IE «Alikhan Bokeihan University»

Considered
at the meeting
Academic Council for Quality
faculty
Protocol No. 6 of 28.03.2022
(signature)

I approve
Dean of the Faculty of Information
Technology and Economics
Karipzhanova A.Zh.

PLAN
DEVELOPMENT OF THE EDUCATIONAL PROGRAM

"Chemistry-Biology" for 2020-2025

Reviewed at the extended

meeting of the Department of Applied Biology

Protocol no. 5 from 06.01.2022

Head of the department Baygazinov Zh.A.

1.General provisions

Educational program 6B01509 "Chemistry-Biology" was developed in accordance with the National Qualifications Framework, with the Dublin descriptors and the European Qualifications Framework.

Educational program 6B01509 "Chemistry-Biology", in accordance with the classifier of educational programs, refers to the field of education 6B01 - Pedagogical Sciences, the direction of training: 6B015 - "Teacher training in natural sciences".

The educational program "Chemistry-Biology" is aimed at training highly qualified teachers with a creative personality, able to reflect, understand modern educational priorities and effectively use modern educational technologies.

According to the educational program "Chemistry-Biology", training of students has been carried out since 2018 on the basis of an application to license No. 0064053.

To improve the quality of education, develop the quality and effectiveness of scientific activities, educate young people on the basis of universal human values, as well as the "transparency" of all academic processes, adherence to the principles of academic honesty and ethics, a plan for the development of the educational program "Chemistry-Biology" was drawn up.

This EP development plan is a document that takes into account modern reforms and transformations in the higher education system of the Republic of Kazakhstan, and is based on an analysis of the external and internal environment.

Leading teachers of the department "Applied Biology" took part in the development of the development plan for the EP with the involvement of students I-333 Shebeleva A., Yesengazhy B., as well as social partners, namely, the director of secondary school No. 21 Rakhimzhanov Sh.K., the director of secondary school No. 10 Temirzhanova L.S., teacher of chemistry and biology of secondary school No. 32 Amirgazina S.G.

The EP development plan was developed on the basis of regulations and program documents:

1. The Constitution of the Republic of Kazakhstan dated 30.08.1995;
2. Message from the President of the Republic of Kazakhstan - Leader of the Nation N.A. Nazarbayev to the people of Kazakhstan, Astana, December 14, 2012 "Strategy "Kazakhstan-2050": a new political course of an established state";
3. State program for the development of education and science for 2020-2025. Approved Decree of the Government of the Republic of Kazakhstan dated December 27, 2019 No. 988;
4. Article by N. Nazarbayev “Looking into the future: modernization of public consciousness”. April 12, 2017;
5. Message from the First President of the Republic of Kazakhstan N.A. Nazarbayev to the people of Kazakhstan dated January 10, 2018 "New development opportunities in the context of the fourth industrial revolution"
6. Message from the First President of the Republic of Kazakhstan N.A. Nazarbayev to the people of Kazakhstan dated October 5, 2018 "The growth of the welfare of Kazakhstanis: increasing incomes and quality of life";
7. Article of the First President of the Republic of Kazakhstan N.A. Nazarbayev "Seven Facets of the Great Steppe" dated November 21, 2018;
8. Order of the First President of the Republic of Kazakhstan N.A. Nazarbayev, given at the opening of the Year of Youth on January 23, 2019 and the XVIII Congress of the Nur Otan Party on February 27, 2019;
9. Message from the President of the Republic of Kazakhstan K.K. Tokayev to the people of Kazakhstan dated September 2, 2019 "Constructive public dialogue is the basis of stability and prosperity of Kazakhstan".
10. Law of the Republic of Kazakhstan dated July 27, 2007 No. 319-III "On Education";
11. Law of the Republic of Kazakhstan dated February 18, 2011 No. 407-IV “On Science”;

12. Law of the Republic of Kazakhstan "On the commercialization of the results of scientific and (or) scientific and technical activities" dated October 31, 2015 No. 381-V ZRK.

13. Professional standard "Teacher"..

2. Analysis of the current situation and development trends of the labor market and educational services

2.1 Educational activities.

The educational program "Chemistry-Biology" is formed on the principle of modular training, which consists of 18 modules of theoretical training and, according to the Dublin descriptors, contains 240 ECTS credits.

The basis for the formation of the EP "Chemistry-Biology" is the professional standard "Teacher". When forming a modular educational program, leading teachers of the Department of Applied Biology, students and representatives of secondary educational institutions in Semey are involved. External reviews of social partners were received for the educational program "Chemistry-Biology".

