

**ABAI KAZAKH NATIONAL PEDAGOGICAL UNIVERSITY**  
**INSTITUTE OF NATURAL SCIENCES AND GEOGRAPHY**

**THE DEVELOPMENT PLAN OF EDUCATIONAL PROGRAM**  
**7M05301 – CHEMISTRY FOR THE YEARS 2022-2025.**

**Almaty, 2022**

The development plan of the OP was developed on the basis of documents: On National priorities of the Republic of Kazakhstan until 2025 (Decree of the President of the Republic of Kazakhstan dated 02/26/2021 №520.) <https://adilet.zan.kz/rus/docs/U2100000520>, Development Strategy "ABAI UNIVERSITY for 2022-2025 (approved by the Decision of the Board of Directors of JSC KAZNPU named after Abaya dated 9.12.2021, Protocol № 12)  
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Approved  
at the meeting of the Council of the Institute of "Natural Sciences and Geography"

Protocol № \_\_\_\_5\_\_\_\_ from «\_\_25\_\_»\_\_\_\_01\_\_\_\_2022y.

Considered  
at the meeting of the EP Chemistry group

Protocol № \_\_\_\_5\_\_\_\_ from «\_\_18\_\_»\_\_\_\_01\_\_\_\_2022y.

Head of the EP

Zh.Mukatayeva

## PREFACE

**The development plan** of the educational program 7M05301 – Chemistry for 2022-2025.

**Code and name of the field of education:** 7M05- Natural Sciences, mathematics and Statistics

**Code and name of the field of study:** 7M053-Physical and Chemical Sciences

**Group of educational programs:** M053 –Chemistry.

**The strategy of the program** is aimed at the formation and implementation of the established competence model, as well as at expanding the possible range of employers.

**The mission of the educational program:** The formation of human resources—highly qualified specialists competitive in the domestic and international labor market in accordance with their needs and prospects for the development of the country and the region

**The purpose of the educational program** is to train highly qualified, competitive specialists with in-depth, systematic theoretical knowledge and practical skills in fundamental and relevant areas of chemistry, capable of self-development and implementation in research, analytical and pedagogical activities.

**When developing the educational program,** the national development priorities of the Republic of Kazakhstan until 2025 and the development strategy of Abai University for 2022-2025, as well as the requirements of employers, were taken into account.

## ANALYSIS OF THE CURRENT SITUATION

### General information about the educational program

Developers of the development plan for educational programs	Representatives of the department: Mukataeva Zh., Korganbaeva Zh., Kassymbekova D. Employers: Kudreeva L. KazNU named after al-Farabi, Students: Baishibekov A. EP 7M05301 – Chemistry
Academic degree:	Master of Natural Sciences in the educational program 7M05301 –Chemistry
Opening year:	2004
Teaching language:	kazakh, russian
Form of study:	full - time
period of study	2
volume of credits	120
The uniqueness of educational programs	Integrated curricula, field study sessions at research institutes, academic mobility of students. The opportunity to participate in real scientific research and projects, work on modern research laboratory equipment when performing them. Having the status of a national university. The location of the campus is in the historical center of Almaty. Have a stable reputation in the market.
Graduate Model	✓able to evaluate current problems and achievements of modern chemistry ✓able to design and carry out comprehensive research, including interdisciplinary, based on a holistic systematic scientific worldview ✓communication, creativity, stress tolerance, multilingual, respect for the environment, tolerance ✓practice-oriented and entrepreneurial skills ✓deep understanding of digital environments, skills in creating new content ✓has in-depth knowledge of modern chemistry problems ✓the ability to lead others, to be a leader, to make independent decisions, the ability to be creative and creative social activity
Types of professional activity	✓Scientific research ✓Scientific and pedagogical ✓Design and technological

