NJSC SHAKARIM UNIVERSITY OF SEMEY

DEVELOPMENT PLAN EDUCATIONAL PROGRAM

6B05102 - Biotechnology

Semey

NON-PROFIT JOINT-STOCK COMPANY «SHAKARIM UNIVERSITY OF SEMEY»

APPROVED

Board member - Vice- rector for academic affairs

_____ I. Oralkanova

«26» 05 2023

EDUCATIONAL PROGRAM DEVELOPMENT PLAN
6B05102 - «Biotechnology»
2023-2027

Semey 2023

Content

1. Passport of the Development Plan of the Bachelor's EP __6B05102 - «Biotechnology»____

1	Basis for development	Shakarim University Strategic Plan for 2021-2025. Faculty work plan
2	Developed by the Academic Committee of the EP	*Head of AK:* Nurymkhan G.N., Dean of the Faculty of Engineering and Technology, assoc. Professor *EP Manager:* Jumazhanova M. M., PhD, acting assoc. Professors *AK members:* Kakimova Zh. Kh., head of the department, candidate of technical sciences; assoc. Professor; Mirasheva G. O., candidate of technical sciences; assoc. Professor; Saylaubaev A.S. Director of «Vostok-Moloko» Corporation LLP; Kalieva Z.Zh. technologist at «Acer» LLP; Zidakhan D.A. student of group BT-101 EP “6B05102 - Biotechnology”; Tleugali Zh.Yu. student of group BT-001 EP “6B05102 - Biotechnology”. *Employer:* Sembaeva Sh.T. technologist at «Vostok-Moloko» Corporation LLP (in accordance with order No. 99 of March 29, 2023
3	Implementation deadlines	2023-2027
4	Expected results of implementation	Training of specialists competitive in the labor market to carry out biotechnological processes with biological objects of microbial, plant, animal origin for the purpose of its use in food and processing production

2. Analytical justification for the EP

2.1 Information about the educational program

The educational program is developed in accordance with the National Qualifications Framework and Occupational Standards, in accordance with the Dublin Descriptors and the European Qualifications Framework. The typical period for completing a bachelor's degree program is 4 years.

EP 6B05102- “Biotechnology” was developed by the Academic Committee

Considered at a meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology (Protocol № 4/6 of April 10, 2023)

Approved at a meeting of the University Academic Council (Protocol № 8 of April 25, 2023)

The main criterion for the completion of the educational process is the completion of at least 240 credits, with the award of a Bachelor of Science degree in the educational program 6B05102 “Biotechnology”.

The educational program 6B05102- “Biotechnology” was developed taking into account the needs of the regional labor market.

- License to conduct educational activities KZ38LAA00018432 dated June 25, 2020, application order № 274 dated June 25, 2020 (bachelor’s degree);
- State compulsory standard of higher and postgraduate education dated July 20, 2022.

The uniqueness of the program lies in the opportunity for students to participate in scientific programs, start-up projects, realize their creative potential through scientific research, creative projects, sports events, as well as continue further education in master's and doctoral programs.

2.2 Information about students

Academic year / Basics of training	2023-2024 academic year	2024-2025 academic year	2025-2026 academic year	2026-2027 academic year
Grant	41	42	43	44
Contract	18	19	18	19
Total	59	60	61	62

2.3 Internal and external conditions for the development of educational programs

For the development and implementation of the educational program 6B05102- «Biotechnology», the department has created favorable and optimal conditions such as:

• highly qualified teaching staff;

• high material and technical equipment of the EP;

• close cooperation with employers;

• modern educational and methodological base, with students' access to information and analytical resources of the world scientific world;

• use of modern and interactive technical teaching aids;

• academic mobility (external and internal);

• high-quality professional infrastructure (educational resources);

• for conducting laboratory and practical classes there are training laboratories equipped with special equipment and materials.

• The provision of educational programs with educational and methodological complexes of disciplines is 100%.

• The teaching staff of the department have personal computers and free access to the Internet.

The presence of high-quality professional infrastructure (educational resources) necessary for the implementation of EP is a guarantee of the training of highly qualified specialists of modern times.

