NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

6B01 - Pedagogical sciences
(Code and classifcation of the feld of education)

6B015 - Teacher training in natural science subjects
(Code and classifcation of the direction of training)

0114
(Code in the International Standard Classifcation of Education)

B011 - Training of computer science teachers
(Code and classifcation of the educational program group)

6B01507 - Computer Science and Robotics
(Code and name of the educational program)

Bachelor
(Level of preparation)

Semey

Educational program

6B01 -- Pedagogical sciences
(Code and classification of the field of education)

6B015 - Training of teachers in Natural science subjects
(Code and classification of the direction of training)

0114
(Code in the International Standard Classification of Education)

B011 - Training of computer science teachers
(Code and classification of the educational program group)

6B01507 - Computer Science and Robotics
(Code and name of the educational program)

Bachelor
(Level of preparation)

Semey 2024

PREFACE

Developed

The educational program 6B01507 - Computer Science and Robotics in the direction of preparation 6B015 - Training of teachers in Natural science subjects on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position
Head of the Academic Committee	Ospanova Dinara	Dean of the Graduate school of physical and mathematical sciences
Educational program manager	Rakhmatullina Zarina	Senior lecturer of the Department of Physical and Mathematical Sciences and Computer Science, Magister
Member of the AC	Kenbayev Daurzhan	Head of the Department of Physics and Informatics
Member of the AC	Kydyralina Lazat	I.o. associate professor of the Department of Physical and Mathematical Sciences and Informatics, PhD
Member of the AC	Mynbayeva Maigul	Teacher of computer science «Nazarbayev Intellectual school of Physics and Mathematics in Semey»
Member of the AC	Toleugaisha Aliyeva	Head of the «Department for monitoring the content of education and the quality of education» of the «Regional Innovation and Methodological Center» of the «Department of Education of the Abai district», methodologist on the subject of informatics
Member of the AC	Bikzhanova Indira	student of the ИР1-101 group
Member of the AC	Zhabelov Nurbolat	student of the ИР-201 group

Reviewing

Full name of the reviewer	Position, place of work
Omarova Anar	KSU «Secondary school-lyceum №22» Semey
Bekkassimova Danar	KSU "Center for Scientific and Practical Education and Tourism" Semey

Reviewed

Considered
At a meeting of the Academic Quality Commission of the Natural and Mathematical of the faculty
Protocol № 3 "9" of January 2024

At a meeting of the Academic Quality Commission of the Graduate school of physical and mathematical sciences
Recommended for approval by the Academic Council of the University
Protocol № 1 "6" of June 2024

Agreed

Head of the education department of the city of Semey Bulabaev B.Z.

Approved

at a meeting of the University Academic Council by protocol No. 6/1 of January 19, 2024.

at a meeting of the University Academic Council by protocol No. 11 of June 28, 2024.

Content

1.Introduction

1.1.General data

The educational program "6B01507 Informatics and Robotics" implemented by the Department of Physical and Mathematical Sciences and Computer Science of the Natural and Mathematical Faculty of the Shakarim State University of Semey city, was developed taking into account the needs of the regional labor market, the requirements of regulatory documents of the Ministry of Education and Science of the Republic of Kazakhstan and is a system of documents for organizing educational process.

The program is focused on training bachelors of education ready for educational activities in secondary educational institutions as a teacher of informatics and robotics, ready to study the opportunities, needs, achievements of students in the field of education, for training and education in the field of education in accordance with the requirements of educational standards, the use of technology that correspond to the age characteristics of students and reflect the specifics of the subject of computer science and robotics,to the training and education of students with engineering and design thinking, to the formation of an educational environment to ensure the quality of education, including with the use of information technology, the implementation of the formulation and solution of research problems in the field of science and education, as well as the use of scientific methods in professional activities research.

When implementing the educational program, it is planned to use artificial intelligence tools in the educational process, thereby developing digital competencies among students in a rapidly changing technological environment.

The educational program provides for the education of a student with special educational needs in the conditions of a higher educational institution, as well as his socialization and integration into society.

1.2.Completion criteria

The main criterion for the completion of the educational process in the preparation of bachelors is the acquisition of at least 205 credits of theoretical training, as well as at least 27 credits of practice, not 8 credits for the preparation of diplomas. Total 240 credits.

