MINISTRY OF EDUCATION AND SCIENCE
REPUBLIC OF KAZAKHSTAN

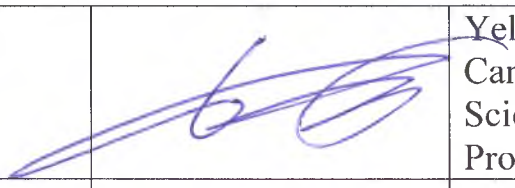
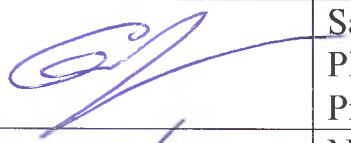
NON-PROFIT JOINT-STOCK COMPANY
"KAZAKH NATIONAL RESEARCH NATIONAL TECHNICAL UNIVERSITY named after K.I. SATBAEV".

APPROVED
Member of the Board - Vice-Rector for Corporate Development and Strategic Planning
NJSTC "KazNRTU named after K.I.Satbayev"
_____ Kuldeev E.I.

DEVELOPMENT STRATEGY
Institute of Energy and Mechanical Engineering
for 2022-2026

Almaty 2022

CONSUMERS

Director of IEaME		Yelemesov K.K. Candidate of Technical Sciences, Associate Professor
Deputy Director		Baskanbayeva D.D. PhD Doctor, Associate Professor
Deputy Director		Kamzanov N.S. Master of Technical Sciences, Senior Lecturer
Deputy Director		Myrzakulov M.K. Master of Technical Sciences
Head of the «Engineering Mechanics Department»		Kaltaev A.Zh. Doctor of Technical Sciences, Professor
Head of the «Technological Machines and Transportation Department»		Bortebaev S.A. Candidate of Technical Sciences, Associate Professor
Head of the «Power Engineering Department»		Sarsenbayev E.A. PhD Doctor, Associate Professor
Head of the «Machine Building Department»		Nugman E.Z. PhD Doctor, associate professor
Head of the «Standardization, Certification and Metrology Department»		Karazhanova D.D. Candidate of Pedagogical Sciences, Associate Professor
Head of the «General Physics Department»		Lesbayev Aidos Bakytzhanovich PhD Doctor, associate professor

CONTENT

INTRODUCTION

The Development Strategy of the Institute of Power Engineering and Mechanical Engineering for 2022-2026 presents the passport of the Development Strategy; description of IEaME development prospects, current state and long-term goals; block of analytical and prognostic substantiation of the Development Strategy - analysis of the state of activity, key problems and their causes; assessment of the innovative potential of the team; forecast of labor market trends on personnel needs; vision of the Development Strategy; mission of the Development Strategy.

The main strategic block of the plan - place and role of IEaME in the system of higher and postgraduate education of Kazakhstan; academic policy; development of innovation potential and its achievement; commercialization of scientific and technical developments; ways to achieve the goal; description of the expected results of the Development Strategy; information on the progress of implementation with a breakdown by year with the indication of target indicators.

The Strategic Plan is intended for the university management staff, teaching staff, students, all interested parties, a wide range of the public.

PASSPORT

Name	Development Strategy of the Institute of Energy and Mechanical Engineering for 2022-2026
Basis for development	State program of development of education and science of the Republic of Kazakhstan for 2020-2025 (hereinafter - the Program) Decree of the President of the Republic of Kazakhstan dated February 15, 2018, No. 636 "On approval of the Strategic Development Plan of the Republic of Kazakhstan until 2025 and invalidation of some decrees of the President of the of the Republic of Kazakhstan"; Message of the Head of State Kasym-Jomart Tokayev to the people of Kazakhstan "Constructive public dialog - the basis of stability and prosperity of Kazakhstan" Message of the Head of State Kasym-Jomart Tokayev to the people of Kazakhstan "Kazakhstan in a new reality: time for action"
Developer Development Strategy	Institute of Energy and Mechanical Engineering (hereinafter - IEaME).
Purpose	Providing students with high quality, practice-oriented education. Providing industries with competitive personnel with higher and postgraduate education.
Challenges	Ensuring quality training of highly qualified competitive personnel. Modernization of the content of educational programs of higher and postgraduate education taking into account global trends.
Timeline and implementation stages	2022-2026. Each calendar year is a stage of the plan implementation. At the end of the year, a report on the implementation of the Development Strategy is provided.

1. BUSINESS ANALYSIS

1.1ANALYZING THE EXTERNAL ENVIRONMENT

1.1.1 Forecast of labor market trends on personnel needs.

The implementation of the policy of higher education development until 2029 is aimed at ensuring the legislative framework, autonomy of higher education institutions, attracting talents to universities and scientific institutes, increasing the level of knowledge and competencies, modern educational programs of higher education based on emerging technologies and the economy of the future, taking into account global competencies. New modern pedagogical design of the educational process with elements of digital technologies, taking into account modern challenges in the system of higher education. Development of academic excellence of universities with the creation of modern educational and scientific laboratories as a factor of providing the knowledge-intensive economy with personnel and development of commercialization.

Employment of graduates. Due to the transition to market relations, the labor market requires a qualitatively new specialist. The presence in the market of international, joint and national companies, enterprises with modern foreign automated and computerized equipment, the number of which is increasing, in most cases require young specialists.

The quality indicators of specialists' training at IEaME are their demand in the labor market, career achievements and high level of competitiveness - employment of graduates exceeds 70%.

The system of social partnership is built on interaction with consumers; contracts for internships have been concluded; the Association of graduates has been created; surveys of heads of internship bases are conducted; the content of educational programs is updated to meet the requirements of employers.

ERG, NAC Kazatomprom, ArcelorMittal JSC, Kazminerals LLP, Aktubrentgen JSC, Almaty Transformer Plant; Kentau Transformer Plant; Almaty Heavy Machine Building Plant (AZTM), Kirov Machine Building Plant, Almaty Fan Plant JSC, MASHSVAR Plant, Almaty Elektrotrans KGP LLP, STATUS PLAST LLP, Center for Earth Science, Metallurgy and Enrichment JSC, Research and Development Center “Parasat”, JSC “Volkovgeologiya”, JSC TNC “Kazchrome”, KAZ Minerals Group, LLP “Karchiginak”, PO “Alatau”, JSC “Elektroshit”, JV “KazElektroprivod”, Promashkomplekt Ekibastuz, JSC “Akmola Repair Plant”, LLP “MFS”, Zhanozen; LLP “SPS”, Zhanozen. Zhanozen; LLP “SAR avto” SKO; ARMAN techno LLP, ALMA ELECTRIC LLP, NC KTZh JSC, Patsifika LLP, Kazakhtelecom JSC, ShalkiyaZink LTD JSC, Intercom Engineering LLP, Bestizolyatsiya Zavod LLP, Amadeo Central Asia LLP, Tian Shan Engineering LLP, LLP “Energy Almaty LTD”, LLP “STK-COM”, LLP “Zhaiykzharyga”, Pipeline Fittings Plant, JSC “AlmatyEnergoService”, plant “Hoffman aluminum”, JSC “Kelet”, “Karaganda Foundry-Machine Plant”, etc.

1.1.2 Relevance of professional competencies of technical profile.

Today, knowing the name of actual specialties for the near future is very important. Consequently, international development, the situation on the labor market is changing rapidly. Therefore, it is necessary to take into account the peculiarities of the current economic market.

According to the State Program of Education and Science Development of the Republic of Kazakhstan for 2020 - 2025, the overall goal of educational reforms in Kazakhstan is to adapt the education system to the new socio-economic environment. Investments in human capital are essential to create a technically progressive, productive workforce that can adapt in a rapidly changing world. Successful economies of the future will be those that invest in the education, skills and abilities of the population. Education needs to be understood as an economic investment, not just a social cost.

One of the main tasks of higher postgraduate education, according to the Program, is to provide personnel with higher and postgraduate education, corresponding to the needs of industrial-innovative development of the country.

From the above, we can conclude that it is necessary to take into account and analyze the most demanded specialties not only now, but also in the future.

1.1.3 Engineering specialties

According to specialists' forecasts, engineering specialties related to industrial production will take the leading positions. The most in demand today are construction workers, specialists in the field of transportation, technological machines and equipment, as well as machine builders. They are followed by metallurgists, power engineers, workers in the field of oil and gas, computer science, radio engineering, electronics and telecommunications, as well as technology and design of light industry products. And then come specialists in mining, automation and control, instrumentation and heat engineering.

At the moment there is an acute shortage of professional engineers, technicians and middle managers in production. A combination of technical and economic or legal education, knowledge of English or any other European language will be especially valued. The demand for marketing engineers and managers is growing in all industries.

On April 12, the Day of Science Workers is celebrated in the country. As is known, it is timed to the birthday of Academician K.I.Satpayev - an outstanding scientist, one of the founders of national science. This day is also associated with the first human breakthrough into space, made from the Kazakh soil, from the Baikonur Cosmodrome.

Science plays a very significant role in the development of both human civilization as a whole and each country, including the Republic of Kazakhstan.

Kazakhstani scientists are actively working on solving important problems, developing promising areas of domestic science. The state, for its part, takes active measures to support science, creates conditions for effective activity and professional growth of scientists, increasing their social status.

