

"KAZAKH NATIONAL AGRARIAN RESEARCH UNIVERSITY"
Non-Commercial Joint Stock Company

EDUCATIONAL PROGRAM DEVELOPMENT PLAN
6B08101 – AGRONOMY

FOR 2024–2028

Recommended by the Academic Committee
of the Faculty of “Agrobiology”
Minutes No. 10 dated May 24, 2024
Reviewed at the extended meeting of the
Department of “Agronomy, Breeding and
Biotechnology”
Minutes No. 11 dated May 15, 2024

Almaty, 2024

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1. Passport of the educational program development plan
“6B08101 – Agronomy” for 2024–2028

Таблица №1

1	Basis for the development of the educational program development plan	The strategy and theme of the Educational Program Development Plan were created based on employer requests, in accordance with the Concept for the Development of Higher Education and Science of the Republic of Kazakhstan for 2023–2029 and the Development Strategy of the Non-Commercial Joint Stock Company “Kazakh National Agrarian Research University” for 2024–2028.
2	Main developers of the educational program development plan	Head of the Department: – Assoc. Prof. Zhanbyrbayev Ye.A. –Ph.D. (Agricultural Sciences), Professor, Zholamanov K.K. –M.Sc. (Agricultural Sciences), Senior Lecturer, Kanatova M.K. Employer: – Bastaubayeva Sh.O., Ph.D. (Agricultural Sciences), Professor, General Director of LLP “Kazakh Research Institute of Farming and Plant Production”
3	Implementation period of the educational program development plan	2024 – 2028
4	Scope and sources of the educational program development plan	State Budget and Contract-Based Funding
5	Expected final results of the educational program development plan implementation	Training in accordance with the requirements of professional competencies and labor market needs for specialists in the field of agronomy, capable of developing and implementing innovative resource-saving agrotechnologies; formation of the graduate’s social and personal qualities, and development of research skills.
6	License appendix number for the field of training	KZ89LAA00031870 dated August 5, 2021, with amendments and updates KZ69LAM00001188 dated March 4, 2025

7	Accreditation of the educational program	NAAR – “Independent Agency for Accreditation and Rating” December 24, 2020 – December 23, 2025
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2. Analytical Justification of the Program

2.1. Information about the Educational Program.

The content of the educational program is established by the following documents:

- State Compulsory Standard of Higher Education. Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022, No. 2;
- Classifier of Areas of Training for Higher and Postgraduate Education. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018, No. 569;
- Model Rules for the Activities of Educational Organizations Implementing Educational Programs of Higher and (or) Postgraduate Education. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 30, 2018, No. 595;
- Rules for Organizing the Educational Process Based on the Credit Technology of Education. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 12, 2018, No. 563;
- Algorithm for Inclusion and Exclusion of Educational Programs in the Register of Educational Programs of Higher and Postgraduate Education. Order of the Minister of Education and Science of the Republic of Kazakhstan No. 665 dated December 4, 2018;
- Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated October 12, 2022, No. 106. Rules for Maintaining the Register of Educational Programs Implemented by Organizations of Higher and (or) Postgraduate Education, as well as the Grounds for Inclusion in and Exclusion from the Register of Educational Programs.

Professional Standard. Appendix No. 72 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated December 11, 2018, No. 339.

Professional Standard: <http://atameken.kz/>

1. Professional Standard “Nursery Activities” — Appendix No. 7 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated October 26, 2022, No. 190.
2. Professional Standard “Production of Cereal Crops” — Appendix No. 9 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated October 26, 2022, No. 190.
3. Professional Standard “Production of Greenhouse Vegetables and Berries” — Appendix No. 10 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated October 26, 2022, No. 190.

4. Professional Standard “Forest Reproduction and Afforestation” — Appendix No. 24 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated May 30, 2023, No. 100.
5. Professional Standard “Yeast Production” — Appendix No. 44 to the Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated December 26, 2019, No. 263.

The goal of the educational program “6B08101 – Agronomy” is to train specialists in the field of agronomy in accordance with the requirements of professional competencies and labor market needs, who are capable of developing and implementing innovative resource-saving agrotechnologies; to foster the social and personal qualities of graduates, and to develop their ability to conduct research activities.

The program is intended for the training of bachelors under the educational program “6B08101 – Agronomy” at the Non-Commercial Joint Stock Company “Kazakh National Agrarian Research University.”

