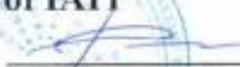


**MINISTRY OF SCIENCE AND HIGHER EDUCATION
OF THE REPUBLIC OF KAZAKHSTAN
NON-COMMERCIAL JOINT-STOCK COMPANY
“ALMATY UNIVERSITY OF POWER ENGINEERING AND
TELECOMMUNICATIONS
NAMED AFTER GUMARBEEK DAUKEYEV”
Institute of automation and information technologies**



"Approved"
Director of IAIT

Fedorenko I.A.
« 28 » . 08 2023

**DEVELOPMENT PLAN
OF THE EDUCATIONAL PROGRAM
6B06102 – Information Systems
for 2023–2028**

**Level of the Main Educational Program
(Bachelor's Degree, Level 6)**

OVERVIEW OF THE MODULAR EDUCATIONAL PROGRAM

The modular educational program “**6B06102 – Information Systems**” was developed by the Department of IT Engineering in accordance with the Law of the Republic of Kazakhstan “*On Education*” dated July 27, 2007, and the following regulatory documents:

- The State License (unlimited) for conducting educational activities No. KZ80LAA00018161 dated May 5, 2020 (initial license No. AB0137445 dated August 4, 2010);
- The State Mandatory Standard of Postgraduate Education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan No. 2 dated July 20, 2022);
- The Standard Rules for the Activities of Higher and Postgraduate Education Organizations (Order of the Minister of Education and Science of the Republic of Kazakhstan No. 282 dated June 9, 2021);
- The Rules for Organizing the Educational Process under the Credit Technology of Education (Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 152 dated April 20, 2011, as amended on October 12, 2018, No. 563);
- The Charter of the Non-Commercial Joint-Stock Company “Almaty University of Power Engineering and Telecommunications named after Gumarbek Daukeyev”;
- The National Qualifications Framework (approved by the Protocol of March 16, 2016, of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations), which regulates the requirements for graduates awarded the academic degree of Bachelor under the educational program “6B06102 – Information Systems.”.

The objective of the educational program “6B06102 – Information Systems” is to provide comprehensive and high-quality training of qualified and competitive specialists in various fields of application of information systems, as well as to foster students’ personal development and to form general cultural universal competencies (general scientific, socio-personal, and instrumental) along with professional competencies.

The mission of the educational program “6B06102 – Information Systems” is to provide high-quality education in the field of information systems aimed at preparing specialists who are capable of successfully competing in the labor market and contributing to the development of information technologies in the country.

The duration of the Bachelor's degree program is 3 years. Graduates of the educational program are awarded the academic degree of Bachelor in Information and Communication Technologies under the educational program “**6B06102 – Information Systems**.”.

The effectiveness of the Development Plan of the Educational Program is evaluated by the University through the implementation of a SWOT analysis. The results of the SWOT analysis serve as a basis for the improvement and further development of the educational program. The SWOT analysis of the Educational Program Development Plan is presented in Table 3.

2. MANAGEMENT MECHANISMS OF THE EDUCATIONAL PROGRAM

At the level of long-term planning, general priority areas and strategic objectives for the development of the educational program are identified, including relevant performance indicators and metrics. The documents related to long-term planning include the University’s vision, mission, development strategy, quality assurance policy, and institutional development plan. Based on these documents, short-term development plans for educational programs are formulated.

Short-term planning at the University level is represented by the quality objectives of Almaty University of Power Engineering and Telecommunications named after Gumarbek Daukeyev, the work plans of collegial governing bodies, and annual operational plans by areas of activity, which take into account the challenges associated with the implementation of educational programs. At the level of structural units, the planning of educational program development is reflected in the quality objectives of institutes and graduating departments, comprehensive development plans of institutes, and departmental work plans. Institute and department plans necessarily include implementation timelines, responsible persons, and a column for reporting on the completion of activities. One of the key requirements for short-term plans is their alignment with the University's mission, strategic goals, and objectives, as well as the inclusion of a section dedicated to performance improvement. This integrated system of plans serves as the primary mechanism for the development of educational programs and the assurance of their quality. The plans address academic and methodological issues, practice-oriented components, and material and technical aspects related to the development of educational programs. At the individual level, planning is represented by the individual work plans of academic staff.