At the department, a practice base is determined for students in the educational program, agreements and contracts are concluded with enterprises for educational, industrial and pre-graduate internships. Currently, there are concluded and valid agreements on industrial technological internships in the following enterprises:

1. Farm «Kalikanuly», Semey, East Kazakhstan region (Aisha);
2. «Vostok-Moloko» Corporation LLP, Ust-Kamenogorsk, East Kazakhstan region;
3. JSC «Sut», Pavlodar, Pavlodar region;
4. JSC «Food Master», Esik, Almaty region;
5. «Bagration Ulan» LLP, p. Proletarka, Ulansky district, East Kazakhstan region;
6. «Kondiz» LLP, Semey, East Kazakhstan region;
7. «Semnan» LLP, Semey, East Kazakhstan region;
8. LLP «Emil», Ust-Kamenogorsk, East Kazakhstan region;

9. LLP «QAZAQ ASTYQ GROUP» Semey, East Kazakhstan region.

The implementation of academic mobility of students and teaching staff, scientific internships for students is carried out with such universities of the Republic of Kazakhstan as: NJSC «Toraigyrov University», NJSC «Kokshetau University named after Sh. Ualikhanov», NJSC «Kazakh Agrotechnical Research University named after S. Seifullin», «Almaty Technological University», etc. and foreign universities Pamukkale University, Turkey; Czech Agrotechnical University, Czech Republic, Prague, «Federal Altai Scientific Center of Agrobiotechnology», department of the Siberian Research Institute of Cheese Making, Barnaul, Kemerovo State University, Kemerovo, Novosibirsk State Agrarian University, Novosibirsk. A memorandum of cooperation was concluded with the Northwest China University of Agriculture and Forestry - Northwest A & F University (China, Xinyang, Shaanxi Province).

One of the department's objectives is to develop a joint educational program with leading universities, the implementation of which is aimed at integration into the international scientific space through academic exchange of teachers and students, as well as obtaining two diplomas.

2.4 Information about teaching staff implementing the educational program

№	Indicators	Units of measurement	2023-2024 academic year	2024-2025 academic year	2025-2026 academic year	2026-2027 academic year
1	Share of teaching staff with an academic degree in EP	%	**61**	**62**	**63**	**64**
2	Including the share of teaching staff with an academic degree in the cycle of general education disciplines	%	**12**	**13**	**14**	**15**

2.5 Characteristics of the achievements of the EP

The achievements of EP 6B05102 – «Biotechnology» include the training of scientific and pedagogical personnel and the implementation of:

1. Scientific projects for grant funding by the Ministry of Science and Higher Education of the Republic of Kazakhstan RK on the topic: «Development of a biosensor for the determination of highly cumulative xenobiotics in milk and dairy products based on regional monitoring of food safety». Scientific supervisor, Doctor of Technical Sciences, Professor Kakimov A.K.

2. A joint project under the Targeted Financing Program with «Kazakh research institute of processing and food industry» LLP on the topic «Development of resource-saving technology for processing secondary raw materials of cattle and poultry in the production of functional meat products». Performed by Doctor of Technical Sciences, Professor Kakimov A.K.

3. Postdoctoral grant from Jumazhanova M.M. AP14973033 «Development of technology for drinking yoghurt with encapsulated probiotic cultures». Scientific supervisor, candidate of technical sciences, associate professor Kakimova Zh.Kh.

The achievements of the EP also include the functioning, on the basis of an agreement on the creation of a branch of the department on the basis of the Semey Branch of the «Kazakh research institute of processing and food industry» LLP, a branch of the department.

Concluding a memorandum with the Northwestern University of Agriculture and Forestry (Xianyang, People's Republic of China), it is planned to implement a double-degree education and an academic mobility program for students and teaching staff in EP 6B05102-Biotechnology.

3. Main objectives of the EP development plan

The goals and objectives of the educational program are formulated taking into account the requirements and requests of potential consumers, and based on an assessment of the demand for the educational program, which are determined by the interests of potential employers, applicants, the potential of the university, the requirements of the state and society as a whole. The educational program 6B05102-Biotechnology is focused on training specialists competitive in the labor market to carry out biotechnological processes with biological objects of microbial, plant, and animal origin for the purpose of using them in food and processing production.

