NON-COMMERCIAL JOINT STOCK COMPANY
KAZAKH NATIONAL PEDAGOGICAL UNIVERSITY
NAMED AFTER ABAI

FACULTY OF SCIENCE AND GEOGRAPHY

APPROVED
Dean of the Faculty
K.D. Kaimuldinova
_____2023 y.

DEVELOPMENT PLAN
OF THE EDUCATIONAL PROGRAM
6B01512 - CHEMISTRY-BIOLOGY

2023-2029

ALMATY, 2023

The Development Plan of the Educational Program has been developed based on the following documents: On the Nationwide Priorities of the Republic of Kazakhstan until 2025 (Decree of the President of the Republic of Kazakhstan dated 26.02.2021 № 520) https://adilet.zan.kz/rus/docs/U2100000520/history Development Strategy «ABAI UNIVERSITY» 2023-2029 y.

https://www.kaznpu.kz/docs/docs/260224/Prog_ru.pdf

Approved
At the meeting of the Faculty Council of Natural Sciences and Geography
Minutes № 5 dated 25.01.2023

Reviewed
At the meeting of the Department of "Chemistry"
Minutes №6 dated 18.01.2023
Head of Department _____ Zh.S. Mukataeva

Abai University is student-centered and creates a harmonious educational environment for acquiring knowledge, professional socialization and adaptation. It fosters respect for the future profession and develops critical thinking skills and tolerance.

FOREWORD

Development Plan of the Educational Program 6B01512 - Chemistry-biology 2023-2029

Code and Name of the Field of Education: 6B01 - Pedagogical Sciences
Code and Name of the Training Direction: 6B015 - Teacher Training in Natural Science Subjects
Group of Educational Programs: B012 - Teacher Training in Chemistry
The strategy of the program is aimed at forming and implementing the established competency model, as well as expanding the potential circle of employers.
Mission of the Educational Program: Training educators capable of anticipating the needs of modern education, based on advanced methodologies, national heritage, and global approaches.
Goal of the Educational Program:
To prepare chemistry and biology teachers with practical skills and leadership qualities, capable of fostering and shaping the well-rounded personality of students; to form systematic knowledge in the fields of chemistry and biology; to organize the educational process in chemistry and biology at a modern scientific and methodological level; to conduct scientific research.

ANALYSIS OF THE CURRENT SITUATION

General information about the educational program

Developers of the EP development plan	Department Representatives: Mukataeva Zh.S., Karazhanova D.A., Kozhagulova Zh.R., Beisekova A.A., Bakytkarim Y. Employers: Bidybaeva E.I., Director of School-Gymnasium No. 159, Almaty; Shazhabaeva K.S., Director of KSU Specialized Lyceum No. 92 named after Mahatma Gandhi, Almaty, Bostandyk District; Zhaylaubaeva Sh.E., Chemistry Teacher, Almaty, Nauryzbay District, HBN NIS; Kaumbaev S.A., Chemistry Teacher, KSU Specialized Lyceum No. 92 named after Mahatma Gandhi, Almaty, Bostandyk District; Suleimenova A.D., Chemistry Teacher, Almaty, School No. 167. Students: Zaurova S. – PhD student in the Chemistry program, Kasen Sh. – Master's student in the Chemistry-Biology program, Teleuova M. – Undergraduate student in the 6B01512 – Chemistry-Biology program.
Academic degree:	Bachelor of education in the educational program 6B01512 - Chemistry-biology
Year of establishment:	2019
Language of instruction:	kazakh, russian
Form of study:	full-time
Duration of study:	4
Number of credits:	240
Uniqueness of the EP	Quality education through collaboration with potential employers. Partnership in the academic mobility program.
Graduate Model	✓ - Able to assess current issues and achievements in modern chemistry ✓ - Capable of designing and conducting comprehensive research, including interdisciplinary studies, based on a holistic and systematic scientific