2.2. Information about Students.

The contingent of undergraduate students in the 2025–2026 academic year is 121 students, of whom 78 study in the Kazakh-language stream and 43 in the Russian-language stream.

Among them, 83 students are enrolled under the state educational grant, and 38 students study on a paid contractual basis (including 1 citizen of the Russian Federation, 1 citizen of the Republic of Uzbekistan, 1 citizen of Hungary, and 1 citizen of Pakistan).

Table 2 – Student Contingent

Academic Year	Educational program “6B08101 – Agronomy”				
	total	kaz	rus	grant	Contract based
2024-2025	42	26	16	35	7
2025-2026	121	78	43	83	38

2.3. Internal Conditions for the Development of the Educational Program.

To achieve the above-mentioned goal of the educational program, the faculty possesses the necessary material and technical resources:

- lecture halls equipped with computers, installed software, and projectors for presentation demonstrations;
- classrooms for practical training, including computer labs with installed software and Internet access for courses conducted in computer-based environments;
- multimedia classrooms for conducting foreign language classes;
- access to electronic textbooks and methodological guidelines for students' independent study, including the preparation of course and diploma papers;
- for students' research activities, the graduating department is equipped with all the necessary instruments and reagents;
- financial resources of the educational program are provided by the university budget,

- as well as by research and international scientific and educational projects;
- information resources available to the educational program include the library (including electronic editions), Internet access for all students and academic staff, and computer facilities;
 - the teaching staff is fully staffed in accordance with the educational program development plan;
 - the material and technical base meets the requirements of the State Compulsory Standard of Education (SCSE).

Educational and methodological documents for the specialty are developed in accordance with the existing regulatory documents, such as state compulsory education standards, model curricula for the specialty, working curricula, academic calendars, catalogs of elective disciplines, and educational and methodological complexes for all fields of study.

The topics of diploma projects correspond to the research directions of the department (initiative research topics). Special attention is paid to issues such as increasing the proportion of teaching staff with academic degrees and their participation in advanced training courses at domestic universities, as well as at universities and research institutions abroad.

2.4. Characteristics of the Surrounding Society

The university has created conditions for the completion of internships: programs have been developed, the content of which corresponds to the goals and objectives of specialist training; long-term and short-term contracts for internships have been concluded; during the internship, supervisors from the university and from the internship base provide constant consultation to the student, guide, and help to carry out professional activities; upon completion, the students' reporting documentation is collected and analyzed, work is carried out to summarize the internship results together with the approved commission composition, which accepts the credit for the internship from the students in the prescribed manner. The final grade for the internship is determined as the evaluation of the internship supervisor from the enterprise (100%) and the evaluation of the internship supervisor from the department for the report defense.

The result of satisfaction of students, teaching staff, and employers with the places, conditions, and content of internships, as well as the level of students and teachers, is the opinion and feedback of organizations providing bases for internships. After completing a certain type of internship, a student survey is conducted in order to identify the level of satisfaction with the places and organization of the internship, as well as a survey of internship base supervisors in order to assess satisfaction with the level of students' training.

Monitoring of internship completion and tracking of the quality of its organization are carried out by the Department of Agronomy, Breeding and Biotechnology and the Department of Internship and Employment. As a result of monitoring, the Department of Internship and Employment and the department form recommendations for improving the organization of internships.

The bases for internships for the educational program “6B08101 – Agronomy” are: LLP “Kazakh Research Institute of Farming and Plant Production”, LLP “Kazakh Research Institute of Animal Husbandry and Feed Production.”

2.5. Information about the Teaching Staff Implementing the Educational Program

The implementation of the undergraduate educational program is provided by scientific and pedagogical staff in accordance with the requirements of the SCSE RK. The list of scientific and pedagogical workers involved in the implementation of this educational program is presented in the certificate on staffing of the educational process and staff completeness.

Qualitative and quantitative composition of the department’s teaching staff: At the Department of “Agronomy, Breeding and Biotechnology,” 23 teachers work, including 2 Doctors of Science, 13 Candidates of Science, and 4 PhD Doctors. The degree-holding rate of the department is 82.6%, the average age of the teaching staff is 50 years, 100% of teachers conduct classes in the state language and the language of interethnic communication, and 4 in English. The employment rate of graduates of “6B08101 – Agronomy” for 2025 was 85%.