Main objectives of the EP development plan:

1. Training of in-demand personnel that meets the demands of the internal and external labor market.
2. Providing conditions for obtaining a full-fledged, high-quality professional education.
3. Formation of basic professional competencies among future specialists.
4. Graduate of competitive specialists with knowledge of a professional foreign language

5. Interaction between the university and employers to assess the competencies of university graduates and satisfaction with the quality of graduates' training

6. Increasing the research potential of the EP

4. Risk Analysis of the Educational Program

№	Name of risks	Corrective measures
1	Decrease in the number of students enrolled in the EP	Development of a comprehensive plan for career guidance for university undergraduate students. Attracting a contingent of students on a paid-contractual basis
2	Insufficient level of language knowledge to introduce trilingual education	Strengthening the language training of students and teaching staff through mandatory attendance at foreign language courses created both at the university and outside it
3	Declining employment rate	Holding a graduate fair
4	Insufficient development of external and internal academic mobility of students and teaching staff	Intensify work with foreign universities for the exchange of students and teaching staff on academic mobility
5	The risk of reducing the degree of teaching staff in the EP	Increasing degree of maturity by defending doctoral dissertations
6	An improving digital infrastructure could lead to rapid aging of the existing infrastructure	Timely planned purchase of modern equipment and instruments
7	Weak activity of teaching staff in publishing scientific works in journals with a high citation index	Publication plan for teaching staff of scientific articles in journals included in the Web of Science and Scopus databases, in scientific journals with an impact factor

5. Action plan for the development of EP

№	Criteria	Expected results	Unit	2023-2024 academic year		2024-2025 academic year		2025-2026 academic year		2026-2027 academic year	
				plan	Actual Execution	plan	Actual Execution	plan	Actual Execution	plan	Actual Execution
Direction 1. Educational and methodological support											
1.1	Updating the educational program based on professional standards, taking into account the recommendations of employers	Conducting an examination of the Educational program «6B05102-Biotechnology» in order to increase practice orientation and develop professional competencies of graduates	fact.	-		+		+		+	
1.2	Monitoring and updating catalogs of elective disciplines in accordance with the development of key and professional competencies and labor market demands	Improving the quality of the content of educational programs by including elective courses aimed at developing key and professional competencies of graduates in accordance with the demands of the labor market	fact.	-		+		+		+	
1.3	Introduction into the educational process of modern teaching technologies that contribute to the development of cognitive activity and communicative ability of students	Improving the quality of teaching academic disciplines, taking into account the novelty and variety of forms of work that contribute to the development of cognitive activity	fact.	+		+		+		+	

1.3.1	Introduction into the educational process of massive open online courses (MOOC) according to the educational program «6B05102-Biotechnology»	Introduction of disciplines into the educational process Improving the quality of teaching academic disciplines, taking into account the novelty and variety of forms of work that contribute to the development of cognitive activity	unit	-		1		1		1	
1.4	Involving social partners and employers in the development and examination of the implementation of educational programs	Improving the quality of implemented educational programs taking into account market demands and employer recommendations	unit	1		1		1		1	
1.5	Development and implementation of elective courses in English	Introduction of disciplines in English into the educational process	unit	1		-		1		-	
1.6	Conducting seminars and round tables on the use of innovative technologies in the educational process	Introduction of innovative technologies into the educational process	unit	1		1		1		1	
1.7	Publication of educational, educational-methodological and scientific literature on implemented educational programs	Improving educational and methodological support in the disciplines of implemented educational programs	unit	1		1		1		1	
1.8	Concluding agreements with foreign and domestic partner universities in order to develop academic exchange of students of all levels and teaching staff	Creation of a base of foreign and domestic universities - partners for the development of academic exchange of students of all levels and teaching staff	unit	1		-		1		-	
1.9	Inviting students from partner universities to study for a semester, short-term internships, practice, etc.	Development of international recognition of educational programs, implementation of academic mobility programs for students	number of people	1		1		1		1	

