



ПЛАН РАЗВИТИЯ **OP "6B07221 Surveying business"**

1 General information

The OP "6B07221 – Surveying" was developed in accordance with the National Qualifications Framework, aligned with the Dublin Descriptors and the European Qualifications Framework, and is based on a modular discipline learning system that ensures the formation of basic cultural and professional competencies of the future engineer-surveyor.

OP "6B07221 – Surveying" is aimed at training specialists in demand in the mining industry, mineral processing, construction, oil and gas industry and related sectors. The program combines fundamental surveying knowledge with modern methods of geodesy, geoinformation technologies and digital spatial data processing, providing bachelor's degree graduates with a solid professional base for further development.

The program is aimed at training competent bachelors who are able to perform surveying measurements, work with modern tools and software, participate in the design of mining facilities and ensure the safe and efficient use of natural resources. The practice-oriented approach allows students to apply the acquired knowledge in the course of educational and industrial practices, forming professional skills of working in real conditions of enterprises.

2 Educational program planning

Planning and management of the educational program of the OP "6B07221 Surveying" is carried out on the basis of priority areas and strategic goals of K.I. Satpayev KazNTU (<https://official.satbayev.university/ru/university/mission-strategy>) and the O.A. Baikonurov Mining and Metallurgical Institute, reflecting the vision, mission, strategic directions and key performance indicators (<https://official.satbayev.university/ru/mining-metallurgy>).

3 The purpose of OP development

Improving the process of training qualified engineering personnel in the field of surveying and geotechnology, who possess fundamental knowledge, practical skills and competencies to perform surveying, ensure safe mining operations and the use of modern digital technologies in production activities.

4 OP Tasks

1. Performing surveying and geodetic works that ensure the accuracy of spatial measurements and support mining processes in real production conditions.
2. Ensuring industrial and environmental safety in mining operations, including participation in monitoring the condition of workings, structures and the earth's surface.
3. Participation in the preparation of design and technical documentation necessary for the performance of mining and surveying operations in accordance with applicable regulations and standards.
4. Application of methods of geometrization, analysis and processing of geospatial

data to solve typical engineering problems and assess the conditions of field development.

5. Participation in the organization of the activities of surveying services of enterprises, assistance in improving the efficiency and technological level of production processes.

5 Risks of OP implementation (SWOT analysis)

<i>S (strength) – strengths (potentially positive internal factors)</i>	<i>W (weakness) – weaknesses (potentially negative internal factors)</i>
1. The university's brand is well-known and graduates are in high demand in the manufacturing sector. 2. A positive image in the educational services market of the Republic of Kazakhstan, confirmed by the stable demand for engineering specialties. 3. The widespread use of modern digital and interactive technologies in the educational process, providing practice-oriented learning. 4. The existence of academic integrity control systems that ensure transparency and quality of training. 5. Partnerships with leading industrial enterprises, scientific organizations and foreign universities, creating opportunities for internships and internships. 6. Modern material and technical base and high level of digitalization, allowing to simulate real production processes. 7. The growth and renewal of the classroom fund, equipped with specialized equipment and software complexes. 8. A sufficient amount of library and electronic resources, providing access to relevant professional resources. 9. Full provision of educational and methodological documentation on the disciplines of the OP, including practical and laboratory tasks. 10. Stable financial position of the university, which allows to support the development of infrastructure and educational services. 11. Teachers with experience in the production and engineering environment, proficient in modern technologies of the industry. 12. Conducting practical classes at the bases of the department's branches and industrial enterprises, ensuring a close link between training and real production. 13. Improving the qualification and professional level of teaching staff, focused on practical and engineering tasks of the industry.	1. Insufficient volume of practice-oriented projects implemented jointly with industrial enterprises, which reduces opportunities for expanding production practices. 2. Limited availability of places in the dormitory, which may reduce the attractiveness of the program for nonresident students. 3. There is an insufficient list of licenses and permits for performing some specialized engineering and technical work, which limits the university's participation in production projects and industry orders. 4. Insufficiently developed cooperation with regional universities and colleges, which limits the influx of applicants and the exchange of experience in the field of practice-oriented learning.
<i>O (opportunity) – favorable opportunities (potentially positive external factors)</i>	<i>T (threat) – threats (potentially negative external factors)</i>
1. There is a high demand for qualified engineering personnel in the field of surveying	1. The increase in the cost of specialized surveying and geodetic equipment due to