The implementation of the educational program “6B08101 – Agronomy” is ensured by teaching staff who have basic education corresponding to the profile of the disciplines taught and who are systematically engaged in scientific and (or) scientific-methodological activities. Teachers of modules and disciplines of the specialized cycle, as a rule, hold academic degrees of Candidate, Doctor of Science, or PhD Doctor and (or) have experience in the corresponding professional field.

In order to improve the quality of educational services, the teachers implementing the educational program “6B08101 – Agronomy” enhance their qualifications through professional development courses, internships in the Republic of Kazakhstan and abroad, and participation in international and national scientific, scientific-practical, and scientific-methodological conferences and seminars.

All professional information regarding the teaching staff is available and posted on the KazNARU website at the following address:
<https://www.kaznaru.edu.kz/ru/department/81>

2.6. Characteristics of the Achievements of the Educational Program

The achievements of the educational program **6B08101 – Agronomy** include a high percentage of graduate employment (ranging from **62% to 87%** in recent years), the development of students’ key competencies for managing and improving agricultural production, as well as the successful application of modern crop cultivation technologies. These achievements are the result of comprehensive training that covers in-depth knowledge in specialized and related disciplines, along with practical skills in organizing production processes.

The educational program “6B08101 – Agronomy” is implemented in accordance with the current labor market requirements, trends in science and technology development, and the university’s strategic goals to ensure high-quality training of competitive specialists.

1. Scientific Research Activity.

The department conducts scientific research on applied and initiative topics reflecting the current trends in crop production development. Students are involved in scientific projects, which contributes to the development of their research competencies and practical skills in conducting experiments, data analysis, and presenting scientific results. The topics of student competition papers and diploma projects align with the department's priority research areas, including farming, crop production, fodder production, seed science, and plant biotechnology. The results of students' research are presented at student conferences and competitions and are published in scientific collections and journals.

2. Improvement of the Educational Program Content.

Taking into account labor market requirements and employer recommendations, necessary updates and new disciplines are regularly introduced into curricula and catalogs of elective courses, aimed at developing students' practice-oriented and research competencies.

Such flexibility and adaptability ensure the program's relevance and compliance with modern professional standards.

3. Cooperation with Employers.

Employers take an active part in shaping the content of the educational program, conducting industrial internships, and assessing graduates' final competencies. Joint work with various agricultural organizations strengthens the practical component of the training process and improves graduate employment rates.

4. Achievements of the Teaching Staff.

The teaching staff of the department is actively engaged in scientific research and methodological work, publishes teaching materials and monographs, and participates in grant-funded projects and international conferences. Teachers implement modern teaching technologies, including elements of dual and blended learning, as well as digital educational resources.

5. Development of Academic Mobility and International Cooperation.

Within the program, activities are carried out to promote academic mobility for students and teachers, including scientific internships and exchanges with foreign partners. The involvement of international scholars in delivering lectures and workshops contributes to raising the academic level of the program and expanding international collaboration.

3. Characteristics of the Problems Addressed by the Educational Program Development Plan and Justification for Their Resolution

The Development Plan of the Educational Program 6B08101 – Agronomy is aimed at addressing such problems as the outdated material and technical base, weak connections with agricultural enterprises, the low attractiveness of agricultural professions, and insufficient motivation for research activities among teaching staff.

The necessity of solving these problems is driven by the need to modernize the crop production industry, train relevant personnel, and prepare qualified specialists capable of working under modern conditions.

- At present, the department faces the following problems:
- Insufficient proficiency of students and teaching staff in professional English.
 - Low mobility and motivation of the teaching staff to use innovative teaching methods.

3. Main Goals and Objectives of the Educational Program Development Plan

The main goals of the Development Plan of the Educational Program 6B08101 – Agronomy include the training of qualified and competitive specialists in the agro-industrial complex who meet employer requirements, as well as the improvement of the educational program in accordance with the university's development strategy.

The objectives consist of enhancing the qualifications of the teaching staff, improving the information and technical base, and implementing student-centered teaching methods aimed at improving the quality of education and the professional performance of graduates.