3. KEY OBJECTIVES OF THE EDUCATIONAL PROGRAM DEVELOPMENT PLAN

- ensuring effective quality management of the educational program implementation and improving the mechanisms for managing the educational process;
- training competitive and highly qualified specialists;
- improving the conditions for high-quality staffing of the educational program;
- strengthening the role of research and innovation activities in the development of the educational program;
- enhancing the resource potential necessary for the implementation of the educational program.

4. EDUCATIONAL PROGRAM DEVELOPMENT PLAN

The Development Plan of the educational program “**6B06102 – Information Systems**” for 2023–2028, including planned activities, implementation timelines, responsible persons, and implementation mechanisms, is presented in Table 1.

5. RISK MITIGATION MEASURES FOR THE EDUCATIONAL PROGRAM

Table 2 presents a list of measures aimed at mitigating risks arising during the implementation of the educational program.

Table 1 – Development Plan of the Educational Program “6B06102 – Information Systems”

Areas of Activity	Activities	Responsible Persons	Implementation Mechanism	Timeline
1	2	3	4	5
1. Ensuring Quality Implementation of the Educational Program and Improving Educational Process Management Mechanisms	1. Provision of the Educational Program with regulatory documents of the Ministry of Science and Higher Education of the Republic of Kazakhstan (State Educational Standards, Model Curricula, and Working Curricula), as well as internal regulatory documents (Regulations and Instructions (forms)).	University Management, Head of the Department of IT Engineering (ITE), Program Director	Submission of requests for the acquisition of regulatory documents to the Ministry of Science and Higher Education of the Republic of Kazakhstan and the Republican Educational and Methodological Council (REMC). Coordination with the Department of Analysis and Strategic Development and the Quality Management System (QMS) Office.	2023-2028
	2. Improvement of the Educational Program Structure. Updating the Modular Educational Program.	Head of the IT Engineering Department, Program Director	Annual updating of 15–20% of the educational program content based on the analysis of contemporary international best practices in the field, employer requirements, and labor market demands. Analysis of employers’ needs, assessment of graduates’ satisfaction, and monitoring of the achievement of the educational program learning outcomes.	2023-2028,
	3. Development and Enhancement of the Modular Principle in the Design of the Educational Program	Head of the IT Engineering Department, Program	Formation of modules taking into account the logical and content-based interrelation of disciplines. Ensuring a unified methodological approach	2023-2028

		Director	to teaching. Development of student cohorts for independent study based on the integrated content of academic disciplines.	
	4. Systematic Improvement of the Educational and Methodological Support of the Educational Program	Head of the IT Engineering Department, Academic Staff	Annual updating of teaching and learning support materials taking into account employer requirements, graduate satisfaction, and the professional development of academic staff.	2023-2028
	5. Cooperation with Industry and Public Sector Organizations to Enhance Specialist Training in Information Systems, Organize Industrial Internships, and Promote Graduate Employment	Head of the IT Engineering Department, Program Director, Academic Staff, Internship and Career Services Office	Organization of master classes, round tables, and research seminars with the participation of leading companies. Participation in the organization of industrial internships. Analysis of the demand for young specialists across relevant industry sectors.	2023-2028
2. Training of Competitive and Highly Qualified Specialists	1. Development and Improvement of the Catalog of Elective Disciplines (CED) Taking into Account Stakeholder Proposals	Head of the IT Engineering Department, Program Director	Interaction with employers. Annual updating of disciplines within the Modular Educational Program based on employer proposals, taking into account research results and the professional development of academic staff.	2023-2028
	2. Development and Implementation of a Multilingual Training Program within the	University Administration, Head of the	Development of training programs and enhancement of academic staff qualifications, including improvement of foreign language	2023-2028

	Educational Program	IT Engineering Department, Program Director, Academic Staff	proficiency (up to 40% by 2028).	
	3. Development and Implementation of Innovative Teaching Methods	Head of the IT Engineering Department, Management of the Institute of Automation and Information Technologies (IAIT), Program Director	Professional development of academic staff. Discussion of issues related to the improvement of teaching methodologies at departmental and institute-level methodological seminars. Implementation of interactive teaching methods.	2023-2028
	4. Formation of a High-Quality Student Body	Head of the IT Engineering Department, Academic Staff, Department of Information Technologies, Admissions and Recruitment	Implementation of a career guidance plan, regular updating of the department's webpage, and provision of consultations by academic staff within the Admissions Office.	2023-2028