The head of state K.K.Tokayev has been paying considerable attention to science from the very first days of his work as President of the Republic of Kazakhstan. He emphasizes that without science we will not be able to ensure the progress of the nation. Such close attention and such an approach become especially relevant in the light of the Address to the Nation of March 16, 2022, which set the path of renewal and comprehensive modernization for the New Kazakhstan. The President of the country has set high goals and new systemic tasks for domestic science, defining its development as "the most important priority". In his Addresses to the People of Kazakhstan in 2019, 2020 and 2021, as well as in his speech at the meeting of the National Council of Public Trust in 2020, he highlighted such program targets:

- Increasing the level of scientific research and its application in practice;
- Increasing and structurally improving the funding of scientific research;
- Improvement of legal relations and institutional support in the scientific sphere, granting more rights to scientists;
- building a digital ecosystem of science;
- obtaining concrete socio-economic, industrial and technical benefits from each scientific work;
- participation in the creation of high-tech, knowledge-intensive industries and technical services;
- increasing the level of development of agricultural science and reducing the deficit of professional staff;
- attracting funds from the largest enterprises, especially from the raw materials sector, into science;
- elaboration of a program document on scientific and technological development of the country, involvement of science in solving applied problems of the national level;
- development of fundamental science.

All these guidelines have become important and demanded areas of work of the Government and Parliament of the RK, public administration bodies, enterprises, organizations and associations of science, scientists and specialists who positively perceived the course of modernization. And there are already certain advances.

At the same time, I would like to emphasize that the issues of **practical implementation of scientific achievements** in practice, first of all, in the economy, are a red thread running through the entire set of put forward goals, directions and objectives of science development - in the context of concrete benefits for the country and the people.

In his recent speeches, the head of state focused special attention on the problem that can critically affect further reforming of the economy - **the systemic shortage of engineering personnel of the modern level.**

Engineering activity is a key tool not only for practical implementation of scientific results in the real sector of economy, but also in the whole industrialization of the country, which is extremely necessary in the current situation.

Today, this tool is clearly underdeveloped. For example, the issue is acute in metallurgical, power, oil and gas, petrochemical and other industries. For example, the average age of power engineers has reached 50 years.

Meanwhile, complex technological processes, their digitalization and modern efficiency standards require a new generation of engineers, which are critically lacking.

Over the past two years, Kazakhstan has attracted over 2,000 foreign specialists. Enterprises are forced to seriously retrain a large number of their own personnel who already have higher education. Billions of tenge are spent on this.

The output of specialists-engineers lags many times behind the real needs of the labor market, and their deficit is growing annually.

For 30 years we have traveled a long way in establishing and improving the new system of higher education. Therefore, the following words of Kasym-Jomart Tokayev sounded quite unexpected for many outside observers, and very encouraging for others familiar with the state of affairs. Speaking on January 11, 2022 at the meeting of the Majilis of the Parliament of the RK, he emphasized that we need to change the view on education: “The time of fascination with humanitarian specialties has passed, priority should be given to technical professions. We have to raise a new generation of engineers, industrialists”.

Even by itself, paying strategic attention to this factor is worthy of being called the beginning of a new stage in the technological and innovative development of the country and its higher education system.

But the head of state also put forward a number of specific directions for solving this difficult task. Among them:

- doubling the number of state educational grants for technical specialties - this year 60% of all educational grants in Kazakhstan will be distributed with consideration of engineering training;

- expansion of the network of branches of advanced technical universities, by 2025 opening of at least five branches of reputable foreign universities, with two branches of universities with a technical bias - in the west of the country;

- reconfiguring the Bolashak program to support engineering education.

Scientists and engineers are hopeful about such policy guidelines outlined by the President of the country.

We believe that the set tasks require fundamental improvement of approaches and increased responsibility of the main actors of the system of training and employing engineering specialists - higher and postgraduate education organizations, on the one hand, and employing enterprises, on the other.

It is in this nexus that the main factors are generated - the material and technical, personnel and methodological basis for the training of specialists, the content of their education and its effective use for the benefit of the country.

At the same time, it is advisable to solve key tasks in a more centralized way, on the basis of public-private partnership covering a wide range of participants. After all, the current world paradigms of engineering education unambiguously show the need for a sharp increase in the quality of engineers' training in accordance with the demands of the labor market, the criteria of modern production and management technologies. And this requires combining efforts of a significant number of educational organizations and employers, involving the state and, of course, the scientific and engineering community, mastering new forms and methods of joint work.

In particular, it is important to open branches of university departments at the advanced enterprises of the country. It will be useful for the management of engineering universities to pay attention to the creation of scientific and educational centers at enterprises as a base for students' practice and targeted scientific developments in the interests of specific production. In such centers it will be necessary to create all necessary conditions for training and accommodation of students and employees sent to them.

There is another problem with student internships - enterprises are not always properly motivated and interested in such internships, moreover, they require additional funding, which enterprises are not always able to allocate. Therefore, it is objectively necessary to provide serious legislative support for the effective solution of such issues, including through possible targeted state support.

Another important aspect of interaction between the state, business and education is the development and improvement of professional standards, which are defined with the participation of employers and become the basis for the curricula of universities. In this regard, the National Chamber of Entrepreneurs of the RK "Atameken" and sectoral associations of employers should strengthen the coordination of activities on the development of professional standards for engineering and technical fields in order to maximize their compliance with modern requirements and, at the same time, the demands of specific Kazakhstani employers.

According to the resolutions of the Cabinet of Ministers of the Republic of Kazakhstan dated August 13, 1991 № 475 and January 22, 1992 № 56, the National Engineering Academy of the Republic of Kazakhstan (NEA RK) is defined as the highest scientific, methodological and coordination center of engineering in Kazakhstan. It has a powerful potential - more than 300 leading scientists and practitioners of engineering, technical and industrial profile, including more than 200 doctors of sciences, managers and prominent specialists of the largest enterprises and higher educational institutions of the country. The Academy has 10 branches and 13 departments in industrial regions, which guarantees effective interaction with the real economy on the ground. Among the members of the Academy there are many graduates of leading technical universities of advanced foreign countries, who still maintain strong ties with authoritative centers of education and scientific and technological progress.

NIA RK productively cooperates with the International Academy of Engineering. Therefore, the Academy is able to play the role of an effective bridge in uniting and coordinating the efforts of universities and employers aimed at systemic improvement of engineering education, organizing their interaction with government agencies. As well as interaction with foreign and international centers in this sphere.

Such partnership, in our opinion, is not only possible, but also necessary in the most critical and system-forming directions of improving the system of training and utilization of modern engineering personnel in Kazakhstan.

1.1.4 High demand for engineering labor.

It is obvious that training of modern engineers is much more expensive than that of humanities. This requires the availability of jobs that require high qualification of

engineering labor and provide high returns to the economy and the development of the country.

In connection with this task, it is important to increase the number and capacity of modern enterprises that produce high value-added products. It is also important to ensure a high level of synchronization of their staffing with the training of engineering specialists in universities. Legislative motivation and stimulation of enterprises to participate in training and employment of graduates is especially necessary. These are the issues, first of all, related to the competence of the public administration system, concerning its interaction with the higher education system and the production sector.

Here is a whole range of promising areas that need special attention, the most serious legislative stimulation and organizational support. For example, systemic technological development of the real sector of the economy on the basis of the best available technologies. Today, this approach together with the wide application of resource-saving technologies and practices is systematically enshrined in the country's legislation by the new Environmental Code of the Republic of Kazakhstan. I think this is the main way to motivate enterprises to improve technological processes in accordance with the world's leading trends. Or the development of agro-technologies - this is relevant for the world as a whole, where tension in food production is growing, and for Kazakhstan, which undoubtedly has a high potential in this area.

1.1.5 International cooperation.

The Institute of Power Engineering and Mechanical Engineering maintains close international relations with many foreign universities and organizations:

- Silesian Technical University, Poland;
- Moscow Institute of Steel and Alloys, Russia;
- G.I.Nosov Magnitogorsk Technical University, Russia;
- Ural State Agrarian University, Russia.
- Pennsylvania State University,
- National University of Singapore,
- National Tech Institute of Calicut

In the current academic year, the department concluded an agreement on a joint educational program of double-degree education with the Silesian Technical University with the issuance of two diplomas.

Together with foreign scientists from Bulgaria, England, India, and Singapore, 5 articles with a high impact factor were published. Together with professors from England (Ding Y.), Bulgaria (Georgiev A., Popov R.), Singapore (Ng K. C.), Italy (Ciccarelli Marco), doctoral students are supervised, together with professors from the USA (Ratner A.), India (Mohanraj, M.) and Singapore (Ng K.C.), a project is being implemented on commercialization using a grant from the World Bank and the Ministry of Education and Science of the Republic of Kazakhstan: Cascade solar heat pump for indoor heating and hot water supply for regions with a continental climate.

As part of the external academic mobility, 2 students of the specialty 5B072400 – Technological Machines and Equipment (by industry) studied in the autumn semester of the 2019-2020 academic year at Tenaga National University (Kuala Lumpur, Malaysia).

1.2 ANALYZING THE INTERNAL ENVIRONMENT

1.2.1 Academic policy

The main objectives of the Institute's activities are:

1. to provide leadership in all aspects of its educational programs by offering relevant educational trajectories to learners.

2. To provide students with high quality, practice-oriented education, equipping them with the knowledge and skills that will ensure a successful career.

3. to establish a close international link in energy and mechanical engineering, educational programs and applied research to benefit the RK industry.

4. To promote the Institute's reputation as a leading provider of advanced technical education through partnerships with leading industrial enterprises in Kazakhstan.

5. To develop an entrepreneurial culture and environment at the Institute.

In 2022-2026 the activities of the Institute will be aimed at accomplishing the following tasks:

1. ensuring high status of a teacher, modernization of educational activities.

2. Ensuring a safe and comfortable learning environment.

3. Ensuring continuity and continuity of education, professional training in accordance with the needs of the economy.

4. equipping the departments with digital infrastructure and modern material and technical base.