To achieve this goal, it is necessary to accomplish the following tasks:

№	Name of the Task	Activity
1	Improvement and enhancement of conditions for obtaining full-fledged, high-quality professional education.	Development of activities aimed at improving educational services for the formation of professional competencies and skills.
2	Involvement in the process of improving the educational program, defining the professional competencies of graduates, and developing educational and methodological support for disciplines proposed by employers.	When updating the content of the educational program, include disciplines and update the content of courses that meet labor market demands and are recommended by employers.
3	Establishment of strong partnerships with foreign collaborators for the implementation of joint scientific research and the publication of educational and methodological literature.	Development and implementation of joint scientific research and publication of educational and methodological literature.
4	Provision of conditions for students' independent research activities within the framework of scientific work throughout the entire period of study.	Inclusion of research activities in the educational program for its further development and improvement.
5	Organization of consultations with employers and research institute scientists in the selection of relevant and practically significant topics for diploma projects and in conducting student research at leading research institutes of the republic.	Creation of a list of relevant and practically significant topics, taking into account the proposals of employers and scientists from research institutes.

To achieve the goal, it is necessary to accomplish the following tasks:

- a. Creation of an innovative educational environment;

- b. Expansion of the educational space;
- c. Involvement of talented youth in scientific research;
- d. Development of multilingual education in order to expand the range of studied languages;
- e. Development of human resource potential;
- f. Development of a professional development system for teaching staff;
- g. Expansion of the university's international cooperation with foreign universities within the framework of scientific projects and academic mobility of students and teaching staff;
- h. Ensuring the demand for graduates in the labor market;
- i. Updating and improving the content of the educational program, modernizing the material base of educational laboratories, and updating the content of lectures and laboratory practicals in accordance with the latest scientific achievements;
- j. Improvement of the system of interaction with employers;
- k. Advanced training of teaching staff in the field of innovative teaching technologies at the national and international levels.

To further increase the number of degree-holding teaching staff, the university needs to strengthen efforts to engage young teachers in scientific research and subsequently train them in doctoral programs.

Considering the further development of the educational program, it is necessary to work on increasing the proportion of faculty members with academic degrees; plan participation in international professional development courses; increase the number of teachers proficient in foreign languages to form multilingual education groups; increase the number of published scientific papers in journals with a high citation index; and participate in the development and implementation of scientific projects supported by international grants.

3. Expected final results of the implementation of the Educational Program Development Plan

The expected final results of the implementation of the Development Plan of the Educational Program 6B08101 – Agronomy include the formation among graduates of universal, general, and professional competencies necessary for professional activity. These are specific knowledge, abilities, and skills that they will acquire, as well as the developed qualities that will allow them to be successful in the field of agronomy.

As a result of the implementation of the measures of the Development Plan of the Educational Program 6B08101 – Agronomy, the following final results are expected:

1. Quality of specialist training

Training of qualified specialists-agronomists possessing theoretical knowledge and practical competencies in the field of farming, crop production, forage production, and seed production of field crops. Formation in graduates of the ability to conduct scientific research, production, and innovative activities under modern conditions of development of agronomy and related fields. Development of skills of critical thinking, project and analytical approaches to solving professional tasks.

2. Development of research potential

Active involvement of students in research activities, participation in competitions, olympiads, and conferences of various levels. Creation of conditions for conducting student research in leading research institutes of the Republic of Kazakhstan and at joint bases with domestic and foreign partners. Increase in publication activity of the teaching staff and students in peer-reviewed journals.

3. Integration of education, science, and production

Strengthening of interaction with employers and specialized enterprises to increase the practice-oriented nature of the educational process. Introduction and development of dual forms of education ensuring the acquisition of practical skills in production. Increase in the level of employment of graduates and employer satisfaction with the quality of their training.

4. International cooperation and mobility

Expansion of academic mobility of students and teaching staff, participation in international programs (Erasmus+, Mevlana, DAAD, etc.). Attraction of professors from foreign universities to teaching and scientific activities at KazNARU. Increase in the international competitiveness of the educational program and preparation for international accreditation.

5. Development of the digital educational environment

Expansion of the possibilities of using the university's educational portal for online registration of disciplines, selection of teachers, submission of applications for dormitories, and access to digital educational materials. Active use of international educational online platforms (Coursera, Aisana, Astana Hub, HUAWEI, etc.) for individualization of learning and improvement of digital competencies of students and teachers.

6. Improvement of educational-methodological and staffing support

Publication and updating of educational and methodological literature by the teaching staff of the department.

Acquisition of modern educational-methodological and laboratory materials for all stages of training.

Professional development of teaching staff, completion of internships in scientific and production organizations, including abroad.