	worldview ✓ - Strong communication skills, creativity, stress resilience, multilingualism, respect for the environment, and tolerance ✓ - Practical orientation and entrepreneurial skills ✓ - Deep understanding of digital environments and skills in creating new content ✓ - Possesses in-depth knowledge of contemporary chemistry issues ✓ - Able to lead others, be a leader, make independent decisions, and demonstrate creativity and constructive social activity
Types of professional activity	✓ - Research ✓ - Teaching and Research ✓ - Project and Technological ✓ - Organizational and Managerial ✓ - Scientific and Technological
Partners in Academic Mobility (Internal and External)	*External Academic Mobility* Pomorska Academy in Słupsk (Poland); University of Poitiers (France); Lille University (France); University of Lorraine (France); Heidelberg University (Germany); Adam Mickiewicz University (Poland); Mykolas Romeris University (Lithuania); Vilnius University (Lithuania); Vytautas Magnus University (Lithuania); University of Debrecen (Hungary); Nigde Omer Halisdemir University (Turkey); Muğla Sıtkı Koçman University (Turkey); Giresun University (Turkey); Fırat University (Turkey); Moscow City Pedagogical University (Russia); Volgograd State Social and Pedagogical University (Russia). *Internal Academic Mobility* Aktobe University named after S. Baishiev; Atyrau University named after H. Dosmukhamedov; K. Zhubanov University; Pavlodar Pedagogical University; Kyzylorda University named after Korkyt Ata.
Employment of graduates	-
Availability of an appendix to the license for the training direction	№ 0137373
Main enterprises with which cooperation is carried out	KSU "Department of Education of the City of Almaty", SE "Department of Education of the Almaty Region", Secondary School No. 26, Almaty Region, Ili District, School-Gymnasium No. 159, Almaty, KSU Specialized Lyceum No. 92 named after Mahatma Gandhi, Almaty, Bostandyk District, etc.
Expected final results of the educational program development plan implementation	- Improvement of the educational and professional activities of students and teaching staff; - Professional development of teaching staff in the field of innovative teaching technologies; - Development of educational and teaching-methodical literature; - Development and operation of joint educational programs with domestic and foreign universities.

Main risks of the educational program

Risk name	**Possible consequences**	**Management mechanisms and measures**

Competition in the education services market	Formation of public opinion about the educational program	Creating a recognizable image of the educational program, increasing the number of university grants, positive reviews about the program, trust, interest, and activity of the Alumni Association (appearances in the media), promoting the quality of education at ABAI UNIVERSITY to potential employers in order to increase the flow of interesting job vacancies for our students and graduates.
Contingent of students	Reduction of the number of students	Implementation of a set of measures aimed at retaining the student body, introducing more effective career orientation activities, systematic interaction with alumni after graduation, and increasing practice-oriented courses within the educational program.
Economic crisis	Decrease in purchasing power	Providing the option of installment payment for debts, individualization of education, motivation to continue studying, individual and group psychological counseling.

SWOT analysis of the implementation of educational programs.

	Strengths	**Weaknesses**
Internal factors	- The goals and strategy of the program are focused on forming and implementing a competency-based model, as well as expanding the potential circle of employers; - In-depth study of subjects to achieve the necessary qualification in the chosen field of chemistry; - Highly qualified faculty and staff; - Research activities conducted in accordance with the real needs of enterprises; - Availability of developed information infrastructure covering all areas of activity; - Active position of the Student Council; - Marketing activities for effective interaction between the university and employers; - High graduate employment rate; - Practice-oriented approach and a wide range of implemented educational programs; - Availability of modern equipment and instruments; - Alumni working in their field of study; - Student-centered learning; - Continuous monitoring and periodic evaluation of programs.	- Lack of joint educational programs with foreign universities - Low activity of the Alumni Association and absence of an endowment fund
	Favorable opportunities	**Threats and risks**
External factors	- Utilization of academic freedom opportunities; - Availability of numerous research topics, within which graduation projects can be carried out; - Participation of the department's faculty in international educational exhibitions and fairs; - Informing students about vacancies, internships, and the labor market situation; - Focusing on developing the ability for self-education in various fields: academic and scientific activities, creativity, and professional careers; - A relatively high level of effectiveness in conducting educational activities, with an increase in student engagement; - Development of distance learning technologies.	- High competition in the educational services market; - Student attrition; - Pandemic; - Economic crisis; - General trend of increasing the cost of paid education.