	✓Organizational and managerial ✓Scientific and technological
Academic Mobility Partners (internal and external)	<i>External academic mobility.</i> Pomeranian Academy in Slupsk (Poland); University of Poitiers (France); University of Lille (France); University of Lorraine (France); Heidelberg University (Germany); Adam Mickiewicz University (Poland); Mikolas-Romiris University (Lithuania); Vilnius University (Lithuania); Vytautas the Great University (Lithuania); University of Debrecen (Hungary); Nigde Omer Halisdemir University (Turkey); Muğla Sıtkı Koçman öiversitesi (Turkey); Giresun University (Turkey); Firat University (Turkey); Moscow City Pedagogical University (Russia); Volgograd State Socio-Pedagogical University (RF). <i>Internal academic mobility.</i> Aktobe University named after S.Baishev; Atyrau University named after H. Dosmukhamedov; ARU named after K. Zhubanov; Pavlodar Pedagogical University; Kyzylorda University named after Korkyt Ata.
Employment of graduates	100 %
Availability of an application to the license for the direction of personnel training	№ 0137373
The main enterprises with which cooperation is carried out	JSC "INSTITUTE OF FUEL, CATALYSIS AND ELECTROCHEMISTRY NAMED AFTER D.SOKOLSKY", SCIENTIFIC AND PRODUCTION ENTERPRISE LLC "ANTIGEN", JOINT-STOCK COMPANY "INSTITUTE OF CHEMICAL SCIENCES NAMED AFTER A.B.BEKTUROV", AL-FARABI KAZAKH NATIONAL UNIVERSITY
Expected end results of the implementation of the EP development plan	- improvement of educational and professional activities of students and teaching staff; - advanced training of teaching staff in the field of innovative learning technologies; -development of educational and methodical literature in English; -participation of students and teaching staff in competitions, project implementation; - increasing the level of information and technical base; - development and operation of joint educational programs with domestic and foreign universities

### The main risks of the educational program

Name of the risk	Possible consequences	Management mechanisms and measures
Competition in the market of educational services	Formation of public opinion about this educational program	Creating a recognizable image of the educational program, increasing the number of university grants, positive feedback about this OP, trust, interest, activity of the Alumni Association (speeches in the media), advertising the quality of education of ABAI UNIVERSITY to potential employers in order to increase the flow of interesting vacancies for our students and graduates.
Contingent of students	Reducing the contingent of students	implementation of a set of measures aimed at maintaining the contingent, the introduction of more effective forms of career guidance; systematic interaction with graduates after graduation, increasing practice-oriented courses on educational programs
Economic crisis	Decrease in solvency	providing the possibility of step-by-step payment of debts, individualization of training, motivation to continue training,

		individual and group psychological consultations.
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### SWOT analysis of the implementation of educational programs

	Strengths	Weak sides
Internal factors	<ul style="list-style-type: none"> <li>- The goals and strategy of the program are aimed at the formation and implementation of the established competence model, as well as at expanding the possible range of employers;</li> <li>- In-depth study of disciplines to achieve the necessary degree of qualification in the field of chemistry chosen by the student.</li> <li>- Highly qualified teaching staff;</li> <li>- Research activities carried out in accordance with the real demands of the enterprise;</li> <li>- Availability of a developed information infrastructure covering all types of activities;</li> <li>- Active position of the Student Council;</li> <li>- Marketing activity for effective interaction between the university and the employer;</li> <li>- High level of employment of graduates ;</li> <li>- Practical orientation and a wide range of implemented EP;</li> <li>- Availability of modern equipment and appliances;</li> <li>-The work of graduates in their specialty</li> <li>-Student-oriented learning;</li> <li>- Continuous monitoring and periodic evaluation of programs.</li> </ul>	<ul style="list-style-type: none"> <li>- Insufficient number of students;</li> <li>-Lack of joint educational programs with foreign universities;</li> <li>-Insufficient level of potential realization in research work (low level of commercialization);</li> <li>- Low activity of the Association of graduates and the absence of an endowment fund.</li> </ul>
	Favorable Opportunities	Threats and risks
External factors	<ul style="list-style-type: none"> <li>- Using the opportunities of academic freedom;</li> <li>-The presence of a large number of initiative topics of research works, within which graduation works can be performed;</li> <li>-Participation of faculty of the department in international educational exhibitions and fairs;</li> <li>-Informing students about vacancies and internships and the situation on the labor market;</li> <li>- Orientation of the individual to the formation of the ability to self-education in various fields: educational and scientific activities, creativity, professional career;</li> <li>-A fairly high level of effectiveness of educational activities, an increase in the activity of students.</li> <li>-Development of distance learning technologies.</li> </ul>	<ul style="list-style-type: none"> <li>-High competition in the educational services market;</li> <li>- Outflow of students;</li> <li>- Pandemic;</li> <li>- Economic crisis;</li> <li>-The general trend of increasing the cost of paid education.</li> </ul>

## 1. THE MAIN OBJECTIVES OF THE DEVELOPMENT OF THE EDUCATIONAL PROGRAM

**Direction 1.** Expanding access to educational services of the University

No	Performance indicators	Unit measu remen	2022	2023	2024	2025
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1.	The contingent of students in EP 7M05301 - Chemistry	Unit	5	3	6	9
2.	Admission by educational programs	Unit	1	2	4	5
3.	Graduates	Unit	4	1	2	4

