

**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  
Gumarbek Daukeyev”  
Institute of Automation and Information Technologies**



**Educational Program Development Plan  
6B06104 - «Artificial Intelligence and Data Analysis»  
For 2024–2028yy  
Level of the Main Educational Program  
(Bachelor's Degree, Level 6)**

## INFORMATION ON THE MODULAR EDUCATIONAL PROGRAM

### 1. Main goals and objectives of the development plan, with indications of timelines and stages of its implementation.

The primary goal of the development plan for the educational program 6B06104 – “Artificial Intelligence and Data Analysis” is to improve it in accordance with the university’s vision, mission, and strategy, aligned with market demands. It also aims to provide high-quality training for specialists who have mastered modern methods and technologies in the fields of artificial intelligence and data analysis. The program is designed to develop skills in machine learning, deep learning, natural language processing, and computer vision, as well as to teach students how to apply this knowledge to solve practical problems in various sectors, such as business, healthcare, finance, and others.

**The uniqueness of the educational program 6B06104 – “Artificial Intelligence and Data Analysis”** lies in the accumulation of up-to-date professional competencies and the modernization of the educational process through the implementation of curricula developed based on the university’s own scientific results, with the participation of employers as well as leading domestic and international professors and researchers.

The development strategy of NC JSC AUET named after G. Daukeyev defines the content of the EP 6V06104– “Artificial Intelligence and Data Analysis” – focusing on training a qualitatively new generation of highly qualified bachelors who are receptive to innovations and capable of organizing and conducting innovative research and implementation activities based on analytical approaches. Graduates acquire deep knowledge in programming, software development, project management for software products, and the technological aspects of information technologies.

**Mechanism for Developing the Plan.** When forming the Specification of the educational program 6B06104 – “Artificial Intelligence and Data Analysis,” the Development Plan of the educational program 6B06104, and the Working Curricula for the 6B06104 program, the experience of implementing similar programs at other universities in Kazakhstan, as well as in nearby and distant foreign countries, is taken into account.

The Specification and the Development Plan of the educational program 6B06104 – “Artificial Intelligence and Data Analysis” were prepared with the involvement of program developers and employers, considering the results of surveys conducted among students enrolled in the program (including analysis of student and faculty satisfaction, assessment of available and required resources for the program, including material and technical infrastructure, etc.).

Implementation period of the educational program 6B06104 – “Artificial Intelligence and Data Analysis”: June 9, 2024 – August 6, 2028.

### 2. Main Objectives of the Educational Program 6B06104 – “Artificial Intelligence and Data Analysis”

№	Task Name	Implementation Period	Expected Result
<b><i>Strategic Direction 1: Unified Scientific-Educational and Professional-Innovation Infrastructure of the University</i></b>			
1	Enhancing the efficiency of scientific-applied laboratories (SALs), focusing on innovations aimed at implementing the strategic industrial and innovation objectives of the Republic of Kazakhstan.	2024-2028	Implementation of NIPO complexes in the field of artificial intelligence: “Modernization of Information and Communication Technologies.”
2	Creation of scientific-methodological centers and corporate “science-education-production” units to promptly implement changes in the models, content, and technologies of professional	2024-2028	Scientific support for the accelerated diversification of educational processes: development of a four-tier competency-based professional model (profession-oriented, professionally-

	education in accordance with the evolving demand for qualifications and the quality of specialists.		based, professionally-identifying, and intercultural-communicative competency subsystems). Development of a graduate model.
3	Enhancing the Research Reputation of NC JSC AUET named after G. Daukeyev	April 2024 2025 2026 2027 2028	Training of research personnel and encouraging them to engage in research activities. Participation in international programs/projects.
4	Improving the university's ranking positions at the regional, national, and international levels.	Annually	Rating by IARA and the NC Atameken
5	EP Accreditation	2024-2028	Procedures such as accreditation. Obtaining the necessary permits.
6	Effectively implement the university's research and innovation development strategy.	April 2024 2025 2026 2027 2028	Ensuring that at least 10% of research is conducted on the basis of innovation-oriented enterprises and business management organizations.
7	Providing the system of professional higher education and others with modern innovative content.	April 2024 2025 2026 2027 2028	Providing Educational and Methodological Support for the EP 6B06104 – “Artificial Intelligence and Data Analysis”
8	Ensure the commercialization of science and attract external funding for applied research.	Entire Study Period	Ensuring that at least 2% of students in the bachelor's and master's programs are funded by employers.
9	Updating the educational program in accordance with labor market requirements	Annually	Updating in the REESTRY of Educational Programs of the Bologna Process Center
<b><i>Strategic Direction 2: Training a New Competitive Generation of Graduates through the Modification of Core Specialties Based on Global and Domestic Labor Market Demand</i></b>			
1	Updating the Content of Educational Programs.	April 2024 2025 2026 2027 2028	Formation of professional competencies taking into account employers' recommendations. Preparation of documentation for updating the educational program in the reestry.
2	Defining specialist competencies and program courses in accordance with Professional Standards	February 2024 2025 2026 2027 2028	Updating competencies in courses and making changes to the Catalog of Elective Courses (CEC).