and geotechnology from mining and related industries. 2. The possibility of introducing new practice-oriented courses and modules in the field of modern monitoring technologies, digitalization and automation of production processes. 3. Expanding career guidance and information work among bachelor's degree graduates, increasing interest in accelerated specialized training programs. 4. The developed industrial, financial, and socio-cultural environment of Almaty, which ensures a steady demand for engineering specialties and a wide range of employment opportunities. 5. Willingness of mining, metallurgical and industrial enterprises to cooperate with the university, providing places for production practices, internships and implementation of applied projects. 6. Stable demand for graduates of accredited specialized educational programs in the national and regional labor markets.	inflationary processes, which complicates its renewal and modernization. 2. Reducing the financial capacity of enterprises to invest in training, internships and corporate educational programs, which may limit the practical training of bachelors. 3. The uneven level of digitalization and automation of production processes in enterprises, which affects the possibilities of introducing modern technologies in training. 4. The limited quality of the Internet infrastructure in a number of regions makes it difficult for nonresident students to use distance and digital learning technologies. 5. Insufficient training of some applicants in specialized disciplines and poor command of foreign languages, which can reduce the effectiveness of mastering modern digital and surveying technologies.
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Long-term action plan for the development and improvement of the educational program

№	Event content	Responsible performers	Deadlines for execution
1	Study and analysis of the competitive environment, disclosure of the department's capabilities to enhance the image and attractiveness of the educational institution for consumers (applicants, students, parents, business partners) of educational services	Head of the Department, teaching staff	2025-2029
2	The use of progressive marketing and digital technologies to promote distance education services	Head of the Department, teaching staff	2025-2029
3	Strengthening career guidance, attracting applicants through tripartite agreements	Directorate, Head of the Department, teaching staff	2025-2029
4	Involvement of teaching staff from among stakeholders in the educational process	Head of the Department, teaching staff	2025-2029
6	Preparation of an educational program for specialized accreditation for compliance with education and agency quality standards	Head of the Department, teaching staff	2025-2029
7	Provision of all types of disciplines with textbooks, manuals, educational and methodical complexes with digital remote support, electronic educational materials, multimedia educational resources	SL, Head of the Department, teaching staff	2025-2029
8	Conducting seminars and master classes and mastering digital forms of teaching with the participation of IT	Head of the Department, teaching staff	2025-2029

9	Conducting seminars using students' volunteer activities, seminars and workshops to improve knowledge and teaching methods in collaboration with stakeholders, public foundations, non-governmental organizations, research institutes and other universities	Head of the Department, teaching staff	2025-2029
10	Ensuring the participation of teachers and students in interuniversity and international conferences, as well as in competitions held by the Ministry of Education and Science of the Republic of Kazakhstan	Head of the Department, teaching staff	2025-2029
11	The development of scientific schools, the introduction of teaching staff's own research into the educational process in the field of teaching methods of academic	Head of the Department, teaching staff	2025-2029
12	Conducting effective positioning of scientific activities in the intellectual property market	Head of the Department, teaching staff	2025-2029
13	Attracting foreign scientists with a high h-index	Head of the Department, teaching	2025-2029
14	Development of educational programs of the department	DAW, Head of the	2025-2029
15	Regular professional development of teaching staff and students	HR, Head of the Department, teaching	2025-2029
16	Strengthening the material and technical base	Directorate, Head of the Department	2025-2029
17	Internal and external academic mobility of teaching staff and students	Directorate, Head of the Department	2025-2029
18	Expanding multilingual education	Directorate, Head of the Department	2025-2029
19	Development of the MOE in the disciplines of the OP and for additional training	Directorate, Head of the Department	2025-2029
20	Ensuring safe and comfortable working conditions, education and extracurricular activities for students	Directorate, Head of the Department	2025-2029
21	Organization of work on effective employment of graduates. Creation and development of an alumni community	Head of Department, responsible for employment and career guidance	2025-2029
22	Formation of a fund of educational and scientific literature in the framework of the training area	Deputy Dean for Research, Department Chair,	2025-2029
23	Equipping classrooms with new computer equipment and other equipment, software	Head of the Department, teaching staff	2025-2029

Reviewed at the meeting of the Department of MSG Protocol №5 dated January 23, 2025y.

Head of MSG Department

Meirambek G.

OP with specification of strategic planning indicators, reflection of risk analysis and assessment, implementation of activities depending on identified risks, guarantees of achievement of planned results

№	Target indicators	Unit of measurement	Risks					
			2025-2026	2026-2027	2028-2029	Analysis and evaluation	Strategies	Guarantees
1	Percentage of employed graduates in the first year after graduation	%	90	95	97	Loss of connection with a graduate	Cooperation with stakeholders and business partners. Feedback from graduates.	Contact information with graduates, business partners, and stakeholders. Employment of graduates. Internal audit
2	Number of joint educational programs	Quantity	0	0	1	Organization analysis The educational process in foreign universities and the assessment of the possibility of creating a SOP.	Collaboration with national and international research centers, institutes, and universities. Involvement of highly qualified faculty in departmental activities. Development and implementation of additional assessment methods to evaluate key indicators of learning effectiveness. Development of an action plan for internal and external mobility of students and faculty.	Risk-oriented analysis (SWOT) of the implemented educational programs. Concluding agreements, approval and launch of educational programs, and admission of students to new programs. Internal audit.