The implementation of the Development Plan of the Educational Program will ensure:

- improvement of the quality and attractiveness of the Educational Program 6B08101 – Agronomy at the national and international levels;
- formation of competitive, mobile, and responsible specialists capable of working in the field of science, education, and agricultural production;
- strengthening of the image of KazNARU as a leading university implementing innovative and internationally oriented educational programs.

3. Measures to Reduce the Impact of Risks for the Educational Program

In order to minimize possible risks affecting the implementation and sustainable development of the educational program 6B08101 – Agronomy, the following measures are planned to be implemented:

№	Activity	Expected Result	Responsible Parties
1	Increase in the number of students through the activation of career guidance work in schools and colleges, and the development of international recruitment (including from CIS countries).	Increase in the number of students and enhancement of the financial sustainability of the program.	Department, Admission Committee of KazNARU
2	Full provision of students with educational and methodological literature (publication of teaching materials by the department staff, updating of library collections, acquisition of modern literature and electronic resources).	Improvement of the quality of the educational process and accessibility of educational resources.	Department, Library of KazNARU
3	Conclusion of agreements with business entities for the organization of industrial and pre-diploma internships, as well as assistance in the employment of graduates.	Increase in the practice-oriented nature of training and the level of graduate employment.	Department, Internship and Employment Office of KazNARU
4	Timely planned renewal and purchase of modern laboratory equipment, consumables, and reagents.	A modern material and technical base that meets the requirements of the educational process and scientific research.	Department, Procurement Department of KazNARU
5	Professional development and enhancement of the teaching staff potential through internships, courses, and participation in international educational and scientific projects.	Improvement of the professional level of teachers and the quality of educational services.	Department, Professional Development Office of KazNARU
6	Activation of international cooperation and academic mobility of students and teaching staff.	Expansion and strengthening of academic exchanges and enhancement of the international status	Department, International Office of KazNARU

		of the educational program.	
7	Development of the digital infrastructure of the educational process (updating of the university portal, introduction of digital monitoring and feedback tools).	Reduction of administrative risks and improvement of the transparency and manageability of the educational process.	Department, IT Department of KazNARU

3. List of Activities of the Educational Program Development Plan

№	Activity	Implementation Period	Responsible Parties	Expected Result
1	Updating of the working curriculum taking into account modern requirements of agriculture, digitalization, and “green” technologies.	annually (before the start of the academic year)	Department of Crop Production and Agronomy	updated curricula that meet labor market requirements
2	Integration of digital technologies and agro-information systems (AgroData, GIS, SmartFarm) into the educational process.	2025–2027	Department, IT Service	improvement of students’ digital competencies
3	Development and implementation of video lectures and online courses (MOOCs) for key disciplines of the educational program.	2025–2026	Department Faculty, Center for Distance Education	enhancement of accessibility and interactivity of learning
4	Increase in the share of practice-oriented training (industrial internships, field training, practical sessions).	annually	Department, Partner Enterprises	development of students’ professional skills
5	Expansion of cooperation with agricultural enterprises and research institutes for conducting joint research and production internships.	2025–2027	Department, International Relations Office	increase in the level of interaction with employers
6	Development and implementation of *Minor* programs in related fields (soil science, crop production, agroecology).	2025–2026	Department, Academic Affairs Office	individualization of students’ educational trajectories
7	Organization of annual Days of Agronomy (career fairs, workshops by employers).	annually	Department, Career and Employment Center	strengthening of the connection between students and employers
8	Preparation and participation of students in scientific and practical conferences, competitions, and youth grants.	annually	Department, Student Research Organization	development of research and analytical competencies
9	Professional development of teachers (internships, training courses, participation in international projects such as *Erasmus+* and others).	annually	Department, Human Resources Office	improvement of teaching quality and implementation of innovations
10	Monitoring of student and employer satisfaction with the quality of the educational program.	annually	Department, Educational and Methodological Office	advancement of the content and methods of instruction

8. Justification of Resource Support for the Plan

- information resources;
- library collection of electronic educational materials and other available educational and methodological support;
- human resources;
- qualified teaching and professorial staff;
- material and technical base.

9. Mechanism for Implementing the Educational Program Development Plan

The mechanism for implementing the Development Plan of the Educational Program “**6B08101 – Agronomy**” includes the development and approval of curricula, working programs of disciplines, as well as the assessment of learning outcomes.

For the effective implementation of the development plan of the educational program **6B08101 – Agronomy**, a phased execution of activities is envisaged, aimed at improving the quality of specialist training and strengthening the competitiveness of the program.