3	Implement the policy of incoming and outgoing academic mobility.	Entire Study Period	Enhancing the attractiveness of the range of educational services offered by the university and achieving an annual average increase of 3% in student enrollment.
4	Ensure collaboration in specialist training within the framework of social partnership: education – practice – employment. Engage employer partners and program alumni in delivering guest lectures, master classes, and trainings; discuss the educational program at Faculty Academic and Methodological Councils (AMC) and AEPC. Publish relevant information on the University’s website.	Annually April 2024 2025 2026 2027 2028	Ensuring the annual employment of 80% of bachelor’s program graduates.
5	Development of bachelor’s educational programs in English in collaboration with foreign partner universities.	April 2024 2025 2026 2027 2028	Improving the university’s ranking positions at the regional, national, and international levels
<b><i>Strategic Direction 3: Integration of Science, Education, and Innovation</i></b>			
1	Commercialization of scientific results obtained within the university’s units.	Annually	Enhancing the university’s research reputation. Development and implementation of internal university projects.
2	Development and implementation of a set of measures to further stimulate faculty participation in research activities.	Annually	Increasing the share of publications in international journals from the total number of publications indexed in Thomson Reuters and Scopus. Active participation of FTS and students in international conferences.
3	Organization of a targeted program for scientific schools to develop their own scientific-innovation image and recognition.	Annually	Участие в международных научных консорциумах для проведения исследований, научных семинаров, подготовки научных публикаций.
4	Использование результатов научных исследований в учебном процессе.	Entire Study Period	Integration of Scientific Results into the Educational Process of the Program 6B06104 – “Artificial Intelligence and Data Analysis”
5	Increase the number of commercialized SRW projects.	Continuously	Commercialization of SR Projects
<b><i>Strategic Direction 4: Innovation-Oriented Training and Retraining of the Academic Staff Reserve Domestically and Abroad</i></b>			

1	Implementation of a system of continuing professional education for faculty based on a competency-based model.	Regularly	Retraining and Professional Development of Scientific and Pedagogical Staff of the IT-Engineering Department
2	Strengthening the role of university administration in planning and managing faculty careers, taking into account each staff member's career orientation based on a career development plan.	April 2024 2025 2026 2027 2028	Activate the process of undergoing professional development courses and internships in the profile of the taught subjects (training internal staff, improving English language proficiency).
3	Expanding the range of offered continuing professional education programs, including distance learning options.	Annually	Developing the necessary competencies in the academic staff reserve. Enhancing financial literacy and the use of ICT in the educational process.
4	Creation of a system for selecting and providing scientific support to talented youth.	April 2024 2025 2026 2027 2028	Establishment of a system for the selection and scientific support of talented youth.
<b><i>Стратегическое направление 5: Интернационализация высшего специального профобразования и корпоративное научно-исследовательское взаимодействие с зарубежным научно-образовательным сообществом</i></b>			
1	Creation of a set of mechanisms for faculty internships within the framework of academic mobility, taking into account the university's needs for improving the educational and scientific content of its programs.	April 2024 2025 2026 2027 2028	Planning Internships for Faculty Members within the Framework of Academic Mobility
2	Development of cooperation with foreign educational institutions. Expansion of interaction with foreign and international organizations supporting education and scientific research. Broadening the scope of collaboration with European, American, and other international partners.	April 2024 2025 2026 2027 2028	Participation in international academic rankings. Develop cooperation with Bologna Process structures and its participants. Exchange of experience by faculty members within the framework of academic mobility with foreign partner universities. Participation in scientific projects, online lectures.
3	Participation in the QS World University Rankings (QS-WUR)	Annually	Participation in the QS World University Rankings (QS-WUR)
<b><i>Strategic Direction 6: Implementation of the National Idea "Мәңгілік Ел" and the State Head's Program for Modernizing Public Consciousness "Рухани жаңғыру"</i></b>			