1.2.2 Scientific activities of the Institute

Work will be continued to improve the efficiency of the Institute's science. It should become a center of scientific thought and an authoritative structure carrying out expert activities. The activities of this work will focus on the development of priority directions of scientific research, implementation of expert activities, awarding special grants, scholarships and prizes in the field of science and technology, popularization of science, conducting foresight studies, etc. The work will be carried out by the Institute. In order to ensure transparency and objectivity in the procedure of electing scientists to academicians of NAS RK, rules and criteria for electing academicians will be approved.

The development of scientific and innovative environment and activities of the Institute will be realized in the following directions:

- mastering the basics of research and innovation activities by master's and doctoral students;
- active involvement of master's and doctoral students in R&D activities;
- active involvement of teaching staff in research and innovation activities;
- transformation of the institute into a center of communication between business, society, and the state on the issues of scientific and technological forecasting, exchange

of advanced knowledge;

- development of close cooperation with the real sector of economy both in search of orders for applied developments and fundamental topics;
- formation of innovative productions and organization of innovative enterprises combining scientific potential of the Institute and capabilities of large enterprises, firms;
- internationalization of scientific activity, expressed in connection with the advanced scientific agenda, publications in international journals, organization of international research teams, etc.;
- development and strengthening of the material and technical base of scientific research.
- activization of the Institute's faculty members' activity on publishing scientific articles in highly rated journals Q1, Q2 and Q3.
- monitoring of the citation of the works of the faculty members of the department in domestic and foreign editions with generalization of the obtained results and identification of the trend for all and each employee personally.

1.2.3 Analysis of the state of IEaME, key development issues and their causes.

Currently, the educational activity in the Institute is carried out by 6 departments on 9 educational programs of bachelor's degree, 6 educational programs of master's degree, 4 educational programs of doctoral studies.

The Institute has 15 licenses, of which: on specialties of bachelor degree - 6; specialties of master degree - 6; specialties of doctoral studies PhD - 3.

The contingent of students - 1239 students. On the state educational order - 1165 students, on a paid - 74 students.

The minimum share of personnel training is carried out at the expense of own funds of students, enterprises and companies Table 1.

Table 1 - Dynamics of the contingent of students in all undergraduate educational programs by sources of funding

Indicator name	**Years**			
	2017 excluding the 1st course	**2018 excluding the 1st course**	**2019 excluding the 1st course**	**2020 excluding the 1st course**
Total number of students, including:	1120	1172	1288	1167
- students on grants of the state budget	1086	1132	1191	1048
- students on a contractual basis	33	39	96	117
- students at the expense of enterprises and companies	1	2	1	2

In the format of three-stage training, the maximum demand is for bachelor's degree programs, the minimum demand is for doctoral degree programs.

Table 2 shows the contingent of students for the academic year 2021-2022 on educational programs of the departments of the Institute:

№	Department	Contingent		
		Bachelor's degree	Master's degree	Doctoral degree
1	Mechanical Engineering Standardization, Certification and Metrology	287	34	11
2	Power engineering	532	15	10
3	Technological machines and transportation	301	44	10
4	Engineering Mechanics	260	1	4
5	Descriptive geometry and engineering graphics	-	-	-

Table 3 shows the list of accredited educational programs of the Institute, in the international agency ASIIN (Germany) - 4, in NAOCO - 5, NAAR - 6, KAZSEE - 1 program.

Table 3 - List of accredited educational programs

№	Cipher	Specialty/EP	№ and validity period of the certificate	Site link
BACHELOR'S DEGREE				
1	5B071200	Mechanical Engineering	ASIIN 01.07.2016 - 30.09.2021	ASIIN
2	6B0710800	Transportation engineering	НААР АВ 3582 11.06.2021-10.06.2026	НААР
3	5B071800	Electric power engineering	ASIIN 30.09.2016 - 30.09.2022	ASIIN
4	5B072400	Technological machines and equipment (by branches)	ASIIN 01.07.2016 - 30.09.2021	ASIIN
5	5B073200	Standardization, metrology and certification	НКАОКО SA-A № 0158/1 27.05.2019-24.05.2021	НАОКО
6	5B073800	Technology of materials processing by pressure	НКАОКО SA №0083/1 07.06.2016-04.06.2021	НАОКО

7	6B07107	Operation and service engineering	ASIIN 24.06.2022 - 15.10.2023	ASIIN
8	6B07115	Technological machines and equipment (by branches)	НААР АВ 4381 10.06.2022-09.06.2027	НААР
MASTER'S DEGREE				
1	7M07111	Digital engineering of machinery and equipment	ASIIN 24.06.2022 - 15.10.2023	ASIIN
2	6M071200	Mechanical Engineering	ASIIN 01.07.2016 - 30.09.2021	ASIIN
3	7M075	Standardization, certification and metrology (by branches)	НААР АВ 3583 11.06.2021-10.06.2026 НҚАОКО SA-A № 0158/2 27.05.2019-24.05.2021	НААР НАОКО
4	7M07113	Electrical Engineering and Power Engineering	KazSEE №1920 KE 0118 13.12.2019-12.12.2024	KazSEE
5	7M07108	Technology and automation of transport and transport systems	НААР №АВ3583 11.06.2021-10.06.2026	НААР
6	6M073800	Technology of materials processing by pressure	НҚАОКО SA №0083/4 07.06.2016-04.06.2021	НАОКО
DOCTORAL DEGREE				
1	6D071200	Mechanical Engineering	НААР №АВ0922 20.06.2016 – 19.06.2021	НААР
2	8D07110	Digital engineering of machinery and equipment	НААР АВ 4381 10.06.2022-09.06.2025	НААР
3	6D071800	Electrical Power Engineering	НААР №АВ0927 20.06.2016 – 19.06.2021	НААР

Table 4 shows the list of educational programs of the department, which are currently undergoing accreditation in the international agency “Kazakhstan Association for Engineering Education KAZEE” since August 2021.

Table 4 - List of educational programs

№	Cipher	Specialty/EP	№ and validity period of the certificate	Site link
BACHELOR'S DEGREE				
1	6B07206 - Industrial Engineering	5B073800 - Technology of materials processing by pressure	from August 2021	in process
2	6B07501 - Industrial Engineering	5B073200 - Standardization, Metrology and Certification	from August 2021	in process
3	6B07105 - Industrial Engineering	5B071200 - Mechanical Engineering	from August 2021	in process
MASTER'S DEGREE				
1	7M07102 - Additive Manufacturing	6M073800 - Technology of materials processing by pressure	from August 2021	in process
2	7M07136 - Additive Manufacturing	6M071200 Mechanical Engineering	from August 2021	in process
3	7M07112 - Digitalization of engineering production	6M071200 Mechanical Engineering	from August 2021	in process
DOCTORAL DEGREE				
1	6D07102 Additive Manufacturing	6D073800 – Technology of materials processing by pressure	from August 2021	in process
2	6D071132 Additive Manufacturing	6D071200 – Mechanical Engineering	from August 2021	in process
3	6D07111 Digitalization of engineering production	6D071200 – Mechanical Engineering	from August 2021	in process

In the rating of educational programs of higher education institutions of Kazakhstan - 2020. The 2nd place is occupied by OP of the Institute “Electric Power Engineering”.

According to the Atlas of new professions for 2023-2024 academic year the following new educational programs are planned to be opened:

For Bachelor's degree programs:

- “Nuclear Power Engineering”;
- “Engineering Mechanics and Modeling”;
- “Design and Technology in Mechanical Engineering”;

- “Ground-based electric transportation and charging infrastructure”;
- “Predictive technologies and machine diagnostics”.

For Master's degree programs:

- “Engineering Mechanics and Modeling”;
- “Innovative technologies and equipment in renewable energy”

1.2.4 Analyze the status of activities, key problems and their causes in science.

To date, the Institute conducts research on seven research projects under grant funding from the Ministry of Education and Science of the Republic of Kazakhstan for a total amount of about 329.9 million tenge.

The Institute conducts applied, exploratory (initiative) research and development work.

As of the end of 2020 and in the implementation of research projects of their commercialization, according to Table 5 involved up to 25% of the teaching staff.

The demand for research services of the university, research projects, takes place on the part of:

- State;
- private enterprises, firms, companies;
- international organizations.

Table 5 – Dynamics of the level of participation of the faculty in the implementation of funded R&D and commercialization

Наименование показателя	**Годы**				
	2016	**2017**	**2018**	**2019**	**2020**
Удельный вес ППС, участвующих в реализации финансируемых научно-исследовательских проектов, коммерциализации, %	25	25	20	20	25

The maximum demand for scientific research services and scientific projects, according to table 6, in terms of the number of contracts concluded, comes from the state.

Table 6 – Dynamics of the number of contracts concluded for the implementation of research projects

quantity of units

Name of the indicator	**Years**				
	2016	**2017**	**2018**	**2019**	**2020**
Total number of contracts, including:	4	4	8	8	10
- contracts for the implementation of projects using state budget funds	4	4	7	9	13

- contracts for the implementation of projects at the expense of private enterprises, firms, companies	0	0	0	1	1
- agreements on the implementation of projects using international grants and funds	0	0	0	0	0

According to Table 7, the volume of demand for science in terms of funding from the state prevails over the income from science received from enterprises and private business.

Table 7 – Dynamics of the volume of funding for research projects

million tenge

Name of the indicator	**Years**				
	2016	**2017**	**2018**	**2019**	**2020**
Total funding, including:	62	62	120	108,5	154,9
- implementation of projects at the expense of the state budget	62	62	162,4	150,4	236,8
- implementation of projects at the expense of private enterprises, firms, companies	0	0	0	0,5	0,5
- commercialization	0	0	38,6	38,6	38,6

The table below shows the results obtained from the implementation of the projects of the State Fund of the Ministry of Education and Science of the Republic of Kazakhstan 2018-2020.