1. Increase in the number of students.

Targeted work is being carried out to increase the number of educational grants, attract foreign citizens, and implement a complex of career guidance activities among school and college graduates. Special attention is paid to promoting the educational program on international educational platforms and participating in exhibitions, forums, and career guidance meetings.

2. Improvement of the content and structure of the educational program.

The department staff develops and annually updates catalogs of elective disciplines with the participation of employers, ensuring that learning outcomes meet modern labor market requirements and professional standards. Interdisciplinary approaches and elements of dual education are actively implemented.

3. Development of practice-oriented learning.

It is planned to organize student visits to advanced and partner farms, leading research institutes, agricultural enterprises, as well as universities of near and far-abroad countries. This will expand students’ professional competencies and ensure their integration into a real production environment.

4. Involvement of external experts and international cooperation.

Leading scientists and specialists from near and far-abroad countries will be invited to conduct lectures, practical classes, workshops, and scientific consultations. Active development of academic mobility of students and teaching staff, as well as the creation and implementation of joint educational and scientific projects with foreign partners, is planned.

5. Information and digital support of the educational process.

The university’s educational portal provides students with opportunities for online registration for disciplines, dormitory applications, participation in social events, and access to educational and methodological materials. This contributes to greater transparency and efficiency in the organization of the educational process.

6. Monitoring and evaluation of implementation effectiveness.

Continuous monitoring of key performance indicators of the educational program is carried out, including graduate employment, employer satisfaction, academic performance, and the level of research activity of students and teaching staff. The results of this analysis are used for further adjustment of the development plan and updating of the educational program.

10. SWOT – analysis

Strengths	Weaknesses
• Compliance of the educational program with the requirements of the State Compulsory Standard of Education (SCSE) and modern trends in agricultural education.	• Insufficient share of courses delivered in English.

• High qualification of the teaching staff, including Doctors and Candidates of Science, as well as instructors with practical experience in the industry.	• Limited material and technical resources for conducting research and practical training in precision agriculture.
• Availability of base farms and production sites for internships and fieldwork.	• Inadequate level of digitalization of the educational process (lack of specialized software and simulators).
• Active cooperation with employers and industry organizations (agroholdings, research institutes, farming enterprises).	• Insufficient involvement of students in international academic exchange programs.
• Opportunity to implement modular and *Minor* programs in related fields (soil science, crop production, ecology).	• Limited publication activity among students and young faculty members.

Opportunities	Threats
• Expansion of international cooperation (dual degree programs, academic mobility, *Erasmus+*, *DAAD*, and others).	• Decrease in applicants' interest in agricultural specialties.
• Integration of digital and “smart” technologies (*Smart Agriculture*, *GIS*, *Big Data*) into the educational process.	• Competition with other agricultural universities offering similar programs.
• Implementation of video lectures and online courses (MOOCs) to expand access to knowledge.	• Possible changes in the regulatory and legal framework of agricultural education.
• Participation of teachers and students in grant projects and scientific-practical conferences.	• Insufficient funding for the modernization of laboratories and training facilities.
• Development of the integration of science, education, and production (project-based learning, agro-incubators).	• Brain drain (highly qualified specialists leaving for the private sector).

11. Graduate Model of the Educational Program 6B08101 – Agronomy

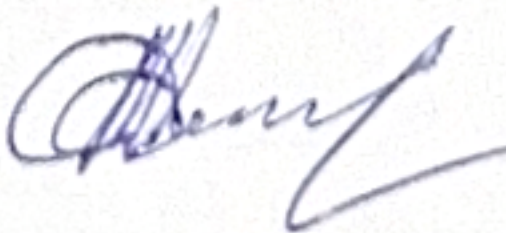
№	Graduate Characteristics	Key Competencies	Learning Outcomes	Potential Fields of Activity
1	Professionally trained specialist in the field of agronomy	Knowledge in the field of farming, crop production, forage production, and seed production of field crops. Proficiency in modern methods of agricultural production management, including the use of digital technologies.	– Develop schemes of modern crop rotation systems for farms and other agricultural enterprises, taking into account their specialization, land, and soil-climatic resources. – Prepare technological maps for the cultivation of agricultural crops with the implementation of innovative technology elements.	– Joint-stock companies, production cooperatives, limited liability partnerships, and agricultural firms; – Farming and peasant enterprises, and production cooperatives; – Experimental and research institutions in the field of agriculture; – Enterprises for storage and processing of crop products; – Institutions for testing agricultural crop varieties; – Agricultural experimental stations;
2	Researcher and innovator	– Ability to formulate scientific hypotheses and conduct experiments. – Skills in project and research activities.	– Participate in the development and implementation of scientific projects. – Be able to analyze results, prepare reports, and publish findings.	– Research institutes and agricultural universities;
3	Practice-oriented specialist	– Ability to apply knowledge in practice. – Ability to organize and develop an environmentally friendly and ecologically safe farming system, to conduct examination of crop products for the presence of hazardous substances.	– Conduct laboratory research, analyze results, and implement innovative solutions. – Participate in production processes.	– Joint-stock companies, production cooperatives, limited liability partnerships, and agricultural firms; – Farming and peasant enterprises, and production cooperatives; – Experimental and research institutions in the field of agriculture; – Enterprises for storage and