		Office		
	5. Implementation of Academic Mobility for Students and Academic Staff	Head of the IT Engineering Department, Administration of the Institute of Automation and Information Technologies (IAIT), Academic Staff, International Relations Office	Student exchange studies and academic staff internships at foreign universities. Expansion of the list of partner universities. Implementation of dual-degree programs.	2023-2028
3. Improvement of Conditions for High-Quality Staffing of the Educational Program	1. Increasing the proportion of academic staff holding advanced academic degrees to 75% through PhD studies, participation in internships, and the recruitment of foreign faculty members with doctoral degrees.	Head of the IT Engineering Department, University Administration, Department of Science and Commercialization	Professional development of academic staff. Encouragement and motivation of young faculty members to enroll in PhD programs. Engagement of highly qualified PhD graduates in teaching and research activities. Development of a plan for inviting international scholars to deliver courses and to organize joint research projects.	2023-2028
4. Strengthening the Role of Research and Innovation Activities in the Development of the	1. Intensification of research activities within the department. Participation in grant-funded and contract-based research projects.	Head of the IT Engineering Department, Academic	Active involvement of academic staff and students in competitive and externally funded research projects. Increase in innovation-oriented research	2023-2028

Educational Program	Expansion of cooperation with international partners for the implementation of joint research projects and the publication of teaching and methodological materials.	Staff	outputs, including the submission of patent applications and the practical implementation (commercialization) of research results. Integration of research outcomes into the educational process and publication of research findings in high-impact, peer-reviewed journals indexed in international databases.	
	2. Achievement of Commercialization of Research Results of the Department's Academic Staff	Head of the IT Engineering Department, Department of Research and Commercialization, Academic Staff	Increase in the number of research projects and programs implemented in cooperation with national companies and private enterprises.	2023-2028
	3. Encouragement and Motivation of Students for Active Participation in Research Activities	Head of the IT Engineering Department, Academic Staff	Participation of students in national and international competitions. Involvement of students in departmental research projects. Increase in the number of students participating in funded research projects.	2023-2028
	4. Increase in Publications by Academic Staff and Doctoral Students in Journals with a Non-Zero Impact Factor	Head of the IT Engineering Department, Academic Staff	Preparation of research publications in journals with an impact factor indexed in international scientometric databases such as Web of Science (Clarivate Analytics, formerly Thomson Reuters) and Scopus.	2023-2028
5. Development of	1. Acquisition of New Laboratory	Head of the IT	Annual procurement plans.	2023-2028

Resource Capacity for the Implementation of the Educational Program	Equipment	Engineering Department, Academic Staff		
	2. Acquisition of Office Equipment, Research Equipment, Technical Teaching Aids, and Instructional Materials	Head of the IT Engineering Department, Program Director	Annual Procurement Plans	2023-2028
	3. Development of the Department's Information and Educational Resources (Website, Portal, Electronic Course Materials, etc.)	Head of the IT Engineering Department, Academic Staff, Department of Information Technologies	Activities for the Development of the University's Information and Educational Resources	2023-2028
	4. Development of Various Forms of Material and Moral Incentives for Academic Staff	Head of the IT Engineering Department	Academic Staff Performance Ranking	2023-2028
	5. Establishment of Thematic Laboratories in Cooperation with Leading Companies and Manufacturers of Innovative Equipment	Head of the IT Engineering Department, Program Director	Conclusion of cooperation agreements and provision of facilities.	2023-2028

Table 2 – Risk Mitigation Plan

№ п/п	Description of Potential Risks	Mitigation Measures
1	Insufficient availability of updated teaching and methodological literature in professional disciplines in the state language.	Planning the annual publication of scientific and teaching materials by the academic staff of the department in accordance with the working curriculum. Enhancing the involvement of academic staff in the development and integration of teaching materials in the state language into the educational process.
2	Decline in student enrollment in the educational program and transfer of students to other universities.	Development of a comprehensive career guidance plan for schools and colleges in Almaty and other regions. Organization of joint scientific and educational activities with school students, including master classes in schools and colleges and the organization of academic competitions. Active engagement and promotion through social media platforms.
3	Insufficient foreign language proficiency among applicants.	Conducting diagnostic foreign language testing among first-year students. Motivating students by offering opportunities to participate in academic mobility programs at the University's foreign partner institutions.
4	Decline in the quality of education due to insufficient background knowledge in natural science disciplines among incoming students.	Increase in the minimum admission score for enrollment in the educational program under state-funded grants. Organization of preparatory courses for prospective applicants. Selection and outreach activities targeting potential applicants in secondary schools.
5	Rapid obsolescence of the existing material and technical base.	Timely and planned procurement of modern equipment. Conclusion of agreements with enterprises to enable the joint use of their laboratory facilities in the educational process.
6	Obsolescence of traditional teaching methods.	Improve and implement innovative teaching technologies in the educational process. Update the technical teaching tools used in instruction.
7	Increase in the average age of academic and research staff.	Training of highly qualified research personnel through Master's and doctoral (PhD) programs in accordance with modern academic standards. Recruitment of young specialists holding doctoral and/or Master's degrees. Creation of favorable conditions for the career development of young professionals.