Table 8 – Analysis of the results of the projects and programs of the IEaME for 2018-2020.

№	**IRN and Project Name, Manager**	**Results obtained**		
		Result and implementation (for example, laboratory, experimental, industrial prototypes are implemented in production or in the educational process)	**Publications (number of articles in Scopus, WoS, RINTS, KKSON databases, received patents)**	**Training of personnel (number of students, master's degree students, doctoral students participating in the project, number of dissertations written within the framework of the project**

1	"Development of a new design of continuous radial-shear with software control for the production of rods and pipes of non-ferrous metals", Mashekov S.A.	A new design of a radial shear mill (RSM) has been developed and manufactured, intended for hot screw rolling and pressing of non-ferrous metal blanks	Scopus – 3, WoS - 4 RINTS – 1 KKSON – 5 Patents - 2	Number of doctoral students participating in the project – 2 one dissertation work is being prepared within the framework of the project – doctoral student Angarbekov Ulan
2	"Structural parametric analysis of actuators and manipulators", Baygunchekov Zh.Zh.	Documentation has been developed and 3D models of two patented parallel manipulators (PM) have been manufactured: a PM with two linearly moving working bodies and a PM with three degrees of traction, operating in a cylindrical coordinate system. Their tests have been conducted to determine the functions of the position of their working bodies.	-11 articles in the Scopus database; -7 reports in international conferences included in the Scopus database; -3 Kazakhstani patents.	- number of doctoral students participating in the project – 3; - number of dissertations written within the framework of the project – 2.
3	"Development of a design for a centrifugal pump with improved performance	Implemented in the production of TOO KARLSKRON A LC AB: 1) Automated PUMP module	-3 articles in the Scopus database; -1 article in the KKSON database	- number of doctoral students participating in the project – 1; -number of master's studentsparticipatedi n the project – 1;

	indicators", Isametova M.I.	2) Methods of computer calculation of pump units and parts	-1 report at an international scientific and practical conference included in the RSCI database; -1 Kazakhstani patent for utility model	- number of dissertations written within the framework of the project – 2.
4	"IRN of the project: AR05132610 "Development of a new design of a radial-shear mill with program control for the production of rods and pipes from non-ferrous metals"	A technology for assembling a pump with polymer wheels has been developed; a set of design documentation has been prepared, and tests have been conducted at the plant's industrial stand to determine the hydrodynamic characteristics; Computer design methods were also introduced using the integrated NASTRAN environment to perform verification and design calculations of centrifugal pump units.	Scopus – 3, Int.conf - 2 RINTS – 1 KKSON - 3 Patents - 1	- number of doctoral students participating in the project – 1; - number of dissertations written within the framework of the project – 1.

5	"Grant funding for scientific research" on the topic AP05133906 "Creation of a new technology for collecting high-viscosity oils in barns and spill sites using ultrasonic devices" *Zaurbekov Seitzhan Arysbekovich*	A steam-ultrasonic device with a new design of jet plate emitter has been developed, a prototype has been manufactured, the application technology has been tested, bench and field tests have been conducted confirming the high efficiency of application.	- 2 articles in the Scopus database; - 1 article in a journal included in the RSCI database; - 11 reports at the international scientific and practical conference; - 1 Kazakhstani patent for utility model	number of doctoral students participating in the project – 2; - number of master's students participating in the project – 1; Number of dissertations written within the framework of the project – 1.
6	Contract No. 266PCF BR05235618 "Modernizatio n of technology and production in the mining and processing industry of the Republic of Kazakhstan" *Elemesov Kasym Koptleuevich*	A new material has been developed and a centrifugal pump body made of fiber concrete has been manufactured.	Scopus – 3, KKSON - 3 Patents – 2 reports at the international scientific and practical conference - 9	Number of doctoral students participating in the project – 1 One dissertation work is being prepared within the framework of the project – doctoral student Igbaeva A.E.

Along with funding for science, the qualitative aspects of the results of the university's research activities include:

- obtaining patents and their commercialization;
- publications in top-rated national and international publications.

In accordance with Table 9, the institute's scientists receive patents for inventions every year.

Table 9 – Dynamics of received patents for inventions and the trend of their commercialization

quantity of units

Name of the indicator	Years				
	2016	2017	2018	2019	2020
Number of patents received for inventions, including:	7	8	10	9	10
- number of commercialized patents	0	0	0	0	0

Table 10 – Dynamics of publication activity of the teaching staff

quantity of units

Name of the indicator	Years				
	2016	2017	2018	2019	2020
Number of publications in journals recommended by the Committee for Control of Consumer Rights	34	38	37	44	14
Number of publications in journals included in international citation databases	8	19	18	16	25

To implement research projects and research and development work, the institute has a certain reserve for the formation of research infrastructure. The institute has 35 laboratories, two of which, in accordance with Table 11, are for conducting scientific research and development work.

Table 11 – Dynamics of the number of laboratories

Number of units

Name of the indicator	Years				
	2016	2017	2018	2019	2020
Total number of laboratories	49	46	39	34	35
Number of laboratories for R&D	2	2	2	2	2

1.2.5 Creation of a system of guaranteed employment for graduates.

It is necessary, including within the framework of the digitalization of the country, to build an effective system for monitoring, analyzing and forecasting the labor market for engineers, and to create constantly updated databases on the efficiency of using specialists (down to personalities).

A real engineer in today's world is a very valuable resource. This was confirmed, in particular, by the information that appeared quite recently - in early February - that South Korea will soon begin to monitor the movements of qualified engineers from the most valuable industries for the state. Serious government agencies are involved in this - the ministries of industry and justice, the intellectual property office and even the national intelligence agency, a corresponding database of specialists will be created.

I think it would be appropriate to develop some of these approaches in Kazakhstan as well. With the obligatory participation of universities, employers and their associations, the National Academy of Sciences, the National Archives of the Republic of Kazakhstan, etc.

In terms of creating branches of reputable foreign universities, as well as the inevitable future expansion and improvement of training of modern engineers in Kazakhstani universities, it is especially useful to create an effective system of advanced forecasting of specific employment of engineering graduates in the near future - this is a serious task for the Ministry of Education and Science, industry ministries together with the involved branches, universities and employers.

At the same time, especially in terms of employment of graduates of the above-mentioned branches, it is worth paying attention to the fact that foreign business is widely represented in all sectors of the economy of Kazakhstan today. There are over 7 thousand business structures with foreign participation in the republic. I think this is one of the promising niches for targeting the training of new generation engineers and their employment.

To solve employment issues, I believe it is necessary to introduce a dual education system for students from 2023, in other words, there is a great need to create conditions for practical training in production for the final year of study. With the help of modern types of training, ensure quality education

1.2.6 Radical improvement of the content and quality of education.

What is required here is the systematic development of a high-tech educational base for universities, continuous improvement of engineering educational programs formed by universities in the closest cooperation with employers, and full-fledged educational and industrial practice focused on specific enterprises in the country.

In light of the creation of branches, it will be necessary to address issues of legislative support for their activities, compatibility of programs, professional standards, Bologna Process norms and employer requirements.

1.2.7 Retraining and advanced training of personnel.

At the current stage, the task of improving the qualifications of Kazakhstani managers in the field of higher technical education and specialists of industrial enterprises is particularly relevant.

One of the solutions here could be the creation by the NEA RK, jointly with the International Engineering Academy, of a fundamentally new Center for Management in Higher Technical Education (Center MVTO). The Center's courses should be aimed at key issues of higher technical education, technological progress, and improving the mechanism for converting innovative ideas into products and services that will provide points of technological growth and create new jobs in the country.

Preliminary studies by the NIS RK show the feasibility of such thematic areas of the advanced training course disciplines as innovation policy and innovation management, new approaches in higher engineering and technical education, intelligent industrial technologies, etc.

And the combined efforts of universities and enterprises, the scientific and engineering community and the state can make a significant contribution to solving this pressing problem and help the country reach new engineering and technological development horizons.

We view the "Horizontal Coordination" very positively, which will allow for improving qualifications at any stage of professional activity, based on any educational level. Moreover, this will allow, if necessary, not only to continue education, but also to change its profile, using the services of the personnel retraining system, including in the form of informal education.

In order to reduce the gap between employers' requirements and graduates' qualifications, the range of short-term courses provided by higher education institutions, technical and vocational education organizations, and training centers in partnership with companies (organizations, enterprises) in the real sector will be expanded.

In conclusion, I would like to emphasize that Kazakhstani scientists are a real gold fund of the nation's intellect, with great creative potential for productive participation in the creation of the New Kazakhstan.

1.2.8 Educational work.

One of the priority tasks of the Institute of Economics and Management is the implementation of a set of measures to educate young people with high civic and moral principles, a sense of patriotism and social responsibility. To implement these tasks, student self-government and youth organizations were created, more than 20 patriotic events were held (2016-2020). The share of students actively involved in social activities, clubs, sections, etc. is 20% of the total contingent.

Students of the Institute take an active part in the implementation of the state programs "Mangelik El" and "Rukhani Zhangyru".

The principle of feedback is constantly in effect – sociological surveys and monitoring of the social well-being of students and teachers are conducted.

At the Institute of Economics and Management1239 students assigned 40 advisors.

Advisors provide consultations on the choice of educational paths, provide students with qualified information on elective courses offered by the department, provide consultations on the preparation of individual educational plans, monitor the attendance and academic performance of students, maintain contact with parents, informing them of the student's academic performance and attendance.

Meetings on supervised department specialties are also held on a regular basis.