				processing of crop products; – Institutions for testing agricultural crop varieties;
4	Communicatively and socially competent personality	– Proficiency in business and scientific communication skills. – Ability to work in a team and an interdisciplinary environment. – Ability to present research results.	– Interact effectively within the professional community. – Demonstrate leadership qualities and communication skills.	Academic and corporate environments, project and research groups
5	Ethically and environmentally responsible citizen	– Awareness of the social and environmental significance of bioengineering activities. – Adherence to the norms of scientific and professional ethics.	– Adhere to ethical principles when conducting research. – Assess environmental risks and the consequences of biotechnological solutions.	Joint-stock companies, production cooperatives, limited liability partnerships, and agricultural firms; – Farming and peasant enterprises, and production cooperatives; – Experimental and research institutions in the field of agriculture; – Enterprises for storage and processing of crop products; – Institutions for testing agricultural crop varieties;
6	Literate and mobile specialist in information technology	– Proficiency in modern digital tools and databases. – Readiness for academic mobility and international cooperation.	– Use digital platforms for data analysis, exchange, and visualization. – Participate in international academic and research projects.	– Universities and international research centers.

As a result of training, the graduate must be able to::

Codes	Learning Outcomes of the Educational Program 6B08101 – Agronomy
PO1	Understand the laws of natural science disciplines, labor protection and environmental standards, and sustainable development, the rules of moral development, and know the importance of the principles and culture of academic integrity. Identify individual educational needs of students with disabilities and provide psychological and pedagogical support.
PO2	Demonstrate knowledge and understanding of the climatic and soil conditions of various regions of Kazakhstan for differentiated use in the farming system and in the use of microorganisms, agrochemical soil indicators in agronomic research.
PO3	Know the basics of managing agricultural technologies based on information and communication technologies and elements of AI; soil-protective, biological farming, and organic production.
PO4	Conduct economic analysis of the efficiency of the enterprise (organization), apply modern research methods in agronomy based on physical and mathematical analyses in the intensive use of reclaimed lands.
PO5	Know plant biology, the basics of harmful plant organisms, and the importance of genetics, breeding, seed production, and variety testing in increasing crop yields.
PO6	Conduct field experiments using innovative methods and apply the results in digitalization for the preservation and reproduction of soil fertility in various natural and climatic zones of the republic.
PO7	Use learning skills necessary for independent continuation in the adaptation of crop production, forecasting, and protection of agricultural crops from pests and diseases.
PO8	Research biotechnological methods in breeding and seed production, know the importance and role of breeding and seed production in increasing crop yields.
PO9	Master theoretical and practical knowledge for solving educational, practical, and professional tasks in crop production, animal husbandry, farming, forage production, and horticulture.
PO10	Know and implement GOST requirements for the storage and processing of produced crop products.
PO11	Acquire knowledge in developing cultivation technologies for technical and oilseed crops and systems of machines and equipment used in these technologies, as well as in variety testing and the importance of lawn grasses.
PO12	Be able to plan and calculate the needs of farms for fertilizers, agricultural machinery, and equipment depending on the applied agrotechnologies in crop production.

Head of the department

«Agronomy, breeding and biotechnology»  Zhanbyrbayev Ye.A.

Dean of the faculty of «Agrobiological»

 Abildayev Ye.S

DEVELOPMENT PLAN OF THE BACHELOR'S EDUCATIONAL PROGRAM 6B08101 – Agronomy

Task 1. Integration of scientific and scientific-technical activities with the educational process at all levels of higher and postgraduate education.