1.3.Typical study duration: 3 y.

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	Training of competitive specialists with high social and civic responsibility, able to carry out professional activities: digitalization of education and organization of training in the field of informatics and robotics using innovative technologies.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	6B01 - Pedagogical sciences
Code and classification of the direction of training	6B015 - Training of teachers in Natural science subjects
Code in the International Standard Classification of Education	0114
Code and classification of the educational program group	B011 - Training of computer science teachers
Code and name of the educational program	6B01507 - Computer Science and Robotics
2.3.Distinctive features of the OP (double degree/joint, OVPO-partner, Double major, innovative)	Academic exchange program, the opportunity to study an additional educational program (Minor).
2.4.Qualification characteristics of the graduate	
Degree awarded / qualification	Bachelor of Education in the educational program
Name of professional standard	Teacher
Atlas of new professions	Tutor Zerocoder Information Security Supervisor Digital linguist
Regional standard	
Name of the profession / list of positions of a specialist	Educator. High school teacher
OQF qualification level (industry qualification framework)	6 (sublevel 6.1)
Area of professional activity	The sphere of education
Object of professional activity	Pedagogical process
Types of professional activity	- socio-pedagogical - the creation of favorable conditions and the provision of humanitarian and pedagogical support for full-fledged life, education and development of students; - educational - the design and management of the educational process of students, the implementation of motivational, diagnostic, corrective, communicative, methodological, work in the conditions of using modern pedagogical and information and communication technologies; - research - participation in research work in the field of informatization of education, informatics, pedagogy, psychology and teaching methods; experimental research and processing of results; - organizational and methodological - study, generalization and dissemination of the experience of innovative teaching; - cultural and educational - the organization of cultural and leisure work with students in the field of information and communication technologies,

	informatization, multimedia education, the development of programs, methods and technologies of educational work in the field of information security and information culture;
2.5.Graduate Model	Ability to solve complex problems; Critical thinking; Creativity; Ingenuity; Having experience in implementing your ideas; Intellectual qualities; The ability to translate the acquired knowledge into material and activity forms; Efficiency-practicality (the ability to optimally use professional knowledge, work on modern office equipment); The ability to lead; Ability to make contact quickly; Openness to new experiences; Ability to observe, analyze specific life situations; The ability to self-improvement, self-actualization and self-realization.

3.Modules and content of the educational program

Module 1. Fundamentals of social and humanitarian knowledge

Brief description of the module content

This module reveals such aspects as: socio-cultural, economic-legal, environmental knowledge, communication skills, the use of information technology taking into account modern trends in the development of society.

Module disciplines

Foreign language

Kazakh(Russian) language (1)

The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Physical Culture

Foreign language

Kazakh(Russian) language (2)

Bases of economics, law and ecological knowledge

Physical Culture

Information and communication technology

Physical Culture

World of Abai

History of Kazakhstan

Physical Culture

Philosophy

Module 2. Psychological-pedagogical and methodological training of personnel

Brief description of the module content

This module includes the study of the application of modern teaching technologies and criterion-based assessment, taking into account the individual, physiological and psychological characteristics of students.

Module disciplines

Introduction to the profession of computer science and robotics teacher

Age psychology and physiology

Pedagogy

Pedagogical practice (psychological and pedagogical)

Training practice

Methods of teaching informatics and robotics

Inclusive education

Technology updated content of education and criterion assessment

Educational data Analytics

Artificial intelligence in education

Methods of teaching digital literacy in primary schools

Pedagogical practice

Academic writing and the basics of scientific research

Pedagogical practice

Module 3. Computer Science and Information Technology

Brief description of the module content

The module "Computer Science and Information Technology" provides comprehensive training in the field of IT, covering both theoretical and practical aspects. Students study the basics of computer science, computer graphics, modeling, video editing and animation, and multimedia processing technologies. The module includes disciplines on computer system architecture, operating systems, computer networks and databases, and information security. Particular attention is paid to modern forms and methods of STEM education, the development of electronic educational resources, and educational smart technologies. Cloud and office technologies are also covered. Practical classes allow you to consolidate the acquired knowledge and skills.