3	Number of educational programs in English	Quantity	0	0	1	Insufficient English proficiency among faculty	Organization and delivery of English language courses for faculty at the university	Availability of international certificates assessing English language proficiency among faculty and students. Internal audit. Semi-annual and annual departmental reports.
4	Increase in student enrollment in distance education programs	Quantity	25	30	40	Poor awareness of applicants	To activate career guidance work. To intensify work on external and internal academic mobility of teaching staff using modern distance learning technologies	Digital resources of the university. Internal audit.
5	Development and implementation of educational, teaching materials reflecting the results of our own research and the best international practices	Quantity	4	6	8	Insufficient implementation of the results of research and development of teaching staff in the development of educational and teaching materials	To consider at the meeting of the department issues related to the development and implementation of teaching staff's own research in the field of teaching methods and to develop methodological guidelines for teaching academic subjects based on teaching staff's own research.	Teaching staff with high qualifications and extensive experience in scientific and pedagogical activities. F KazNITU 703-06. The annual plan of educational and methodical publications. Internal audit

6	The share of updating the scientific equipment fleet from the total number of scientific equipment, %*	Quantity	15	20	25	Increased cost of equipment due to inflationary costs	Opening and equipping of the scientific and educational laboratory in Geo-Information Engineering (GIE)	Conducting laboratory sessions in accordance with the curriculum of the educational program
7	Increase in protection documents and copyright certificates	Quantity	13	15	20	Insufficient patenting of faculty research results	Participation of faculty and students in grant competitions organized by the Ministry of Science and Higher Education of the	Patenting of scientific developments. Patent Department
8	Number of faculty with sufficient English proficiency for conducting research and educational activities	Quantity	3	3	5	Low English proficiency among senior faculty members	Organization and delivery of English language courses for senior faculty members at the university	Availability of international English language proficiency certificates among faculty and students
9	Share of degree-holding faculty involved in research and experimental design work, %	Quantity	76	78	80	The percentage of science funding in Kazakhstan is among the lowest in the world (0.13% of GDP).	Increase faculty participation in grant competitions organized by the Ministry of Science and Higher Education of the Republic of Kazakhstan (MSHE RK).	Highly qualified faculty with substantial research experience.

10	Number of publications in scientific journals of the Republic of Kazakhstan recommended by COCSON, Ministry of	Quantity	9	12	14	Lack of and insufficient funding for scientific research	Increase faculty and student participation in research and student research activities (R&D and SRA).	Faculty with high qualifications and extensive experience in conducting research. Published scientific articles.
11	Number of ongoing research projects	Quantity	4	5	6	The percentage of science funding in Kazakhstan is among the lowest in the world (0.13% of GDP).	Increase faculty participation in grant competitions organized by the Ministry of Science and Higher Education of the Republic of Kazakhstan	Faculty with high qualifications and extensive experience in conducting research.
12	Number of research outcomes implemented in the educational process	Quantity	4	5	6	Insufficient funding for scientific research	Development and integration of research results into the core disciplines of the curriculum.	Implementation and report of research results in the educational process. Open classes.
13	Number of publications in international journals indexed in Scopus / WoS	Quantity	12	16	18	Insufficient funding for scientific research	Increase faculty participation in grant competitions organized by the Ministry of Science and Higher Education of the Republic of Kazakhstan (MSHE RK).	Faculty with high qualifications and extensive experience in conducting research.

14	Percentage of faculty holding academic degrees (%)	%	71,5	73	75	Insufficient number of grants for the training of master's and doctoral students	Recruitment and employment of new staff who have successfully defended their master's and doctoral theses	Awarding of academic and scientific degrees to graduates. Internal audit.
15	Increase in the proportion of faculty and research staff who have undergone professional development domestically and abroad	%	90	95	98	Insufficient funding	Participation of faculty in the "Bolashak" competition, organization of professional development courses for faculty. Within the framework of the Industrial Advisory Board for the educational program, sign a Memorandum and jointly develop, with various associations, an action plan for the proper preparation of students for professional certification of the program.	Certificate of professional development. Internal audit.

Reviewed at the meeting of the Department of MSG Protocol №5 dated January 23, 2025y.

Head of MSG Department



Meirambek G.