The EP is designed as a set of sequential training modules for the entire period of study and is aimed at mastering the competencies necessary for the award of a bachelor of education degree in the educational program 6B01509 "Chemistry-Biology".

In 2019, the educational program "Chemistry-Biology" was included in the Register of Educational Programs of the Unified Management System for Higher Education of the Ministry of Education and Science of the Republic of Kazakhstan with an attainability rate of 78.49%.

In the 2019-2020 academic year, 19 students study under the educational program "Chemistry-Biology", of which 8 people study on the basis of an educational grant. As part of improving the level of knowledge of a foreign language, students take English courses at the Center for Multilingual Education of KazHJIU with the receipt of confirming certificates of mastering the appropriate level of language proficiency. At the same time, in the 2019-2020 academic year, students of the OP "Chemistry-Biology" and teachers of the department "Applied Biology" at the expense of extrabudgetary funds of the university study English at the educational and scientific center "Erudit" in the city of Semey.

For conducting training sessions at the Department of Applied Biology, specialized rooms and scientific and educational laboratories are available.

Based on the foregoing, it is necessary to note the following strengths of the EP "Chemistry-Biology":

- formation of students' competencies, taking into account the real needs of social partners;
- equipping laboratories with modern devices and equipment;
- application of innovative teaching technologies;
- Staffing of the teaching staff of the Department of Applied Biology with highly qualified personnel;
- Continuous professional development of teaching staff.

However, some weaknesses should be noted:

- a small contingent of students admitted to the 1st course in 2018;
- lack of developed joint educational programs with foreign partners;
- Insufficient level of teaching staff foreign languages.

2.2 Research and innovation activities.

Research and innovation work on the EP "Chemistry-Biology" is carried out on the basis of the legislation of the Republic of Kazakhstan in the field of regulation of scientific activity, as well as on the basis of local regulatory documents of the university in the field of organizing scientific work at the university.

In 2019, the scientific theme of the department "Propagation of plants common in the Semey region by microcloning" was registered at JSC "NCGNTE" (registration number

0119RKI0202). Research in this area has the status of initiative and is funded by the university at its own expense. Within the framework of this scientific topic, the Department of Applied Biology in September 2019 signed an agreement on joint research with the Department of Dendrology of the Forestry Technical University (Sofia, Bulgaria).

Within the framework of the scientific theme of the faculty department, 4 invention patents were received (3 from the patent bureau of the Republic of Kazakhstan, 1 from the Eurasian Patent Bureau), 29 publications in scientific journals of the Republic of Kazakhstan, 7 publications in foreign peer-reviewed journals, 19 - textbooks and teaching aids.

To attract students to research activities on the scientific topic of the department, there is a scientific circle "Chemist-Biologist Experimenter".

In order to test the results of scientific research, the following scientific and educational laboratories operate at the department: laboratory of cellular biotechnology; laboratory of microbiology and virology; laboratory of organic and bioorganic chemistry; laboratory of general chemistry, laboratory of cellular biotechnology, laboratory for sterile and microbiological studies, etc. All laboratories are equipped with modern instruments and equipment.

Strengths of research and innovation work:

- creation of conditions for the development of research skills of students;
- publication of teaching staff of the Department of Applied Biology of scientific articles in scientific periodicals of the Republic of Kazakhstan, in foreign peer-reviewed journals, publication of textbooks in the state and English languages;
- active participation of the teaching staff of the department in scientific internships;
- the presence of a mechanism for material stimulation of scientific activity of teachers and students of the OP "Chemistry-Biology".

Along with the strengths, it is necessary to note the weaknesses:

- low level of commercialization of scientific research;
- insufficient level of foreign language proficiency of the teaching staff of the department "Applied Biology" for the full promotion of the results of scientific research in the international scientific space;
- the absence since 2018 of scientific projects carried out within the framework of grant funding.

2.3 Educational and social activities

To activate creative initiatives, self-realization and self-development of students of the EP "Chemistry-Biology" on the basis of expanding student self-government and involving them in all spheres of university life, various student organizations function: the team "Enactus KazHUIU", the creative group "Urker", youth wing "Zhas Otan", "Alliance of students of KazHJIU", public fund "Commonwealth of young lawyers", "Union of KVN KazHJIU", debate club "Everest", charitable organization "Ak niet", "Business incubator".

Students of the EP "Chemistry-Biology" are members of student organizations and take part in various events. In the process of participation in the work of student organizations, there is a development of diverse interests of students, civic engagement, a creative attitude to learning, social activities, the formation of leadership qualities among future teachers of the Chemistry-Biology program. At the same time, it is necessary to note the insufficient level of involvement of all students in student self-government.