1.10	Participation of teaching staff and students in international academic exchange programs	Development of international cooperation with foreign universities implementing educational programs in the field of Biotechnology	number of people	1		1		1		1	
1.11	Development of outgoing academic mobility of teaching staff and students in the direction «6B05102-Biotechnology»	Improving the educational program based on the experience of implementing similar programs in leading foreign universities	number of people	1		-		1		-	
Direction 2. Teaching staff											
2.1	Increasing the professional level and training of scientific and pedagogical personnel for the implementation of educational programs once every 5 years	The share of teaching staff who have undergone advanced training at the republican and international level is at least 20%	number of people	1		1		1		1	
2.2	Completion of advanced training, retraining, internship of teaching staff at the international level	Completion of at least 2 teachers in advanced training, retraining, and internship programs for teaching staff at the international level	number of people	1		1		1		1	
2.3	Promotion of publications of teaching staff works in international publications indexed by the Web of Science and Scopus databases	Increasing the share of teaching staff who have published the results of scientific research in publications indexed by the Web of Science and Scopus databases - at least 30% of the total number of teaching staff	%	30		30		30		30	
2.4	Involving specialists from the practical field of activity in teaching and scientific activities	Participation in the implementation of educational programs of practitioners (at least 20% of specialists)	%	20		20		20		20	
Direction 3. Internationalization of educational programs											

3.1	Concluding agreements on international cooperation with foreign universities	Implementation of joint projects, preparation of scientific publications with foreign partners, creation of bases for scientific internships for students	unit	1		1		1		1	
3.2	Attracting foreign students to study under the educational program «6B05102-Biotechnology»	Increase in the number of foreign students	number of people	1		1		1		-	
3.3	Organization of joint scientific and practical events with international partners	Increasing the efficiency of scientific and scientific-methodological activities of teaching staff, exchange of experience with foreign partners	unit	1		1		1		1	
3.4	Inviting foreign specialists to give lectures and provide consultations on master's projects and dissertations	Improving the content component of educational programs based on the introduction of the experience of foreign specialists in the implementation of educational programs	unit	1		-		1		-	
3.5	Expanding cooperation with leading foreign scientific and educational organizations in order to attract the most qualified foreign specialists to the implementation of educational programs	Formation of key and professional competencies in accordance with the practice of leading universities	number of people	-		1		1		-	
Direction 4. Logistics and digitalization											
4.1	Stage-by-stage equipment of classrooms with technical teaching aids (projectors, panels, interactive and multimedia boards, multifunctional devices, webcam, projector screen, etc.)	Equipping classrooms assigned to the department with technical teaching aids (projectors, panels, interactive and multimedia boards, multifunctional devices, webcam, projector screen, etc.)	unit	1		1		1		1	

4.2	Carrying out automation of the educational process (testing, session management, student movement, dean's office, department, teaching staff load, schedule, library, syllabuses)	Information management based on automation of the educational process (testing, session management, student movement, dean's office, department, teaching load, schedule, library, syllabuses)	fact.	+		+		+		+	
4.3	Replenishment of the full-text database of scientific research results of teaching staff and students, teaching staff (articles, monographs, etc.)	Increasing the number of results of scientific works of scientists, research of teaching staff and students, teaching staff (articles, monographs, etc.)	unit	3		5		7		7	
4.4	Expansion of the fund of scientific and educational literature, including on electronic media for ongoing educational programs	Ensuring the implementation of educational programs based on modern educational and information resources, including on electronic media	%	10		10		10		10	
4.5	Monitoring the content and improvement of the faculty website	Formation of the faculty website on various aspects of the implementation of educational programs.	%	20		20		20		20	

Head of the department _____ **Kakimova Zh.Kh.**

REVIEWED
at a meeting of the Commission for Quality Assurance of Engineering Faculty of Technology
Protocol 5, May 25, 2023
Chairman _____ Abdilova G.B.

APPROVED
Dean of the Faculty of Engineering and Technology _____ Nurymkhan G.N.
May 26, 2023