8	Low publication activity of academic staff in high-impact journals.	<p>Development of a publication plan for academic staff in journals recommended by the Committee for Quality Assurance in Science and Higher Education of the Republic of Kazakhstan (CQASHE) and in international journals with a recognized impact factor.</p> <p>Active participation of academic staff in grant competitions announced by the ministries of the Republic of Kazakhstan and international organizations to obtain funding for research projects.</p>
9	Termination of cooperation agreements with industrial partners.	Timely conclusion and renewal (prolongation) of partnership agreements with leading industry enterprises for internships and subsequent employment opportunities.
10	High competition from other universities offering similar educational programs.	Participation in national, regional, and international rankings (e.g., the Atameken ranking). Benchmarking analysis of similar educational programs implemented at other universities.

Table 1 – SWOT Analysis of the Educational Program Development Plan “6B06102 – Information Systems”

Strengths	Weaknesses
<ul style="list-style-type: none"> • The educational program has been developed in collaboration with employers. • Availability of four independent study tracks (specializations). • Well-equipped modern teaching laboratories. • Existence of departmental competence centers in partnership with leading global vendors. • Highly qualified academic staff. • Involvement of experienced industry practitioners from major enterprises across various sectors in the educational process as faculty members. • Stable student enrollment. • Joint Master's degree program implemented in cooperation with the National Research Nuclear University MEPhI (Russia). • Strong demand from industry for graduates of the program, resulting in high graduate employability. • Established partnerships with industrial enterprises, enabling the implementation of research and development results into production processes. • Well-developed student social support policy (tuition discounts, incentives for achievements in competitions and research, scholarships and grants, including the Gumarbek Daukeyev scholarship). 	<ul style="list-style-type: none"> • Lagging behind leading positions in the Atameken ranking in the indicator “Statistical Data and Graduate Achievements.” • Limited availability of partner organizations in certain regions for organizing all types of student internships. • Insufficient number of publications in international peer-reviewed journals. • Aging academic staff and industry practitioners, with a low level of staff turnover and renewal. • Insufficient English language proficiency among academic staff, limiting effective international cooperation. • Inadequate provision of teaching materials in the state and English languages. • Low level of promotion, motivation, and engagement of young faculty members and students in research projects and innovation activities. • Low publication activity of academic staff and students. • Low level of student academic mobility.
Opportunities	Threats
<ul style="list-style-type: none"> • Established partnerships with global vendors provide opportunities for the creation of advanced training and certification centers. • Certification of graduates by internationally recognized organizations. • Professional development of academic staff on preferential terms in leading global companies. • Diversity and flexibility of study tracks (specializations). • Attractiveness of the educational program for prospective students and highly qualified faculty from other universities. • Recruitment of young industry practitioners. • Implementation of dual-degree programs in cooperation with international and national universities. • Growing demand for high-tech specializations enables continuous updating of study tracks and curricula. 	<ul style="list-style-type: none"> • Decline in the proportion of academic staff holding doctoral degrees due to delays in PhD defenses and retirement of senior qualified faculty members. • Rapid changes in the labor market requiring continuous revision and adjustment of the educational program. • Obsolescence of laboratory equipment, software, and computer infrastructure. • Growth in student enrollment leading to potential shortages of classroom space, laboratory facilities, and academic staff. • Limited availability of internship placements in regions amid increasing student enrollment. • Frequent changes in regulatory frameworks governing education and research. • Decline in the academic preparedness of incoming students due to insufficient school and college-level training.

<ul style="list-style-type: none">• Engagement of senior (4th-year) students in research activities to encourage further enrollment in Master's programs, teaching careers, and the development of startups.	<ul style="list-style-type: none">• Outflow of qualified faculty and researchers to higher-paying commercial sectors or other universities.• Loss of high-performing students to other domestic and international universities.
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Head of the IT Engineering Department



Tukenova L.M.

Program Director
Educational Program “6B06102 – Information Systems”



Tussupova B.B.