In order to form students' skills and abilities of self-management, develop initiatives and independence of students, increase their responsibility for competent and professional participation in the life of society, students of the EP "Chemistry-Biology" are involved in such collegiate governing bodies of the faculty as the Student Council of the Faculty, Academic Council for Faculty Quality.

Based on the foregoing, it is necessary to note the strengths in this area:

- the presence of conditions for the activation of creative initiatives, self-realization and self-development of students;

- creation of conditions for the development of entrepreneurial skills of students;

- participation of students in the discussion and solution of the main issues of the department and faculty.

However, there are also weaknesses to be noted:

- insufficient level of student participation in student self-government;

- insufficient degree of student involvement in sports sections.

2.4 International activities

Expansion of the scope of international cooperation is one of the main directions of development of the EP "Chemistry-Biology". For the development of international cooperation in the direction of preparation of the OP "Chemistry-Biology", more than 13 cooperation agreements were signed.

For the development of international cooperation in the scientific field, in December 2019, an agreement was signed on a joint scientific research in the direction of "Propagation of forest plants in culture in vitro as the basis of plantation forestry" on the topic "Microclonal propagation of plants (Scotch pine)" with Professor of the Department of Dendrology of the Forestry Technical University, (Sofia, Bulgaria) Tashev Alexander Nikolov.

As part of the academic mobility of students and teaching staff of the Chemistry-Biology EP, agreements were signed with universities in the near and far abroad: Bialystok Technical University (Poland), Higher School of Finance and Management (Poland), Sofia University. Kliment Ohridsky (Bulgaria), Irkutsk State Agrarian University. A.A. Ezhevsky (Russia), Altai State University (Russia), etc.

Strengths in the direction of development of international cooperation:

- carrying out joint research work with foreign partner universities;

- passing advanced training courses and internships for teaching staff of the OP "Chemistry-Biology" in universities of near and far abroad;

- active participation of teaching staff of EP "Chemistry-Biology" in the program of academic mobility.

However, there are also weaknesses to be noted:

- insufficient activity of students of the EP "Chemistry-Biology" in the implementation of the program of external academic mobility;

- foreign scientists are not sufficiently involved in lecturing on the OP "Chemistry-Biology";

- lack of developed joint educational programs with foreign partners.

3. Directions of the EP development plan, goal, objectives, expected results, target indicators, implementation measures

- **The purpose of the development plan** the EP is to ensure the effective management of MOP 6V01509 "Chemistry-Biology".

The strategic goal of the educational program development plan is to improve and supplement the content of the educational program, in which pedagogical science and pedagogical practice are considered as a single system.

Tasks

-improvement and improvement of conditions for obtaining a full-fledged, high-quality professional pedagogical education;

-creation of preconditions for independent research activity of the student as a factor of pedagogical skill;

-development of measures for the development of work with scientific information using domestic and foreign experience in professional pedagogical activities.

Expected end results of the implementation of the EP development plan

- increasing the level of demand for graduates of the EP "Chemistry-Biology";

- implementation of joint educational programs with foreign partners;

- development of the academic mobility program for teaching staff and students;

- implementation of scientific projects carried out within the framework of grant funding;
- increasing the level of effectiveness of scientific research and publication activity of the teaching staff of the OP "Chemistry-Biology";
- further development of international cooperation;
- advanced training of teaching staff in the field of innovative learning technologies.

Target indicators	unit measurements	in the planning period					
		2020	2021	2022	2023	2024	2025
The share of graduates of the EP "Chemistry-Biology", employed in the first year after graduation	%	-	-	90	90	90	90
Share of updated educational programs based on the requirements of social partners	%	100	100	100	100	100	100
Share of students who completed a foreign language course	%	5	20	35	45	55	70
Number of agreements concluded with partner universities for the development of joint EPs	ед.	-	1	1	1	2	2
The share of students participating in research work from the total contingent of students	%	20	25	30	35	40	45
Number of applications for participation in scientific projects carried out within the framework of grant funding	ед.	1	1	2	2	1	1
The number of teaching staff publications in rating publications (based on information resources on the Web of Science platform (Clarivate Analytics) and Scopus (Elsevier), JSTORE, etc.)	ед	4	6	8	8	10	10
The share of students actively participating in events held by youth organizations and student self-government	%	30	35	40	45	50	55
The share of students participating in the implementation of the academic mobility program	%	-	10	20	20	25	30