Conditions are being created to strengthen student self-government bodies (committees on youth affairs, student parliaments, student councils, etc.). The debate movement will continue to develop leadership qualities and oratorical skills. The Institute of Economics and Management has student deans of the institute.

Students of the Institute of Economics and Management are actively take part in the implementation of socially significant projects, expansion of types of volunteering, provision of research and technological developments in the region, provision of knowledge-intensive services and production of innovative products, development of

acceleration and mentoring programs for the implementation of start-ups and development of existing youth businesses, implementation of the Open University Concept, cooperation with Associations, communities, NGOs, conducting professional training and retraining.

During quarantine students of the institute Aidar Ademi and Taupikh Zhanerke participated online the Elbasy Medali project as part of the implementation of the initiative of the First President Nursultan Nazarbayev "El Umiti" - "Hope of the Nation" and received prize medals. It is being implemented under the auspices of the Nursultan Nazarbayev Foundation and is aimed at motivating young people to self-development.

Kuralbek Meirzhan, a 4th-year student majoring in "Electric Power Engineering" at the Kazakh National Research Technical University named after K.I. Satpayev, defended the honor of our university at the Republican Olympiads in the distance learning format. In the 2nd academic year, our student took 3rd place at the Republican Olympiad in Physics and Mathematics among future power engineers at the Republican Olympiad of JSC "Samruk-Energy" on the subject of "Theoretical Foundations of Electrical Engineering", which was held online due to the quarantine situation in the country. For 3rd place, JSC "Samruk-Energy" awarded a scholarship of 300,000 tenge. He spent most of his scholarship on charity events in his village and helped those in need. A year later, in the 3rd academic year, he was awarded a 3rd degree diploma in the subject "Electrical Engineering" at the XIII Republican Subject Olympiad for students of higher educational institutions of the Republic of Kazakhstan, organized by Toraigyrov University.

1.2.9 Material and technical base.

The institute’s material and technical base is located in 4 academic buildings of the university.

In total, the Institute has 19 educational laboratories, 4 computer classes, and 8 classrooms equipped with multimedia equipment.

In The IEaME has educational laboratories for the following subjects: "Power Supply", "Electrical Apparatus", "Electric Power Engineering", "Energy Efficiency and Energy Security of Enterprises", "Strength of Materials", "Fundamentals of Design and Machine Parts", "Theory of Mechanisms and Machines", "Metalworking Equipment and Tools", "Fundamentals of Mechanical Engineering Technology", "Foundry Technology", "Heating Devices", CNC "Machine Numerical Control", a class with 4 CNC machines from BOXFORD (Great Britain).

The Institute's laboratories have established industrial equipment manufactured in 1970-2008 in good condition, equipped with technological equipment, tools and auxiliary means, measuring instruments and tools. The institute has an accredited testing laboratory "EMiAPK". Work is underway to form a single platform for the electronic laboratory (e-lab).

IEiM actively participates in state programs for the creation of modern laboratories and technology parks such as: GIP, the creation of a scientific and technical

"Technopark", Megagrants within the framework of grant and program-targeted financing.

In order to improve the material and technical base of the Institute of Economics and Management, it is planned to open three digital/virtual laboratories at the Institute in the 2022-2023 academic year:

1. "Virtual laboratory for repair and maintenance of passenger cars";
2. "Virtual Laboratory for Electric Vehicles";
3. "Virtual Laboratory for Renewable Energy Sources energy."

Another opening is also planned for the 2023-2024 academic year.three digital/virtual laboratories:

1. "Virtual laboratory on electric arc and semi-automatic welding";
2. "Virtual laboratory for driving a car category B, C";
3. "Editing technological machines and equipment."

1.2.10 Evaluation of the innovative potential of the team.

The strategic directions of the activities of the Institute of Economics and Management are based on national and regional development priorities.

IEaME is provided with highly qualified teaching staff and research workers.

The total number of full-time faculty members is 72, of which 42 have a degree: 7 doctors of science, 16 PhDs, 24 candidates of science, and 23 masters. The average age of full-time faculty members is 44 years.

In the educational process, teachers use innovative teaching technologies that help students develop analytical and critical thinking skills and make professional decisions.

In recent years, more than 10 foreign professors have been invited to give lectures at the institute.

The Institute has sufficient potential to achieve its strategic goals.

The Institute constantly participates in research competitions in fundamental and applied sciences under the auspices of the Ministry of Education and Science of the Republic of Kazakhstan and other ministries.

Scientific and technical programs on automation, digitalization and additive technologies are being prepared with industrial enterprises of the Republic of Kazakhstan.

As part of the participation of the teaching staff and students in the research work, the institute held the following events:

- 2nd year undergraduates in the specialty “Digitalization of Mechanical Engineering Production” of the department “Industrial Engineering” as part of 2 teams KókJiek Teams (Ibraim Alibek, Tustykbaev Maksat, Gotman Yanna, Seyitkazy Nurgul) with the project “Smart Stop” and Katrina (Azhay Askhat, Disenbekova Aliya, Ilyasov Yeszhan) with the “Wind Installation” project participated in the “Student Energy Challenge - 2020” competition, organized by the KAZENERGY Association and the Shell Kazakhstan company and reached the finals.

- a team of students majoring in "Electric Power Engineering" and "Thermal Power Engineering" of the "Power Engineering" department participated in the annual

intellectual team competition "Student Energy Challenge". The "Evil Geniuses" team presented their project on the topic "The Impact of Climate Factors on the Efficiency of Photovoltaic Modules". Team members: 3rd-year students - Iglikov K., Boyko D., Ilalova G., 4th-year students - Baktiyarov T., Kalmen N. Leader - Khidolda E.

- the team "KPD100" of the same department participated with a project on the topic "Development of a thermal and electric energy generator based on solar parabolic concentrators". Team members: 3rd year students - Belgibaykyzy T., Amanbaev A., Shylmagambetov R., Shagmanova M. Leader - Umyshev D.R.

Also actively involve enterprises, both in the process of forming training programs and conducting master classes, as well as in conducting joint research projects. These measures will establish a close connection between the University and the industry within the framework of commercialization of scientific developments of our scientists.

2. VISION, MISSION

KazNRTU, as a center for the formation and development of new areas of scientific knowledge, the development of scientific and scientific-industrial collaboration at the Kazakhstani and international levels, preserves the essence of a technical university in the context of transformation and challenges of the modern digital era, develops and transmits the values of engineering education.

2.1 VISION

The vision of the institute’s strategic development is connected with the close integration of education, science and production, ensuring high quality educational and professional training of graduates, and improving the system of higher and postgraduate education.

The implementation of the Institute's vision requires the faculty, scientific and administrative staff, students, and postgraduates to adhere to high standards of professionalism and the values of universal morality. In its educational, research, and educational work, in every management decision and action, the Institute constantly demonstrates its commitment to these principles and values.

The educational activities of the Institute are aimed at generating, accumulating, transmitting and disseminating advanced knowledge and new ideas. For this purpose, the potential of the formed teaching staff and scientific groups, centers, educational and scientific-production laboratories, which are the basis of the educational process, will be used.

2.2 MISSION

Formation of an innovative scientific and educational environment in which the training and development of national personnel is implemented and assistance in intensive professional development of personnel in priority technological areas of the Republic of Kazakhstan is provided.

3. STRATEGIC ACTIVITIES, GOALS AND KEY PERFORMANCE INDICATORS, TASKS

The main prerequisite for the creation of the Institute of Economics and Management is the President's Address "The Third Modernization of Kazakhstan: Global Competitiveness" dated January 31, 2017.

The activities of the Institute of Economics and Management are aimed at conducting applied research and development in the following areas:Industry 4.0,solving technological problems of business in cooperation with domestic universities and research institutes, as well as assisting enterprises in technology transfer.

The leading role of the institute is determined by the training of personnel in in-demand specialties.

The Institute trains specialists in educational programs

bachelor's degree

6B07101 Energy,
6B07122 - Thermal power engineering
6B07105 Industrial Engineering,
6B07206 Industrial Engineering,
6B07501 Industrial Engineering,
6B07108 Transportation Engineering,
6B07123 - Technology of production, repair and operation of wagons
6B07124 - Technology of production, repair and operation of locomotives
6B07107 Operational and service engineering,
6B07115 Technological machines and equipment (by industry),
6B07106 Engineering Mechanics,
6B07502 - Standardization, certification and metrology (by industry).

Master's degree

7M07102 Additive manufacturing,
7M07112Digitalization of mechanical engineering production,
7M07113Electrical engineering and power engineering,
7M07108 Technology and automation of transport and transport systems,
7M07111 Digital engineering of machines and equipment.

doctoral studies

8D07102 Additive Manufacturing,
8D07112Digitalization of mechanical engineering production,
8D07113Electric power industry,
8D08110 Digital machines and equipment.

the employment rate of which reaches 75%, which testifies to the quality of education at the institute:

The Institute's staff is making every effort to transform itself into an intensively developing regional innovative educational and scientific complex for automation and digitalization, to achieve leadership positions in the country's higher education system and to ensure the competitiveness of its graduates and improve the quality of educational and scientific and technical services that meet world standards.

In the 2024-2025 academic year, in accordance with the request of the Atlas of New Professions and regional standards, IEiM will open new in-demand EPs.

Key end points by 2026:

- Increasing the proportion of employed graduates in the first year after graduation from a university under a state educational order;
- Increase in publications in ranking publications indexed by the international database Scopus/Web of Science;
- The share of teaching staff teaching in English out of the total number of teaching staff is 15%.