Module disciplines

Theoretical basics of informatics

Computer graphics and graphic packs

Computer Systems Architecture and Operating Systems

Computer architecture and computing systems

Computer systems and networks

Educational smart technologies

Forms and methods of STEM learning

Electronic educational resources

Basics of computer simulation

Databases and Information Systems

Corporate information systems

Fundamentals of computer video editing

Fundamentals of computer animation

Modern database management system

Multimedia Processing Technology

Data protection

Information security in computer networks

Cryptographic methods of information protection

Cloud technologies

Office Technology

Computer Technology Workshop

Pregraduation practice

Production (pedagogical) practice

Module 4. Programming technologies

Brief description of the module content

The module "Programming Technologies" covers a wide range of disciplines, providing students with comprehensive knowledge and skills in the field of programming. The program includes the basics of algorithmization and programming, as well as the study of popular programming languages: Python, Java, C#, C++, etc. Students master basic and advanced web development technologies, including the creation of web applications. Computer graphics programming and mobile application development complement the training, providing comprehensive preparation for today`s challenges in software development.

Module disciplines

Fundamentals of algorithmization and programming

Fundamentals of frontend development

Fundamentals of Web Development

Basics of Internet Technologies

Python Programming

Java Programming

C# Programming

C++ Programming

Object-oriented programming in C++/C#

Object-oriented programming in Java

Object Oriented Programming in Python

Web development in Java

Web development in PHP

Web development in Python

3D-programming

Mathematical modeling

Computer graphics programming

Programming mobile applications in Java

Programming of mobile devices

Mobile app development

Solving programming tasks

Module 5. Robotics

Brief description of the module content

The module "Robotics" offers comprehensive training in the fundamentals and modern technologies in the field of robotics and mechatronics. Students study the basics of mechatronics and robotics, robotic systems and complexes, and work with the popular Arduino and Raspberry Pi platforms. The module includes the design of embedded systems, design of parts for mechatronic modules and robots, modeling and programming of robots. The module also covers machine learning, artificial intelligence systems and neural networks. This module enables students to gain the skills and knowledge needed for a successful career in robotics and related technologies.

Module disciplines

Fundamentals of Mechatronics and Robotics

Robotics on the Arduino platform

Robotics on the Rasberry platform

Details of mechatronic modules, robots and their design

Simulation and programming of robots

Design of embedded systems

Information devices and systems in mechatronics and robotics

Machine learning

Neural networks

Robotic systems and complexes

Artificial intelligence systems

Control systems of mechatronic and robotic complexes

Final examination

Brief description of the module content

Writing and defending a thesis or preparing and passing a comprehensive exam.

Module disciplines

Comprehensive exam

Diploma work

4.Summary table on the scope of the educational program

«6B01507 - Computer Science and Robotics»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Module 1. Fundamentals of social and humanitarian knowledge										
Foreign language	GER/CC	1	5	150		45		35	70	Examination
Kazakh(Russian) language (1)	GER/CC	1	5	150		45		35	70	Examination
The module of socio-political knowledge (sociology, political science, cultural studies, psychology)	GER/CC	1	8	240	30	45		55	110	Examination
Physical Culture	GER/CC	1	2	60		60				Differentiated attestation
Foreign language	GER/CC	2	5	150		45		35	70	Examination
Kazakh(Russian) language (2)	GER/CC	2	5	150		45		35	70	Examination
Bases of economics, law and ecological knowledge	GER/US	2	5	150	15	30		35	70	Examination
Physical Culture	GER/CC	2	2	60		60				Differentiated attestation
Information and communication technology	GER/CC	3	5	150	15	15	15	35	70	Examination
Physical Culture	GER/CC	3	2	60		60				Differentiated attestation
World of Abai	BS/US	3	3	90	15	15		20	40	Examination
History of Kazakhstan	GER/CC	4	5	150	15	30		35	70	Examination
Physical Culture	GER/CC	4	2	60		60				Differentiated attestation
Philosophy	GER/CC	5	5	150	15	30		35	70	Examination
Module 2. Psychological-pedagogical and methodological training of personnel										
Introduction to the profession of computer science and robotics teacher	BS/US	1	3	90	15	15		20	40	Examination
Age psychology and physiology	BS/US	1	5	150	15	30		35	70	Examination
Pedagogy	BS/US	2	5	150	15	30		35	70	Examination
Pedagogical practice (psychological and pedagogical)	BS/US	2	2	60						Total mark on practice
Training practice	BS/US	2	2	60						Total mark on practice
Methods of teaching informatics and robotics	BS/US	3	5	150	15	30		35	70	Examination
Inclusive education	BS/US	3	3	90	15	15		20	40	Examination
Technology updated content of education and criterion assessment	BS/US	3	5	150	15	30		35	70	Examination
Educational data Analytics	BS/CCh	4	5	150	15		30	35	70	Examination
Artificial intelligence in education	BS/CCh	4	5	150	15		30	35	70	Examination
Methods of teaching digital literacy in primary schools	BS/CCh	4	5	150	15		30	35	70	Examination
Pedagogical practice	BS/US	4	7	210						Total mark on practice