1	Development, implementation, and organization of activities within the framework of the national idea «Мәңгілік Ел».	April 2024 2025 2026 2027 2028	Fostering the values of Kazakhstani patriotism (educational activities by group mentors). Activating the creative and innovative potential of students through increased participation in scientific and creative competitions, as well as social projects.
2	Implementation of student self-governance, involving students in academic and research activities, as well as in the university's collegial management bodies.	April 2024 2025 2026 2027 2028	Organization of collegial management bodies (APC). Engage students in competitions (Olympiad among students of the program 6B06104 – “Artificial Intelligence and Data Analysis” and the organization of roundtable discussions).
3	Implementation of monitoring the achievement of expected results in the field of social and youth policy using diagnostic research methods, in accordance with the recommendations of the Ministry of Science and Higher Education of the Republic of Kazakhstan.	April 2024 2025 2026 2027 2028	Surveying students regarding the quality of teaching and student satisfaction with learning outcomes, as well as the provision of conditions at the university for personal development and education.
4	Implementation of a comprehensive plan to counteract corruption at the University.	Regularly	Organization of activities on anti-corruption policy
<b><i>Strategic Direction 7: Modernization, Development of Infrastructure, Material-Technical Base, and Informatization of the University</i></b>			
1	Posting information about the educational program, department news, and scientific-methodological events on the website. Social media (development of a new format for department pages).	April 2024 2025 2026 2027 2028	Updating the university website's information database on educational programs and departments.
2	Assisting the Library and Information Center in enhancing the information literacy of university users.	April 2024 2025 2026 2027 2028	Increasing the publication activity of university researchers; monitoring the availability of scientific databases and electronic journals (FTS publications – registration in e-library, electronic library). Updating the library collection with professional literature (submitting requests for the acquisition of modern literature).
3	Operation of the Quality Management System	April 2024 2025 2026 2027 2028	Implementation, maintenance, and improvement of the Key Performance Indicators (KPI) system

4	Creating conditions for the education of students with special educational needs in accordance with methodological recommendations for implementing inclusive education at the university, with indicative indicators from the Ministry of Science and Higher Education of the Republic of Kazakhstan.	April 2024 2025 2026 2027 2028	Creating learning conditions and infrastructure for inclusive education
5	Improving and enhancing conditions for obtaining comprehensive, high-quality professional education (dual education).	April 2024 2025 2026 2027 2028	Acquisition of educational equipment fully aligned with modern specialist requirements in the fields of business and management, setting up classrooms and laboratories, and purchasing 1C software.
<b>Monitoring the Effectiveness of the Educational Program</b>			
1	Involving employers in the process of improving the educational program, defining graduate professional competencies, and preparing educational and methodological support for courses proposed by employers.	April 2024 2025 2026 2027 2028	When updating the content of the program 6B06104 – “Artificial Intelligence and Data Analysis,” include courses recommended by employers.
2	Strengthening ties with foreign partners to conduct joint scientific research and publish educational and methodological literature.	April 2024 2025 2026 2027 2028	Implementation of joint scientific research and publication of educational and methodological literature.
3	Expand the geography of internship bases (opportunities for internships across regions of Kazakhstan – Mangystau, Aktobe, Atyrau, Kyzylorda, etc.).	2024 2025 2026 2027 2028	Incorporation of exploratory and research work into the study of the educational program.
4	Organizing consultations with employers and researchers when selecting relevant and practically significant topics for thesis projects.	April 2024 2025 2026 2027 2028	Creating a list of relevant and practically significant topics, taking into account the suggestions of employers in the field of business and management.
5	Improving the Assessment of Learning Outcomes	April 2024 2025 2026 2027 2028	Improving independent study assignments, the format of test tasks, and exam formats.
6	Development/use of methods for determining the level of students’ acquired competencies	June 2024 2025 2026 2027	Analysis of results from final and interim assessments, outcomes of professional practice, and employer feedback.

		2028	
7	Employer surveys and faculty (PPS) questionnaires on program satisfaction, etc.	June 2024 2025 2026 2027 2028	Discussion at department meetings – reviewing the educational program, organizing roundtables with invited industry specialists, and discussing and analyzing employer feedback.