## Direction 2. Innovative provision of educational activities

№	performance indicators (share, percentage, quantity)	Unit measurements	2022	2023	2024	2025	Responsible executors	Completion Form
1.	Deciding on the type of EP (current, new, innovative, interdisciplinary, additional (minor), joint EP	unit.	current educational program -1	current educational program -1	current educational program -1	current educational program -1	graduating department	EP
2.	Participation of educational programs in the ratings of educational programs	fact	+	+	+	+	graduating department	The results of the rating of educational programs
3.	Accreditation EP	fact	+			+	graduating department	Result Accreditation
4	passing post-accreditation monitoring	fact		+			graduating department	Monitoring results
5.	Updating educational programs taking into account the requirements of the labour market	fact	+	+	+	+	graduating department	Updated educational program, Expert opinion
6.	Analysis of the EP for compliance with the strategic development plan of the university	fact	+	+	+	+	graduating department	Minutes of meetings of the Department
7.	Conducting round tables on the introduction of competencies into the educational process	fact	+	+	+	+	graduating department, employers	Reference, protocol
8.	The number of specialists involved in the educational process in the relevant industry	unit.	3	3	4	5	graduating department	Contracts, memorandums
9.	Participation of representatives of potential stakeholders as experts of educational programs	fact	+	+	+	+	graduating department, работодатели	Minutes of meetings of the Department
10.	Analysis of the availability of teaching staff with the appropriate potential for the development of EP	%	100	100	100	100	graduating department	The staff form of the teaching staff of the department
11.	The number of teaching staff who have completed advanced training courses in the subject area	%	100	100	100	100	graduating department, teaching staff	Certificates, diplomas

12.	Advanced training, the establishment of teaching staff through training in the PhD doctoral program, internships	fact	+	+	+	+	graduating department, teaching staff	Certificates, diplomas
13.	Development of digital knowledge and research competencies that allow graduates to master the expert level of IT competencies and skills in research and development.	fact	+	+	+	+	University, department, teaching staff	Certificates, diplomas
14.	Providing a micro-degree (nanodegree) for future teachers	fact	–	+	+	+	University, department, teaching staff	Certificates, diplomas
15.	Improving the quality of teaching staff organization of Winter and Summer schools for teaching staff	fact	+	+	+	+	University, department, teaching staff	Certificates, diplomas
16.	Organization of work within the framework of the "Silver University" for obtaining a quality education for everyone and at any age. (specializations to choose from: digital education, inclusive education, training based on digital technologies)	fact	-	+	+	+	University, department	report
17.	The share of graduates of the EP employed in the first year after graduation (from the total number of graduates)	%	100	100	100	100	graduating department	Results employment
18.	The share of graduates of the EP, trained by state order, employed in the first year after graduation from the university of the EP	%	100	100	100	100	graduating department	Results employment
19.	The proportion of university graduates participating in the assessment of the quality of educational services (full-time education)	%	20	20	25	30	graduating department	Presence in the commission
20.	Participation of undergraduates in determining the content of the program	fact	+	+	+	+	graduating department, students	As part of the compilers of the EP
21.	The number of employers participating in the assessment of the quality of training of specialists	unit.	2	2	5	5	EP's employers	Contracts, memorandums, expert opinions
22.	The proportion of students participating in the assessment of teaching activities of teaching staff	%	50	50	50	50	graduating department, students	Survey results
23.	The number of teaching aids developed in the Kazakh language	unit	2	4	5	7	graduating department, students	Developments by disciplines
24.	The number of educational and methodological publications developed by the teaching staff on the specifics of the EP	unit	1	-	1	2	graduating department	educational and methodical publications, textbooks

### Direction 3. Internationalization of the program

№	Performance indicators (share, percentage, quantity)	Unit measurement	2022	2023	2024	2025	Responsible executors	Completion Form
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1.	Interuniversity partnership within the framework of educational programs: Double-degree EP	unit	-	-	-	1	graduating department	joint educational program, Double-degree EP
	with a foreign university	unit	-	-	-	1		
	with a Kazakh university	unit	-	-	1	1		
2.	The number of students who have completed a scientific internship at leading foreign universities and research centers, companies	unit	-	1	1	1	graduating department	Order, report
3.	Number of students EP participating in the internal Outgoing Academic mobility program	unit.	-	-	1	2	graduating department, academic mobility center	Order, transcript of students
4.	The number of students participating in the internal incoming academic mobility program	unit.	-	-	1	1	graduating department student	Order, transcript of students
5.	Number of teaching staff participating in the internal Outgoing Academic mobility program	unit.	-	1	1	1	graduating department teaching staff	Order, report
6	Number of teaching staff participating in the internal Incoming Academic mobility program	unit.	-	1	1	1	graduating department teaching staff	report
7.	Number of foreign scientists involved	unit.	-	-	1	1	graduating department	report
8.	Number of teaching staff participating in the external Outgoing Academic mobility program	unit.	-	1	1	1	graduating department teaching staff academic mobility center	report
9	internships within the framework of international exchange programs (ERASMUS +, DAAD, Mevlana, Bolashak)	unit.	-	-	1	1	graduating department teaching staff academic mobility center	report