Academic writing and the basics of scientific research	BS/US	5	5	150	15	30		35	70	Examination
Pedagogical practice	BS/US	5	5	150						Total mark on practice
Module 3. Computer Science and Information Technology										
Theoretical basics of informatics	BS/US	1	5	150	15	30		35	70	Examination
Computer graphics and graphic packs	AS/US	1	5	150	15		30	35	70	Examination
Computer Systems Architecture and Operating Systems	BS/CCh	2	5	150	15		30	35	70	Examination
Computer architecture and computing systems	BS/CCh	2	5	150	15		30	35	70	Examination
Computer systems and networks	BS/CCh	2	5	150	15		30	35	70	Examination
Educational smart technologies	BS/CCh	3	5	150	15	30		35	70	Examination
Forms and methods of STEM learning	BS/CCh	3	5	150	15	30		35	70	Examination
Electronic educational resources	BS/CCh	3	5	150	15	30		35	70	Examination
Basics of computer simulation	AS/US	3	5	150	15		30	35	70	Examination
Databases and Information Systems	BS/CCh	4	5	150	15		30	35	70	Examination
Corporate information systems	BS/CCh	4	5	150	15		30	35	70	Examination
Fundamentals of computer video editing	BS/CCh	4	5	150	15		30	35	70	Examination
Fundamentals of computer animation	BS/CCh	4	5	150	15		30	35	70	Examination
Modern database management system	BS/CCh	4	5	150	15		30	35	70	Examination
Multimedia Processing Technology	BS/CCh	4	5	150	15		30	35	70	Examination
Data protection	BS/CCh	5	5	150	15	15	15	35	70	Examination
Information security in computer networks	BS/CCh	5	5	150	15	15	15	35	70	Examination
Cryptographic methods of information protection	BS/CCh	5	5	150	15	15	15	35	70	Examination
Cloud technologies	AS/CCh	5	5	150			45	35	70	Examination
Office Technology	AS/CCh	5	5	150			45	35	70	Examination
Computer Technology Workshop	AS/CCh	5	5	150			45	35	70	Examination
Pregraduation practice	AS/CCh	6	11	330						Total mark on practice
Production (pedagogical) practice	AS/CCh	6	11	330						Total mark on practice
Module 4. Programming technologies										
Fundamentals of algorithmization and programming	BS/US	1	5	150	15		30	35	70	Examination
Fundamentals of frontend development	BS/CCh	2	5	150	15		30	35	70	Examination
Fundamentals of Web Development	BS/CCh	2	5	150	15		30	35	70	Examination
Basics of Internet Technologies	BS/CCh	2	5	150	15		30	35	70	Examination
Python Programming	BS/US	2	5	150	15		30	35	70	Examination
Java Programming	BS/CCh	3	5	150	15		30	35	70	Examination
C# Programming	BS/CCh	3	5	150	15		30	35	70	Examination