**Risk Map of the Educational Program 6B06104 – “Artificial Intelligence and Data Analysis”**

<b>№</b>	<b>Task Name</b>	<b>Risks</b>	<b>Corrective Measures</b>
1	Participation in Educational Program Rankings	Decline in the Educational Program’s Ranking Position	Pay attention to positioning the educational program in national rankings. Improve graduate employment outcomes by developing competencies that enhance graduates’ competitiveness in the labor market.
2	Accreditation of the Educational Program	Poor Implementation of the Educational Program	Development of innovative educational modules whose content meets the requirements of educational standards, the labor market, and employers. Involvement of professors from leading foreign universities and industry practitioners in international business in teaching and research activities.
3	Updating the content of the educational program in accordance with employer recommendations and labor market requirements.	Decline in the Relevance of the Educational Program’s Course Content	Studying the “Atlas of New Professions” in the fields of economics, accounting, and finance; mastering new courses and removing disciplines related to “disappearing professions.”
4	Ensuring high-quality educational services for future specialists to acquire professional competencies and skills at a high standard.	Loss of interest among applicants and students in the educational program due to the influence of external factors on the industry and relevant specializations, leading to a decrease in enrollment.	Promoting the educational program through effective advertising. Strengthening career guidance efforts to attract applicants to the program. Introducing minors into the curriculum to provide students with additional skills and abilities that enhance employment opportunities.

5	Formation of a system of key competencies, as well as general scientific and specialized knowledge, skills, and abilities for future specialists in business and management; acquisition of theoretical knowledge and practical skills by students in solving economic tasks for the effective functioning of business structures.	Reorientation of potential students to other educational institutions offering similar programs, increasing competition among universities.	Improve the educational program to enhance its competitiveness. Promote the program through effective advertising. Strengthen career guidance efforts to attract applicants.
6	Acquire knowledge, skills, and abilities in the fields of social-humanitarian and natural sciences necessary for understanding processes occurring in the Republic of Kazakhstan.	Socio-economic changes in the country will inevitably affect the development of the University and the implementation of the program.	Flexible tuition payment system. Encouragement of high-achieving, active, and socially vulnerable students through the awarding of scholarships.
7	Improving and enhancing conditions for obtaining comprehensive, high-quality professional education (dual education).	The university may not always deliver the necessary training materials to enterprises on time; formalized mentoring; partner employers may not see interns as their future employees, believing that their level of preparation does not meet the enterprise's requirements. Students do not see themselves in the profession, aiming only to obtain a diploma.	Conduct discussions and surveys with partner enterprise representatives to identify shortcomings in the organization of the educational process and gather employer suggestions/recommendations; consider the mentor's activities as a mutually beneficial partnership and formalize it by both parties. Hold regular meetings between partner enterprise representatives and students to familiarize them with the educational process and students' level of preparation; organize open classes, seminars, and training sessions with invited enterprise representatives as observers and guest lecturers. Make guaranteed employment at the enterprise a mandatory condition of dual education.

8	Involving employers in the process of improving the educational program, defining graduates' professional competencies, and preparing educational and methodological support for courses proposed by them.	The process of interaction with enterprises may not go through all stages of the university's management cycle, as collaboration activities are carried out by separate departments; the university and employers may not find common ground, do not understand each other's requirements, and cannot identify effective forms of cooperation.	Develop a unified management system for interaction with enterprises to eliminate fragmented and localized activities; hold regular meetings and discussions between employers, department FTS, and students, as well as conduct surveys to identify mutually beneficial forms of cooperation
9	Strengthening cooperation with foreign partners to carry out joint scientific research and publish educational and methodological literature.	Insufficient or lack of funding for conducting joint scientific research and publishing educational and methodological literature; Unstable economic or political situation in the partner country, which hinders fruitful cooperation, travel, and meetings to discuss joint projects and publications.	Submit a recommendation to the university administration to include expenses for joint publications and scientific research with foreign partners in the university budget; Conduct a search for profitable options for self-financing the publication of educational manuals, textbooks, and articles; Transition to virtual forms of communication as one of the effective ways to interact with foreign partners, such as video conferences using ZOOM and Microsoft Teams, and by corresponding via email or messaging apps.
10	Creating the prerequisites for students' independent research and investigative activities within the framework of conducting scientific research at all stages of their education.	Lack of motivation among students; insufficient information or students' inability to process it effectively.	Conduct ranking of students' extracurricular activities and reward students for achievements in independent research activities; involve students in additional education programs that provide them with the opportunity to become familiar with the basics of research activities necessary for carrying out investigative work during supplementary classes and consultations.

projects, taking into account the suggestions of employers and the scientific priorities of the Republic of Kazakhstan.		to discuss diploma project topics, and in conducting joint research and business projects.
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**Expected final results of the implementation of the educational program development plan.**

The expected outcomes of the educational program imply a clear future orientation, which is reflected in the students' ability to shape their education based on success in personal and professional activities that meet the requirements of employers. The educational program will enable students to acquire deep theoretical knowledge and practical skills in the field of professional education.

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