According to strategic objectives:

Strategic objective 1. "Quality composition of the university – By 2026, 10% of PhD students from the total number of students"

- Increase in the University's Position in the QS WUR Rankings
- Increasing the position of the university QS WUR by subject Petroleum Engineering;
- Increasing the share of completed postdoctoral programs;
- Increasing the number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking;
- Increasing the share of students studying within the framework of academic mobility, financed by the university from the total number of students;
- Increasing the proportion of teaching staff who have undergone advanced training and foreign internships;
- Increasing the level of implementation of new qualification requirements (standards) for talent management; increasing human resources potential;
- Increasing the proportion of students engaged in volunteer activities from the total number of students studying in bachelor's degree programs;
- Increasing the share of attracted foreign scientists with a high h-index;
- Increasing the share of teaching staff teaching in English from the total number of teaching staff;
- Increasing the share of international educational programs implemented, academic exchanges with foreign partners.

Strategic objective 2. "Quality results of contract research – 300 scientific publications in Q1 and Q2 by 2026"

- Increasing the share of funded educational and research projects carried out at the university;
- Increase in publications in top-rated publications;

− Increasing the proportion of teaching staff who have international certificates confirming proficiency in a foreign language in accordance with the common European framework (standards) for proficiency in a foreign language;

− Increasing the share of expenses for the development of educational and scientific laboratories from the total budget of the university.

Strategic objective 3 "Quality education – By 2026, at least 10% of graduates receive 1,000,000 tenge in wages"

− Increasing the proportion of graduates employed in the first year after completing their studies (out of the total number of graduates);

− Increasing the share of innovative projects developed by order of industry associations and enterprises;

− Increasing the share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third degree diplomas) from their total number;

− Increasing the share of employers and business structures involved in the educational process.

Strategic objective 4. "Quality scientific research – by 2026 the amount of contract research will be no less than 2.0 billion tenge per year"

− Increasing the share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the university);

− Increasing the share of university teaching staff participating in educational and research projects from the total number of teaching staff;

− Increasing the share of grants from local government agencies and employers;

− Increasing the share of projects financed by local government bodies and business representatives;

− Increasing the proportion of young scientists who have received a university grant for research activities;

− Increasing the proportion of young researchers involved;

− Increasing the share of international scientific projects implemented from the total number of projects;

− Increase in the number of implemented virtual laboratories;

− Increasing the share of commercialized scientific developments from the total amount of applied scientific research financed from the budget

− Increasing the share of young scientists in the total number of scientists and

− researchers conducting R&D

− Increase in the share of modernized testing laboratories from the total number of testing laboratories to the 2020 level (2020 - 915)

High-quality corporate governance – By 2026, increase the level of satisfaction with the quality and condition of infrastructure, research, and the level of digitalization to at least 90%

- Increasing the volume of investments attracted for the development of the university from the total income of the university;
- Increase in the number of electronic resources introduced into the educational process;
- Increasing the level of provision of conditions for students with special educational needs (curriculums, elevators, ramps, handrails, etc.);
- Increasing the proportion of students with special educational needs from their total number;
- Increasing the number of OPs implemented using remote technologies;
- Increasing the share of foreign students in the higher education system from the total number of students;
- Increasing the share of information systems for determining borrowing in order to implement the principles of academic honesty in universities (the existence of an agreement);
- Increasing the share of research conducted using a digital platform;
- Increasing the share of funds in the endowment fund from the total income of the university;
- Increasing the share of start-up projects implemented by employees studying at the university;
- Increasing the share of updated certified scientific equipment in state universities;
- Increasing the proportion of university administrators who have undergone advanced training in management;
- Gradually increasing the proportion of women in the executive body during competitions for vacant positions;
- Gradual increase in the proportion of women on the board of directors after summing up the results of the Board of Directors' activities by decision of the Sole Shareholder;
- Gradually increasing the proportion of female managers in structural divisions of organizations.

4. RISK MANAGEMENT SYSTEM

Risk management is a management strategy for achieving the Institute's set goal. Successful development of the Institute's activities depends on the correct and prompt identification and response to risk.

The strategy is developed based on the indicators of the Development Program, the implementation of which takes into account and analyzes the risks of educational, scientific and organizational and managerial activities. Through timely analysis of changes in the educational system, assessment of the situation in the educational services market and its forecasting, avoiding crisis phenomena, it tries to maintain high positions in the ratings.

Improving the image of the university in the eyes of stakeholders taking into account the risks of educational activities.

To manage risks, the Institute uses a differentiated approach, which involves risk assessment, monitoring changes in the external environment, standardizing the Institute's processes, diversifying income, tracking the progress of our priorities, directions and goals, using relevant indicators, benchmarks for comparative analysis. With these tools, we will be able to effectively use resources, respond to challenges in the external environment, and update the Strategy, while maintaining commitment to the Institute's mission.

4. EXPECTED RESULTS

No.	Target indicators	Unit of measurement	2022						
			Institute of EaME	**Department of Mechanical Engineering**	**Department of TMaT**	**Department of EM**	**Department of Energy**	**Department of SCaM**	**Department of General Physics**
			Of these	Of these	Of these	Of these	Of these	Of these	Of these
1 QUALITY UNIVERSITY CONTINGENT – BY 2026 10% OF PHD STUDENTS FROM THE TOTAL NUMBER OF STUDENTS									
1	Share of completed postdoctoral programs	%	0	0	0	0	0	0	0
2	Number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking	Quantity	-	-	-	-	-	-	-
3	The share of students studying within the framework of academic mobility, financed by the university from the total number of students	%	0	0	0	0	0	0	0
4	The share of teaching staff who have undergone advanced training and foreign internships	%	1	1	1	1	1	1	1
5	Percentage of students engaged in volunteer activities out of the total number of students enrolled in undergraduate programs	%	5	10	6	0	3	3	0
6	The share of teaching staff teaching in English out of the total number of teaching staff	%	0	0	0	0	0	0	0
7	The share of attracted foreign scientists with a high h-index	%	37	100	0	100	0	0	100

8	The share of international educational programs implemented, academic exchanges with foreign partners	%	0	0	0	0	0	0	0
9									
2 QUALITY RESEARCH RESULTS – 300 SCIENTIFIC PUBLICATIONS IN Q1 AND Q2 BY 2026									
10	The share of funded educational and research projects carried out at the university	%	89	100	100	80	-	-	-
11	Increase in publications in top-rated publications	Quantity	21	3	5	2	2	0	9
12	The share of teaching staff holding international certificates confirming proficiency in a foreign language in accordance with the Common European Framework of Reference for Language Proficiency	%	9	7	11	1	7	10	12
13	The share of expenses for the development of educational and scientific laboratories from the total budget of the institute	%	-	-	-	-	-	-	
3 QUALITY EDUCATION - BY 2026, AT LEAST 10% OF GRADUATES WILL RECEIVE 1,000,000 TENGE IN WAGES									
14	The share of graduates employed in the first year after completing their studies (from the total number of graduates)	%	75	75	85	Released only in 2023	100	Released only in 2022	Non-graduating department
15	The share of innovative OPs developed by order of industry associations and enterprises	%	-	-	-	-	-	-	-

16	The share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third degree diplomas) from their total number	%	3	1	0.5	0	4	1	Non-graduating department
17	The share of employers and business structures involved in the educational process	%	15	30	20	10	10	20	5
4 QUALITY SCIENTIFIC RESEARCH – BY 2026 THE AMOUNT OF CONTRACT RESEARCH WILL BE NOT LESS THAN 2.0 BILLION TENGE PER YEAR									
18	Share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the institute)	%	-	-	-	-	-	-	-
19	The share of employed graduates in the first year after graduation from a higher education institution under the state educational order	%	90	80	98	Released only in 2023	100	Released only in 2022	Non-graduating department
20	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	48	50	50	60	50	40	50
21	The volume of income from research and development from the total income of the institute	%	-	-	-	-	-	-	-
22	Share of grants from local government agencies and employers %	%	-	-	-	-	-	-	-

23	The share of projects financed by local government bodies and business representatives	%	-	-	-	-	-	-	-
24	The share of young scientists who received a university grant for research activities	%	36	100	-	-	-	100	-
25	Share of young researchers attracted	%	37	100	100	90	0	0	0
26	The share of implemented international scientific projects from the total number of projects	%	0	0	0	0	0	0	0
27	Number of implemented virtual laboratories	Quantity	3	0	2	0	1	0	0
28	The share of commercialized scientific developments from the total amount of applied scientific research financed from the budget	%	0	0	0	0	0	0	0
29	The share of young scientists from the total number of scientists and researchers carrying out R&D and scientific research	%	25	10	0	100	20	100	95
5 GOOD CORPORATE GOVERNANCE – BY 2026, INCREASE THE LEVEL OF SATISFACTION WITH QUALITY, INFRASTRUCTURE, RESEARCH, AND DIGITALIZATION TO AT LEAST 90%									
30	Volume of attracted investments for the development of the university from the total income of the university (%)								
31	The proportion of students with special educational needs from the total number of students	%	0	0	0	0	0	0	0
32	The share of OPs implemented using remote technologies	%	100	100	100	0	100	0	100

33	The share of foreign students in the higher education system from the total number of students	%	6	2	6	20	5	1.5	0
34	Share of research conducted using a digital platform	%	17	100	100	90	0	0	0
35	The share of university administrators who have undergone advanced training in management	%	100	100	100	100	100	100	100
36	Increasing the share of PPP degree holders	%	55	60	80	60	50	80	55
37	Gradual increase in the proportion of female managers in structural divisions of organizations	%	20	0	20	0	0	0	0