1. MAIN OBJECTIVES OF THE EDUCATIONAL PROGRAM DEVELOPMENT

Direction 1. Expanding access to the university's educational services

№	Performance indicators	Unit	2023	2024	2025
1.	The contingent of students in the educational program 6B01512 – Chemistry-Biology.	Unit	343	415	450
2.	Admission to the educational program.	Unit	140	106	100
3.	Graduation.	Unit	72	73	74

Direction 2. Innovative support of educational activities

№	Performance indicators (share, percentage, quantity)	Unit	2023	2024	2025	Responsible executors	Form of completion
1.	Decision-making on the type of educational program (existing, new, innovative, interdisciplinary, additional (minor), joint educational program)	units	Д -1	Д -1	Д – 1	Graduating department	EP, SEP
2.	Participation of the educational program in program rankings	fact	+	+	+	Graduating department	Results of the educational program ranking
3.	Accreditation of the educational program	fact			+	Graduating department	Accreditation result
4	Post-accreditation monitoring completion	fact	+	+		Graduating department	Monitoring results
5.	Updating the educational program in line with labor market requirements	fact	+	+	+	Graduating department	Updated educational program (EP), Expert opinions
6.	Analysis of the educational program for alignment with the university's strategic development plan	fact	+	+	+	Graduating department	Meeting minutes of the departments
7.	Conducting roundtable discussions on integrating competencies into the educational process	fact	+	+	+	Graduating department, employers	Report, protocol
8.	Number of industry specialists involved in the educational process	person	1	4	3	Graduating department	Agreements, memorandums
9.	Analysis of the availability of faculty with the corresponding potential for the development of the educational program	%	100	100	100	Graduating department	Staffing form of the faculty and teaching staff of the department
10.	Number of faculty members who have completed professional development courses in the subject area	%	100	100	100	Graduating department Faculty and teaching staff	Certificates, diplomas
11.	Percentage of graduates of the educational program employed in the first year after graduation (out of the total number of graduates)	%	100	100	100	Graduating department	Employment results
12.	Percentage of graduates of the educational program who were trained under the state order and employed in the first year after graduation from the university in the respective educational program.	%	100	100	100	Graduating department	Employment results
13	Percentage of university graduates participating in the evaluation of the quality of educational services (full-time education)	fact	+	+	+	Graduating department	Presence in the commission

14	Availability of integrated educational programs for management in inclusive education	fact	+	+	+	Graduating department	Report
15	To strengthen the potential of teacher education, the development of new educational programs.	fact	-	+	+	Graduating department	Report
16	Implementation of online courses (MOOC)	fact	-	-	+	Graduating department Faculty and teaching staff	Course development
17	To form a targeted system of continuous work with gifted children and talented youth, organizing activities within the framework of the "Kids University" project.	fact	-	-	+	Graduating department Faculty and teaching staff	Report
18.	Organization of activities within the "Life-long Learning" framework to provide quality education to everyone, at any age.	fact	-	+	+	Graduating department	Report
19.	Student participation in defining the content of the program	fact	+	+	+	Graduating department, employers	In the composition of the educational program developers
20.	Number of employers participating in the evaluation of the quality of specialist training	ед	6	6	6	Employers of the educational program	Agreements, memorandums, expert opinions
21.	Percentage of students participating in the evaluation of the teaching activities of faculty members	%	50	50	50	Graduating department, students	Survey results
22	Number of educational and methodical materials developed in the Kazakh language	units	2	4	5	Graduating department, students	Developments in disciplines
23	Number of educational and methodical publications developed by faculty members based on the specifics of the educational program	units	3	5	4	Graduating department	Educational and methodical publications, textbooks
24	Opening of pedagogical retraining courses for graduates of non-pedagogical specialties	fact	+	+	+	Graduating department	Order on the admission of students
25	Preparation of graduates for the National Certification Test (NKT)	fact	+	+	+	Graduating department	NKT certificates
26	To develop the digital ecosystem: - Create a center for innovative educational digital technologies, transforming traditional didactic models into innovative ones using digital educational technologies; - Develop an online platform with access to video lectures, electronic interactive multimedia learning materials for core courses of educational programs; - Create author courses by faculty members on leading national platforms of open online education (EdTech-kz, Open Edx-kz, etc.) and integrate them into the curricula; - Implement gamification (using gaming techniques in the educational process to	fact	-	+	+	Graduating department	