<i>Nº</i>	Performance indicators	Unit of measur.	2024	2025	2026	2027	2028
1.	Contingent of students enrolled in the Educational Program	чел	127	118	125	130	150
2.	Share of graduates employed within the first year after graduation	%	89	87	88	90	95
3.	Share of international students in the total number of students in the Educational Program	%	40	42	43	45	45
4.	Share of students participating in academic mobility programs of the total number of students in the Educational Program	%	2	2,5	3	4	5
5.	Compliance of the academic staff of the Educational Program with qualification requirements regarding academic degrees	%	65	70	70	75	80
6.	Share of invited foreign experts involved in teaching activities	%	1	1	2	2	3
7.	Number of research institute (RI) scientists employed as part-time and/or hourly faculty at the university	pers.	2	2	3	4	5
8.	Share of academic staff teaching in English in the total number of academic staff	%	15	16	17	17	18
9.	Number of educational-methodological publications developed by faculty according to the specifics of the Educational Program	qty.	10	12	12	13	15
10.	Updating the Educational Program in accordance with labor market requirements	+/-	+	+	+	+	+
11.	Analysis of the Educational Program for compliance with the University Strategic Development Plan	+/-	+	+	+	+	+
12.	Implementation of dual (work-integrated) education	+/-	+	+	+	+	+
13.	Integration of digital technologies into the disciplines of the Educational Program	+/-	+	+	+	+	+
14.	Holding round-table discussions on the implementation of competencies in	+/-	+	+	+	+	+

	the educational process						
15.	Participation of potential stakeholders as experts in the Educational Program	qty.	2	2	3	3	4
16.	Involvement of stakeholders in the development of the Educational Program and in the evaluation of the quality of specialist training (students, employers, alumni)	+/-	+	+	+	+	+
17.	Implementation of double-degree / joint programs with partner universities	+/-	-	-	-	-	+
18.	Position of the Educational Program in national rankings: — NAAR — NKAOKO — Atameken	rank	1 1 1	2	1	1 1 1	1 1 1
19.	Availability of accreditation of the Educational Program	+	+	+	+	+	+
20.	Share of disciplines incorporating online courses (Coursera, edX, etc.)	%	5	5	5	6	6
21.	Number of students who have completed at least one certified Coursera course related to the Educational Program	pers.	36	37	40	45	50
22.	Number of academic staff involved in conducting fundamental and applied research	unit	5	6	8	8	10
23.	Number of research projects carried out within international cooperation	unit	-	-	-	1	1
24.	Number of student publications in journals recommended by the Committee for Quality Assurance in Science and Higher Education (KKSON)	unit	-	-	-	1	1
25.	Number of students participating in research projects and academic competitions	unit	-	-	-	1	1

Task 2. Development of an effective model of corporate governance and strengthening of the university's intellectual potential.

<i>№</i>	Performance indicators	Unit of measur.	2024	2025	2026	2027	2028
1.	Share of young researchers in the total number of scientists and researchers engaged in R&D activities	%	1	1	1	2	2
2.	Share of academic staff who have completed professional development and international internships	%	4	4	4	5	5
3.	Participation of academic staff in annual	qty.	-	-	1	1	1

	competitions for the awards “Best Researcher,” “Best University Teacher,” state awards and scholarships for outstanding scientists in the field of science						
4.	Participation of the academic staff of the Educational Program in the “Silver University” programs aimed at providing access to high-quality education for individuals of any age (specializations offered: digital education, inclusive education, digital technology-based learning)	+/-	-	-	-	+	+
5	Share of students of the Educational Program involved in organized social and community activities, including through student self-governance, debate and volunteer movements, in order to promote civic engagement and patriotism	%	16	17	18	19	20

Task 3. Activities aimed at the commercialization of the results of scientific and scientific-technical research and the implementation of scientific developments and technologies in production.

<i>Nº</i>	Performance indicators	Unit of measur.	2024	2025	2026	2027	2028
1.	Participation of students in startup projects	pers.	0	0	0	1	1

Task 4. Development of the university’s scientific and educational infrastructure and digital architecture.

<i>Nº</i>	Performance indicators	Unit of measur.	2024	2025	2026	2027	2028
1.	Share of upgraded laboratory equipment	%	0,35	0,40	1	1	1
2.	Provision of student housing (availability of dormitory accommodation for students)	+/-	+	+	+	+	+