of the department on the basis of continuity: attracting the most competent graduates of the university, as well as specialists in the practical field of activity to teaching and scientific activities						
Development of infrastructure and material and technical base: expansion of the classroom fund of the department for educational and scientific activities. Carrying out measures to form a modern educational and laboratory base: creation of the IT infrastructure of the department; acquisition of modern software; updating of the computer park through the acquisition of a new generation of computers; acquisition of modern multimedia equipment.						
To improve dual training to create additional opportunities to improve the effectiveness of training in the field of engineering and technology. Organization of internships and research practices for graduate students in advanced IT universities and research institutes of the near and far abroad						

4. Mechanisms of implementation of the OP development plan

The development of the OP development plan provides an integrated approach to the implementation of activities aimed at achieving the set goal through the solution of formulated specific tasks, contributes to the full implementation of planned activities

At the end of the academic year, at the meeting of the department, the monitoring of the OP "6B061 Information and Communication Technologies" is carried out, with the participation of all interested parties, the results achieved, the effectiveness and efficiency of the implementation of the OP are discussed. The analysis of the achievement of target indicators is considered at a meeting of the department with the participation of leading teaching staff, other interested persons.

The monitoring results are submitted for discussion to the Academic Quality Council of the Faculty. Based on the analysis of the monitoring results, adjustments are made to the OP development plan, but no more than 2 times a year.

Monitoring of the implementation of the Development Plan is carried out by analyzing and summarizing information on the implementation of development indicators in the following areas. Based on the results of the monitoring, the management of OP "6B061 Information and Communication Technologies" is preparing a conclusion on the implementation of the Development Plan.

The conclusion is drawn up in any form and sent to the Dean of the Faculty and is the basis for drawing up the annual report of the faculty within the framework of strategic indicators and results for evaluating the Development Strategy of the university as a whole.

The processes of formation, monitoring and implementation of the OP development plan should be based on the principles of openness and transparency. The OP development plan is posted on the official website of the university.

5. Risk management arising in the process of implementing OP 6B07125 "Electric Power Industry"

Name of possible risk	Possible consequences in case of failure to take risk management measures	Risk management measures
1	2	3
Reduction of the contingent of students in the OP	Reduction of the number of students, reduction of the staff of teaching staff	It is necessary to carry out active work on the attractiveness of this specialty in order to attract a new contingent of students on the basis of attracting grants and scholarships to students
Decrease in the output of educational and methodological literature in the state language in specialized disciplines	A possible decrease in the quality of graduates and the assimilation of students in the state language.	Increase in the production of own publications of the UMR faculty of the department according to the content of the OP courses and their acquisition from outside
The outflow of personnel from the education and science system caused by the discrepancy between the level of wages in the industry and the average level of wages in the country	Reduction of scientific potential of teaching staff	Training of scientific personnel through master's and doctoral studies (PhD) on the basis of attracting grants and other sources of funding. Involvement of practical programmers, heads of leading organizations, large companies, etc. in the educational process.
Weak motivation of teaching staff to publish scientific papers in journals with a high citation index	Decrease in the share of teaching staff who have the opportunity to manage scientific projects and graduate works on OPTIMIZATION	To make a plan for publications of teaching staff in foreign publications with a non-zero impact factor with the search for funds from grant projects from the state budget, receiving scholarships for scientific research (the best university teacher)
Decrease in the proportion of students covered by external academic mobility	Reducing the attractiveness of the OP, not mastering the target indicators	Ensuring academic mobility of students and teaching staff on a permanent basis, through joint educational programs with partner universities
Insufficient volume of orders for research work from the enterprises of the region	Reduction of the level of commercialization of research works at the university	Expand the search for potential customers for research and development, expand the range of research directions offered by the university

6. Financial support of the OP development plan

Financial support for the implementation of the Development Plan of the OP "6B061 Information and Communication Technologies" for 2020-2025 will be provided from the funds of the university, as well as by attracting funds from state and other sources of funding.

Capital and operating costs are assumed.