	increase student engagement and motivation); - Develop MOOCs (Massive Open Online Courses) platforms; - Use control and assessment systems based on methods like Open-Book, Open-Paper, Critical Thinking, and Take-Home exams; - Implement proctoring technology using biometric data of students.						

Direction 3. Internationalization of the program

№	**Performance indicators (share, percentage, quantity)**	**Unit**	**2023**	**2024**	**2025**	**Responsible executors**	**Form of completion**
1.	Inter-university partnership within the framework of the educational program: Dual-degree educational programs.	units	-	-	-	Graduating department	SEP, Dual Degree Programs
	with a foreign university	units	-	-	-		
	with a Kazakhstani university	units	-	-	-		
2.	Number of students in the educational program participating in the internal outgoing academic mobility program.	units	-	-	1	Graduating department, academic mobility center	Order, student transcripts
3.	Number of students in the educational program participating in the internal incoming academic mobility program.	units	-	-	1	Graduating department, student	Order, student transcript
4.	Number of faculty members participating in the internal outgoing academic mobility program.	units	1	1	1	Graduating department, faculty members	Order, report
5.	Number of faculty members participating in the internal incoming academic mobility program.	units	1	1	1	Graduating department, faculty members	Report
6	Number of invited foreign scholars.	units	1	4	3	Graduating department	Report
7.	Number of faculty members participating in the external outgoing academic mobility program.	units	1	1	1	Graduating department, faculty members (PPS), Academic Mobility Center.	Report

Direction 4. Expansion of the scope of scientific research and innovations

№	**Performance indicators (share, percentage, quantity)**	**Unit**	**2023**	**2024**	**2025**	**Responsible executors**	**Form of completion**
1.	Number of faculty members involved in educational and research projects	person	6	8	8	Graduating department	Report
2.	Number of faculty members involved in the implementation of fundamental and applied research	person	3	4	5	Graduating department	Report
3.	Number of publications in journals indexed in the 1st, 2nd, and 3rd quartiles according to the Journal Citation Reports by Clarivate Analytics or journals with a percentile rank based on CiteScore in the Scopus database.	units	5	6	8	Graduating department	Indicator of the base

4.	Number of publications of doctoral students' research articles in journals with a non-zero impact factor, indexed in Thomson Reuters/Scopus databases.	units	7	8	10	Graduating department Doctoral students	Database indicators
5	International Scientific and Practical Conference "Modern Aspects of Chemical Science and Chemical Education: Theory and Practice," Almaty.	fact	+	-	+	Graduating department	Journal collection, media coverage, and social media links.
6	Round table "Path to Science" – Scientific and Methodological Seminar with Meetings of Outstanding Chemists and Scientists.	fact	-	+	-	Graduating department	Media coverage and social media links.
7	Number of research projects conducted within the framework of international cooperation.	units	-	-	1	Graduating department	Report
8	Number of publications by faculty members in journals recommended by the Committee for Control in Education and Science (CCES).	units	6	8	15	Graduating department	Report
9	Number of faculty members participating in the National "Best Teacher" competition.	units	-	1	1	Graduating department	Competition results.
10	Number of publications by students.	fact	+	+	+	Graduating department, students	Report
11	Number of students participating in scientific research and competitions.	units	-	1	1	Graduating department, students	Report
12	Operation of scientific centers and laboratories: • Organic Synthesis Laboratory • Physico-Chemical Methods of Research Laboratory • Inorganic Chemistry Laboratory • Analytical Chemistry Laboratory • Chemical Technology Laboratory • Petrochemistry and Organic Chemistry Laboratory	fact	+	+	+	Graduating department, students	Auditorium fund.