No.	**Target indicators**	**Unit of measurement**	**2023**						
			Institute of EaME	**Department of Mechanical Engineering**	**Department of TMaT**	**Department of EM**	**Department of Energy**	**Department of SCaM**	**Department of General Physics**
			Of these	Of these	Of these	Of these	Of these	Of these	Of these
1 QUALITY UNIVERSITY CONTINGENT – BY 2026 10% OF PHD STUDENTS FROM THE TOTAL NUMBER OF STUDENTS									
1	Share of completed postdoctoral programs	%	0	0	0	0	0	0	0
2	Number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking	Quantity	-	-	-	-	-	-	-

3	The share of students studying within the framework of academic mobility, financed by the university from the total number of students	%	0,1	0	0,1	0	0	0	0
4	The share of teaching staff who have undergone advanced training and foreign internships	%	2	2	1	2	2	1	2
5	Percentage of students engaged in volunteer activities out of the total number of students enrolled in undergraduate programs	%	5	15	6	6	3	3	0
6	The share of teaching staff teaching in English out of the total number of teaching staff	%	1	1	0	0	0	0	0
7	The share of attracted foreign scientists with a high h-index	%	37	100	0	100	0	0	100
8	The share of international educational programs implemented, academic exchanges with foreign partners	%	10	0	0	0	0	0	0
9									
2 QUALITY RESEARCH RESULTS – 300 SCIENTIFIC PUBLICATIONS IN Q1 AND Q2 BY 2026									
10	The share of funded educational and research projects carried out at the university	%	91	100	100	80	-	-	-
11	Increase in publications in top-rated publications	Quantity	25	3	5	2	2	0	9
12	The share of teaching staff holding international certificates confirming proficiency in a foreign language in accordance with the Common European Framework of Reference for Language Proficiency	%	10	7	11	1	7	10	12

13	The share of expenses for the development of educational and scientific laboratories from the total budget of the institute	%	1	-	-	-	-	-	1
3 QUALITY EDUCATION - BY 2026, AT LEAST 10% OF GRADUATES WILL RECEIVE 1,000,000 TENGE IN WAGES									
14	The share of graduates employed in the first year after completing their studies (from the total number of graduates)	%	79	75	85	Released only in 2023	100	Released only in 2022	Non-graduating department
15	The share of innovative OPs developed by order of industry associations and enterprises	%	56						
16	The share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third degree diplomas) from their total number	%	5	1	0.5	0	4	1	Non-graduating department
17	The share of employers and business structures involved in the educational process	%	15	30	20	10	10	20	5
4 QUALITY SCIENTIFIC RESEARCH – BY 2026 THE AMOUNT OF CONTRACT RESEARCH WILL BE NOT LESS THAN 2.0 BILLION TENGE PER YEAR									
18	Share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the institute)	%	10						

19	The share of employed graduates in the first year after graduation from a higher education institution under the state educational order	%	90	80	98	Released only in 2023	100	Released only in 2022	Non-graduating department
20	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	49	50	50	60	50	40	50
21	The volume of income from research and development from the total income of the institute	%	-	-	-	-	-	-	-
22	Share of grants from local government agencies and employers %	%	-	-	-	-	-	-	-
23	The share of projects financed by local government bodies and business representatives	%	-	-	-	-	-	-	-
24	The share of young scientists who received a university grant for research activities	%	1	100	-	-	-	100	-
25	Share of young researchers attracted	%	37	100	100	90	0	0	0
26	The share of implemented international scientific projects from the total number of projects	%	5	0	0	0	0	0	0
27	Number of implemented virtual laboratories	Quantity	1	0	1	0	0	0	0
28	The share of commercialized scientific developments from the total amount of applied scientific research financed from the budget	%	2	0	0	0	0	0	0
29	The share of young scientists from the total number of scientists and	%	29	10	0	100	20	100	95

	researchers carrying out R&D and scientific research								
5 GOOD CORPORATE GOVERNANCE – BY 2026, INCREASE THE LEVEL OF SATISFACTION WITH QUALITY, INFRASTRUCTURE, RESEARCH, AND DIGITALIZATION TO AT LEAST 90%									
30	Volume of attracted investments for the development of the university from the total income of the university (%)								
31	The proportion of students with special educational needs from the total number of students	%	0.36	0,1	0,1	0	0	0,1	0
32	The share of OPs implemented using remote technologies	%	100	100	100	0	100	0	100
33	The share of foreign students in the higher education system from the total number of students	%	6	2	6	20	5	1.5	0
34	Share of research conducted using a digital platform	%	18	100	100	90	0	0	0
35	The share of university administrators who have undergone advanced training in management	%	100	100	100	100	100	100	100
36	Increasing the share of PPP degree holders	%	56	60	80	60	50	80	55
37	Gradual increase in the proportion of female managers in structural divisions of organizations	%	20	0	20	0	0	0	0

No.	Target indicators	Unit of measurement	2024						
			Institute of EaME	**Department of Mechanical Engineering**	**Department of TMaT**	**Department of EM**	**Department of Energy**	**Department of SCaM**	**Department of General Physics**
			Of these	Of these	Of these	Of these	Of these	Of these	Of these
1 QUALITY UNIVERSITY CONTINGENT – BY 2026 10% OF PHD STUDENTS FROM THE TOTAL NUMBER OF STUDENTS									
1	Share of completed postdoctoral programs	%	0	0	0	0	0	0	0
2	Number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking	Quantity	-	-	-	-	-	-	-
3	The share of students studying within the framework of academic mobility, financed by the university from the total number of students	%	0.2	0	0,1	0	0	0	0
4	The share of teaching staff who have undergone advanced training and foreign internships	%	3	2	1	2	2	1	2
5	Percentage of students engaged in volunteer activities out of the total number of students enrolled in undergraduate programs	%	4	15	6	6	3	3	0
6	The share of teaching staff teaching in English out of the total number of teaching staff	%	10	1	0	0	0	0	0
7	The share of attracted foreign scientists with a high h-index	%	38	100	0	100	0	0	100
8	The share of international educational programs implemented, academic exchanges with foreign partners	%	13	0	0	0	0	0	0
9									

2 QUALITY RESEARCH RESULTS – 300 SCIENTIFIC PUBLICATIONS IN Q1 AND Q2 BY 2026									
10	The share of funded educational and research projects carried out at the university	%	92	100	100	80	-	-	-
11	Increase in publications in top-rated publications	Quantity	26	3	5	2	2	0	9
12	The share of teaching staff holding international certificates confirming proficiency in a foreign language in accordance with the Common European Framework of Reference for Language Proficiency	%	11	7	11	1	7	10	12
13	The share of expenses for the development of educational and scientific laboratories from the total budget of the institute	%	2	-	-	-	-	-	1
3 QUALITY EDUCATION - BY 2026, AT LEAST 10% OF GRADUATES WILL RECEIVE 1,000,000 TENGE IN WAGES									
14	The share of graduates employed in the first year after completing their studies (from the total number of graduates)	%	82	75	85	Released only in 2023	100	Released only in 2022	Non-graduating department
15	The share of innovative OPs developed by order of industry associations and enterprises	%	57						
16	The share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third	%	10	1	0.5	0	4	1	Non-graduating department

	degree diplomas) from their total number								
17	The share of employers and business structures involved in the educational process	%	15	30	20	10	10	20	5
4 QUALITY SCIENTIFIC RESEARCH – BY 2026 THE AMOUNT OF CONTRACT RESEARCH WILL BE NOT LESS THAN 2.0 BILLION TENGE PER YEAR									
18	Share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the institute)	%	10						
19	The share of employed graduates in the first year after graduation from a higher education institution under the state educational order	%	90	80	98	Released only in 2023	100	Released only in 2022	Non-graduating department
20	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	51	50	50	60	50	40	50
21	The volume of income from research and development from the total income of the institute	%	0.5	-	-	-	-	-	-
22	Share of grants from local government agencies and employers %	%	1	-	-	-	-	-	-
23	The share of projects financed by local government bodies and business representatives	%	1	-	-	-	-	-	-
24	The share of young scientists who received a university grant for research activities	%	1	100	-	-	-	100	-
25	Share of young researchers attracted	%	37	100	100	90	0	0	0
26	The share of implemented international scientific projects from the total number of projects	%	7	0	0	0	0	0	0

27	Number of implemented virtual laboratories	Quantity	1	0	1	0	0	0	0
28	The share of commercialized scientific developments from the total amount of applied scientific research financed from the budget	%	4	0	0	0	0	0	0
29	The share of young scientists from the total number of scientists and researchers carrying out R&D and scientific research	%	33	10	0	100	20	100	95
5 GOOD CORPORATE GOVERNANCE – BY 2026, INCREASE THE LEVEL OF SATISFACTION WITH QUALITY, INFRASTRUCTURE, RESEARCH, AND DIGITALIZATION TO AT LEAST 90%									
30	Volume of attracted investments for the development of the university from the total income of the university (%)		1						
31	The proportion of students with special educational needs from the total number of students	%	3	0,1	0,1	0	0	0,1	0
32	The share of OPs implemented using remote technologies	%	100	100	100	0	100	0	100
33	The share of foreign students in the higher education system from the total number of students	%	7	2	6	20	5	1.5	0
34	Share of research conducted using a digital platform	%	19	100	100	90	0	0	0
35	The share of university administrators who have undergone advanced training in management	%	100	100	100	100	100	100	100
36	Increasing the share of PPP degree holders	%	56	60	80	60	50	80	55