Activities to achieve target indicators	2020	2021	2022	2023	2024	2025

Effective management of the quality implementation of the educational program and improvement of the mechanisms for managing the educational process						
Active involvement of social partners, students and leading teachers in monitoring and updating the EP	x	x	x	x	x	x
Involvement of employers and foreign partner universities in the review of the EP	x	x	x	x	x	x
Conducting surveys of internal and external stakeholders	x	x	x	x	x	x
Training of competitive personnel						
Conducting an analysis of the demand for graduates	x	x	x	x	x	x
Systematic updating of the educational program based on the study of the requirements of the labor market and modern achievements of science and technology	x	x	x	x	x	x
Attracting students to student self-government and scientific activities for the development of diverse interests, civic engagement, a creative attitude to learning, social activities, the formation of leadership qualities	x	x	x	x	x	x
Development of the academic mobility program for students and teaching staff	x	x	x	x	x	x
Implementation of demonstration exams according to WorldSkills standards as part of the intermediate and final certification of students.	x	x	x	x	x	x
Improving the conditions for high-quality staffing of the EP						
Advanced training of teaching staff for the organization of work in new conditions (remote technologies, etc.)	x	x	x	x	x	x
Invitation of leading scientists from other universities under an international cooperation agreement	x	x	x	x	x	x

Research and innovation activities in the development of EP						
Activation of scientific research at the department	x	x	x	x	x	x
Participation in grant and contractual research and projects	x	x	x	x	x	x
Stimulating and motivating students to actively participate in scientific activities	x	x	x	x	x	x
Growth of teaching staff publications in foreign peer-reviewed scientific journals	x	x	x	x	x	x
Development of resource potential for the implementation of the EP						
Improving the security of the development of the educational program with material, technical and information resources	x	x	x	x	x	x
Development of information and educational resources of the department (website, portal, electronic teaching materials, etc.)	x	x	x	x	x	x

4. Mechanisms for implementing the EP development plan

In the process of implementing the educational program, factors (conditions) were identified that contribute to the formation of a positive motive for learning among students:

- awareness of the theoretical and practical significance of the acquired knowledge;
- professional orientation of educational activity;
- the right to choose elective disciplines;
- the opportunity to participate in student self-government bodies, olympiads, scientific conferences.

In this regard, the main mechanisms for implementing the EP development plan include:

- involvement of students in the management of the educational program, which will allow to educate a competent and competitive personality and to train bachelors of education in the OP "Chemistry-Biology" at a higher level;
- constant monitoring and updating of the EP "Chemistry-Biology" with the involvement of internal and external stakeholders;
- external review of the EP "Chemistry-Biology" by social partners and foreign partner universities;
- development of international cooperation in the scientific field, academic mobility of teaching staff and students.

5. Management of risks

Name of possible risk	Possible consequences if risk management measures are not taken	Risk Management Measures
1	2	3
Direction:		
External risks		
Imperfection of the legal	Imbalance between the real needs	Shortage of qualified

framework in the field of education and science	of the labor market and the specialties of graduates	personnel
Economic crisis, inflation, increase in the cost of education, low consumer solvency	Decrease in the contingent of students, the level of quality of educational services provided	1. Providing benefits for tuition fees. 2. Involvement of social partners in the training of specia
Weak level of preparedness of applicants in natural science disciplines, incl. foreign languages	Low level of competitiveness, non-compliance with international standards	1. Organization of the preparatory department for admission to the university. 2. Conducting specialized courses, training seminars
The outflow of young people to foreign universities	Insufficient number of students	1. Increasing the number of received state grants based on the organization of scientific and methodological support for the preparation of school graduates for the UNT exams 2. Creation of a center for vocational guidance and the introduction of optional courses in schools on the choice of professions and specialties 3. Creation of a system of internal university grants
Insufficient volume of commercialization of scientific developments	Lack of innovation, new technologies for use in production	Introduction of public-private partnership in science
Internal risks		
Insufficient motivation for professional growth of teaching staff and employees	Decreased competitiveness of graduates and the university as a whole	1. Transition to a differentiated system of evaluation and remuneration, moral incentives. Development of a system of indicators of scientific and educational productivity 2. Ensuring mandatory professional development and language competence of university staff
Low R&D efficiency	Lack of scientific developments, new technologies, low level of innovative activity, impossibility of commercializing the results	1. Initiation of research projects of the republican, international levels 2. Improvement of the teaching staff incentive program to increase publication activity 3. Participation in international scientific conferences, symposiums

5. Financial support of the EP development plan

Financial support for the implementation of the Development Plan of the EP "Chemistry-Biology" for 2020-2025 will be carried out from the university's funds, as well as by attracting funds from state and other sources of funding.

Capital and operating costs are assumed.