Direction 5. Improvement of infrastructure and material-technical base.

№	**Performance indicators (share, percentage, quantity)**	**Unit**	**2023**	**2024**	**2025**	**Responsible executors**	**Form of completion**
1	Development of the computer park.	fact	+	+	+	Graduating department	Infrastructure modernization.
2	Acquisition of software.	fact	+	+	+	Graduating department	Infrastructure modernization.
3	Acquisition of laboratory equipment and others.	fact	+	+	+	Graduating department	Infrastructure modernization.
4	Replenishment of the library collection.	fact	+	+	+	Graduating department	Infrastructure modernization.
5	Purchase of furniture.	fact	+	+	+	Graduating department	Infrastructure modernization.

Direction 6. Career guidance work within the framework of the educational program.

№	Performance indicators (share, percentage, quantity)	Unit	2023	2024	2025	Responsible executors	Form of completion
1	Providing presentations to students and school teachers on online and offline platforms, distributing materials with information about the educational program, a list of subjects for the Unified National Testing (ENT), a list of documents required for admission, as well as the university's ranking, its material and technical base, and admission opportunities at ABAI UNIVERSITY.	fact	+	+	+	Graduating department	Report, social media links.
2	To identify talented students, organize club activities for 9th, 10th, and 11th grade students based on practical experience related to the student's area of interest.	fact	-	+	+	Graduating department, faculty members, students	Memorandum, agreement.
3	Holding department meetings on career guidance and the preparation of student recruitment, organizing working groups on key areas.	fact	+	+	+	Graduating department	Report on the student enrollment.
4	Conducting online lessons with the help of faculty members, providing methodological assistance to support Abai University graduates employed in rural areas.	fact	-	+	+	Graduating department	Report Protocol
5	During the internship, providing methodological support to teachers and students of secondary schools in scientific project competitions and Olympiads.	fact	+	+	+	Graduating department	Report
6	Creating a collection of video lessons on the topic "Introduction to Chemical Science" for secondary school students.	fact	+	+	+	Graduating department	Report Protocol
7	Реализация проекта KIDS UNIVERSITY	fact	-	+	+	Graduating department	Report
8	Organizing the event "Student for a Day" to promote early career self-determination among schoolchildren.	fact	+	+	+	Graduating department	Report
9	Organizing a special competition among second-year undergraduate students to create an Honors College (a group of top-performing students, an elite group of the most advanced learners).	fact	-	+	+	Graduating department	Report

Direction 7. Educational work within the framework of the educational program.

№	Performance indicators (share, percentage, quantity)	Unit	2023	2024	2025	Responsible executors	Form of completion
1	Carrying out activities within the framework of the Programs and according to the student affairs plan of the institute.	fact	+	+	+	Graduating department	Report, links on social media.
2	Activation of the national social project "Accelerator of Good: Izgilik elshysi"	fact	+	+	+	Graduating department	Report, links on

	(engaging youth in volunteerism, fostering humanism, responsiveness, compassion, decency, and the spirit of Kazakhstani patriotism).						social media.
3	Activities aimed at fostering decency and anti-corruption values.	fact	+	+	+	Graduating department	Report.
4	Opening of a student entrepreneurship HUB, engaging students in professional tutoring, preparing children for Olympiads, organizing school-wide educational events, working with at-risk youth, and developing communication skills in Kazakh, Russian, and English languages in a Speaking Club.	fact	+	+	+	Graduating department, students	Report.