37	Gradual increase in the proportion of female managers in structural divisions of organizations	%	5	0	20	0	0	0	0

No.	Target indicators	Unit of measurement	2025						
			Institute of EaME	Department of Mechanical Engineering	Department of TMaT	Department of EM	Department of Energy	Department of SCaM	Department of General Physics
			Of these	Of these	Of these	Of these	Of these	Of these	Of these
1 QUALITY UNIVERSITY CONTINGENT – BY 2026 10% OF PHD STUDENTS FROM THE TOTAL NUMBER OF STUDENTS									
1	Share of completed postdoctoral programs	%	0	0	0	0	0	0	0
2	Number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking	Quantity	-	-	-	-	-	-	-
3	The share of students studying within the framework of academic mobility, financed by the university from the total number of students	%	0.2	0	0,1	0	0	0	0
4	The share of teaching staff who have undergone advanced training and foreign internships	%	3	2	1	2	2	1	2
5	Percentage of students engaged in volunteer activities out of the total number of students enrolled in undergraduate programs	%	4	15	6	6	3	3	0
6	The share of teaching staff teaching in English out of the total number of teaching staff	%	10	1	0	0	0	0	0

7	The share of attracted foreign scientists with a high h-index	%	38	100	0	100	0	0	100
8	The share of international educational programs implemented, academic exchanges with foreign partners	%	13	0	0	0	0	0	0
9									
2 QUALITY RESEARCH RESULTS – 300 SCIENTIFIC PUBLICATIONS IN Q1 AND Q2 BY 2026									
10	The share of funded educational and research projects carried out at the university	%	92	100	100	80	-	-	-
11	Increase in publications in top-rated publications	Quantity	26	3	5	2	2	0	9
12	The share of teaching staff holding international certificates confirming proficiency in a foreign language in accordance with the Common European Framework of Reference for Language Proficiency	%	11	7	11	1	7	10	12
13	The share of expenses for the development of educational and scientific laboratories from the total budget of the institute	%	2	-	-	-	-	-	1
3 QUALITY EDUCATION - BY 2026, AT LEAST 10% OF GRADUATES WILL RECEIVE 1,000,000 TENGE IN WAGES									
14	The share of graduates employed in the first year after completing their studies (from the total number of graduates)	%	82	75	85	Released only in 2023	100	Released only in 2022	Non-graduating department
15	The share of innovative OPs developed by order of industry associations and enterprises	%	57						

16	The share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third degree diplomas) from their total number	%	10	1	0.5	0	4	1	Non-graduating department
17	The share of employers and business structures involved in the educational process	%	15	30	20	10	10	20	5
4 QUALITY SCIENTIFIC RESEARCH – BY 2026 THE AMOUNT OF CONTRACT RESEARCH WILL BE NOT LESS THAN 2.0 BILLION TENGE PER YEAR									
18	Share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the institute)	%	10						
19	The share of employed graduates in the first year after graduation from a higher education institution under the state educational order	%	90	80	98	Released only in 2023	100	Released only in 2022	Non-graduating department
20	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	51	50	50	60	50	40	50
21	The volume of income from research and development from the total income of the institute	%	0.5	-	-	-	-	-	-
22	Share of grants from local government agencies and employers %	%	1	-	-	-	-	-	-

23	The share of projects financed by local government bodies and business representatives	%	1	-	-	-	-	-	-
24	The share of young scientists who received a university grant for research activities	%	1	100	-	-	-	100	-
25	Share of young researchers attracted	%	37	100	100	90	0	0	0
26	The share of implemented international scientific projects from the total number of projects	%	7	0	0	0	0	0	0
27	Number of implemented virtual laboratories	Quantity	1	0	1	0	0	0	0
28	The share of commercialized scientific developments from the total amount of applied scientific research financed from the budget	%	4	0	0	0	0	0	0
29	The share of young scientists from the total number of scientists and researchers carrying out R&D and scientific research	%	33	10	0	100	20	100	95
5 GOOD CORPORATE GOVERNANCE – BY 2026, INCREASE THE LEVEL OF SATISFACTION WITH QUALITY, INFRASTRUCTURE, RESEARCH, AND DIGITALIZATION TO AT LEAST 90%									
30	Volume of attracted investments for the development of the university from the total income of the university (%)		1						
31	The proportion of students with special educational needs from the total number of students	%	3	0,1	0,1	0	0	0,1	0
32	The share of OPs implemented using remote technologies	%	100	100	100	0	100	0	100

33	The share of foreign students in the higher education system from the total number of students	%	7	2	6	20	5	1.5	0
34	Share of research conducted using a digital platform	%	19	100	100	90	0	0	0
35	The share of university administrators who have undergone advanced training in management	%	100	100	100	100	100	100	100
36	Increasing the share of PPP degree holders	%	56	60	80	60	50	80	55
37	Gradual increase in the proportion of female managers in structural divisions of organizations	%	5	0	20	0	0	0	0

No.	**Target indicators**	**Unit of measurement**	**2026**						
			Institute of EaME	**Department of Mechanical Engineering**	**Department of TMaT**	**Department of EM**	**Department of Energy**	**Department of SCaM**	**Department of General Physics**
			Of these	Of these	Of these	Of these	Of these	Of these	Of these
1 QUALITY UNIVERSITY CONTINGENT – BY 2026 10% OF PHD STUDENTS FROM THE TOTAL NUMBER OF STUDENTS									
1	Share of completed postdoctoral programs	%	0	0	0	0	0	0	0
2	Number of educational programs within the framework of double-degree education with partner universities from the Top-700 of the QS ranking	Quantity	-	-	-	-	-	-	-

3	The share of students studying within the framework of academic mobility, financed by the university from the total number of students	%	0.2	0	0,1	0	0	0	0
4	The share of teaching staff who have undergone advanced training and foreign internships	%	3	2	1	2	2	1	2
5	Percentage of students engaged in volunteer activities out of the total number of students enrolled in undergraduate programs	%	4	15	6	6	3	3	0
6	The share of teaching staff teaching in English out of the total number of teaching staff	%	10	1	0	0	0	0	0
7	The share of attracted foreign scientists with a high h-index	%	38	100	0	100	0	0	100
8	The share of international educational programs implemented, academic exchanges with foreign partners	%	13	0	0	0	0	0	0
9									
2 QUALITY RESEARCH RESULTS – 300 SCIENTIFIC PUBLICATIONS IN Q1 AND Q2 BY 2026									
10	The share of funded educational and research projects carried out at the university	%	92	100	100	80	-	-	-
11	Increase in publications in top-rated publications	Quantity	26	3	5	2	2	0	9
12	The share of teaching staff holding international certificates confirming proficiency in a foreign language in accordance with the Common European Framework of Reference for Language Proficiency	%	11	7	11	1	7	10	12

13	The share of expenses for the development of educational and scientific laboratories from the total budget of the institute	%	2	-	-	-	-	-	1
3 QUALITY EDUCATION - BY 2026, AT LEAST 10% OF GRADUATES WILL RECEIVE 1,000,000 TENGE IN WAGES									
14	The share of graduates employed in the first year after completing their studies (from the total number of graduates)	%	82	75	85	Released only in 2023	100	Released only in 2022	Non-graduating department
15	The share of innovative OPs developed by order of industry associations and enterprises	%	57						
16	The share of those admitted to higher education institutions who have the Altyn Belgi badge, winners of international Olympiads and competitions of scientific projects of the last three years, winners of the presidential and republican Olympiads and competitions of scientific projects of the current academic year (awarded first, second and third degree diplomas) from their total number	%	10	1	0.5	0	4	1	Non-graduating department
17	The share of employers and business structures involved in the educational process	%	15	30	20	10	10	20	5
4 QUALITY SCIENTIFIC RESEARCH – BY 2026 THE AMOUNT OF CONTRACT RESEARCH WILL BE NOT LESS THAN 2.0 BILLION TENGE PER YEAR									
18	Share of income received from scientific activities, innovative developments and commercialized projects (from the total budget of the institute)	%	10						

19	The share of employed graduates in the first year after graduation from a higher education institution under the state educational order	%	90	80	98	Released only in 2023	100	Released only in 2022	Non-graduating department
20	The share of teaching staff participating in educational and research projects from the total number of teaching staff	%	51	50	50	60	50	40	50
21	The volume of income from research and development from the total income of the institute	%	0.5	-	-	-	-	-	-
22	Share of grants from local government agencies and employers %	%	1	-	-	-	-	-	-
23	The share of projects financed by local government bodies and business representatives	%	1	-	-	-	-	-	-
24	The share of young scientists who received a university grant for research activities	%	1	100	-	-	-	100	-
25	Share of young researchers attracted	%	37	100	100	90	0	0	0
26	The share of implemented international scientific projects from the total number of projects	%	7	0	0	0	0	0	0
27	Number of implemented virtual laboratories	Quantity	1	0	1	0	0	0	0
28	The share of commercialized scientific developments from the total amount of applied scientific research financed from the budget	%	4	0	0	0	0	0	0
29	The share of young scientists from the total number of scientists and	%	33	10	0	100	20	100	95

	researchers carrying out R&D and scientific research								
5 GOOD CORPORATE GOVERNANCE – BY 2026, INCREASE THE LEVEL OF SATISFACTION WITH QUALITY, INFRASTRUCTURE, RESEARCH, AND DIGITALIZATION TO AT LEAST 90%									
30	Volume of attracted investments for the development of the university from the total income of the university (%)		1						
31	The proportion of students with special educational needs from the total number of students	%	3	0,1	0,1	0	0	0,1	0
32	The share of OPs implemented using remote technologies	%	100	100	100	0	100	0	100
33	The share of foreign students in the higher education system from the total number of students	%	7	2	6	20	5	1.5	0
34	Share of research conducted using a digital platform	%	19	100	100	90	0	0	0
35	The share of university administrators who have undergone advanced training in management	%	100	100	100	100	100	100	100
36	Increasing the share of PPP degree holders	%	56	60	80	60	50	80	55
37	Gradual increase in the proportion of female managers in structural divisions of organizations	%	5	0	20	0	0	0	0