#### Direction 4. Expanding the scope of scientific research and innovation

<i>№</i>	Performance indicators (share, percentage, quantity)	Unit measurements	2022	2023	2024	2025	Responsible executors	Completion Form
1.	Number of teaching staff participating in educational and research projects	people	1	1	1	2	graduating department	report
2.	The number of teaching staff involved in the implementation of fundamental and applied research	people	1	1	1	2	graduating department	report
3.	The number of publications in the publications included in the 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> quartiles according to the Journal Citation Reports of Clarivate Analytics or having a percentile indicator in the Scopus database according to the Cite Score	unit	1	1	1	2	graduating department	Database metrics
4.	The number of publications of scientific articles of doctoral students	unit	1	1	2	3	graduating department	Database metrics



	in journals with a non-zero impact factor included in databases Thomson Reuters/Scopus						doctoral students	
5	International scientific and practical conference "Modern aspects of chemical science and chemical education: theory and practice" Almaty	fact	+	-	+	-	graduating department	Collection of the magazine, Information in the media and links in social networks
6	Round table "The way to science" scientific and methodological seminar meeting of outstanding chemists-scientists	fact	-	+	-	-	graduating department	Collection of the magazine, Information in the media and links in social networks
7	Number of research projects carried out within the framework of international cooperation	unit	-	-	1	1	graduating department	report
8	The number of publications of the teaching staff in publications recommended by the Committee for Quality Assurance in Education and Science (CQAESc)	unit	3	3	6	8	graduating department	report
9	The number of teachers participating in the Republican contest The best teacher	unit	-	1	1	1	graduating department	Competition result
10	Number of student publications	fact	+	+	+	+	graduating department student	report
11	Number of students taking part in scientific research and competitions	unit	-	1	1	1	graduating department student	report
12	Functioning of scientific centers, laboratories: • Laboratory of organic synthesis • Laboratory of physical and chemical research methods • Laboratory of inorganic chemistry • Laboratory of Analytical Chemistry • Laboratory of chemical technology • Laboratory of petrochemistry and organics	fact	+	+	+	+	graduating department student	auditorium Fund

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

№	Performance indicators (share, percentage, quantity)	Unit measurements	2022	2023	2024	2025	Responsible executors	Completion Form
1	Development of a computer park	fact	+	+	+	+	graduating department	infrastructure modernization
2	Software acquisition	fact	+	+	+	+	graduating department	infrastructure modernization

3	Purchase of laboratory equipment, etc.	fact	+	+	+	+	graduating department	infrastructure modernization
4	Replenishment of the library fund	fact	+	+	+	+	graduating department	infrastructure modernization
5	Purchase of furniture	fact	+	+	+	+	graduating department	infrastructure modernization

**Direction 6.** Career guidance work within the framework of the EP

№	Performance indicators (share, percentage, quantity)	Unit measurements	2022	2023	2024	2025	Responsible executors	Completion Form
1	Providing presentations to students and teachers of schools on online and offline platforms, handouts with information about this educational program, a list of subjects for passing the UNT, a list of documents required for admission, as well as the rating of the university, its material and technical base and the possibility of admission to ABAI UNIVERSITY	fact	+	+	+	+	graduating department	Report, links in social networks
2	Holding meetings of the Council for Career Guidance and preparation of applicants, organizing the work of working groups in key areas.	fact	+	+	+	+	graduating department	Report on the contingent of students
3	Round table "Career guidance – investment in the future"	fact	+	+	+	+	graduating department	Report

**Direction 7.** Educational work within the framework of Educational programs

№	Performance indicators (share, percentage, quantity)	Unit measurements	2022	2023	2024	2025	Responsible executors	Completion Form
1	Carrying out activities within the framework of the Programs and according to the plan of educational work of the Institute, active participation in the social life of the university	fact	+	+	+	+	graduating department	Report, links in social networks
2	Holding events focused on the national educational ideal, the system of basic national values (The Concept of the Great Abai "Tolyk Adam)	fact	+	+	+	+	graduating department	Report, links in social networks
3	Implementation of comprehensive measures: development of a training and talent development Program, development of coaching, mentoring and mentoring methods, work of the social and psychological assistance service.	fact	+	+	+	+	graduating department	Report, links in social networks