C++ Programming	BS/CCh	3	5	150	15		30	35	70	Examination
Object-oriented programming in C++/C#	BS/CCh	4	5	150	15		30	35	70	Examination
Object-oriented programming in Java	BS/CCh	4	5	150	15		30	35	70	Examination
Object Oriented Programming in Python	BS/CCh	4	5	150	15		30	35	70	Examination
Web development in Java	AS/CCh	4	5	150	15		30	35	70	Examination
Web development in PHP	AS/CCh	4	5	150	15		30	35	70	Examination
Web development in Python	AS/CCh	4	5	150	15		30	35	70	Examination
3D-programming	AS/CCh	5	5	150	15		30	35	70	Examination
Mathematical modeling	AS/CCh	5	5	150	15		30	35	70	Examination
Computer graphics programming	AS/CCh	5	5	150	15		30	35	70	Examination
Programming mobile applications in Java	AS/CCh	5	5	150	15		30	35	70	Examination
Programming of mobile devices	AS/CCh	5	5	150	15		30	35	70	Examination
Mobile app development	AS/CCh	5	5	150	15		30	35	70	Examination
Solving programming tasks	AS/US	5	5	150	0		45	35	70	Examination
Module 5. Robotics										
Fundamentals of Mechatronics and Robotics	BS/CCh	3	5	150	15		30	35	70	Examination
Robotics on the Arduino platform	BS/CCh	3	5	150	15		30	35	70	Examination
Robotics on the Rasberry platform	BS/CCh	3	5	150	15		30	35	70	Examination
Details of mechatronic modules, robots and their design	BS/CCh	4	5	150	15		30	35	70	Examination
Simulation and programming of robots	BS/CCh	4	5	150	15		30	35	70	Examination
Design of embedded systems	BS/CCh	4	5	150	15		30	35	70	Examination
Information devices and systems in mechatronics and robotics	AS/CCh	5	5	150	15		30	35	70	Examination
Machine learning	AS/CCh	5	5	150	15	30		35	70	Examination
Neural networks	AS/CCh	5	5	150	15	30		35	70	Examination
Robotic systems and complexes	AS/CCh	5	5	150	15		30	35	70	Examination
Artificial intelligence systems	AS/CCh	5	5	150	15	30		35	70	Examination
Control systems of mechatronic and robotic complexes	AS/CCh	5	5	150	15		30	35	70	Examination
Final examination										
Comprehensive exam		6	8	240						
Diploma work		6	8	240						

Non -Profit Limited Company «Shakarim University of Semey»

Educational program development plan

6B01507 «Computer science and robotics»
for 2024-2027 years

Semey, 2024

Content

1. Passport of the educational program development plan 6B01507 Computer science and robotics

1	The basis for the development	Development program of Shakarim University for 2023-2029 Faculty work plan
2	Terms of implementation	2024-2027
3	Expected results of implementation	Training of competitive specialists with high social and civic responsibility, capable of carrying out professional activities: digitalization of education and organization of training in the field of computer science and robotics with the use of innovative technologies.

2. Analytical justification of the EP

2.1 Information about the educational program

The educational program has been developed in accordance with the National Qualifications Framework and Professional Standards, according to the Dublin Descriptors and the European Qualifications Framework. The period of mastering the bachelor's degree program is 3 years.

EP «6B01507 Computer Science and Robotics» was developed by the Academic Committee

Reviewed at the meeting of the Academic Quality Commission of the Faculty of Natural Sciences and Mathematics

The main criterion for the completion of the educational process is the development of at least 240 credits, with the award of a Bachelor of Education degree in the educational program "6B01507 Computer Science and Robotics".

The educational program is aimed at studying the most modern achievements in computer science and robotics, at mastering modern programming languages, forms and methods of information protection, mastering web programming skills, designing robots, etc. The educational program includes 5 modules: Fundamentals of Social and Humanitarian Knowledge, Psychological-pedagogical and methodological training of personnel, Computer Science and Information Technology, Programming Technology, Robotics and final certification.

2.2 Information about students

Academic year / The basis of trainig	2024-2025	2025-2026	2026-2027
Grant	51	60	65
Contract	5	6	6
Total	56	66	71

2.3 Internal and external conditions of EP development

Graduates of the EP are in demand not only at the regional, but also at the regional and republican level.

In order to improve quality, contracts are annually concluded with practice bases: KSU "Multidisciplinary gymnasium named after Shakarim with training in three languages", KSU "Gymnasium № 37 named after Y. Altynsarin", NIS, KSU "Secondary school № 16 named after Toleubay Amanov", KSU "Secondary school № 49", KSU "Secondary school № 39 named after Alikhan Bokeikhan", KSU "Secondary school № 47 named after Akhmet Baitursynov", KSU "Secondary school № 25".

Students of EP 6B01507 «Computer Science and Robotics» have the opportunity to study on external and internal academic mobility. The University has concluded contracts with the following partner universities: NPJSC «Toraigyrov University», NPJSC «Kokshetau University named after Shokan Ualikhanov», NPJSC «South Kazakhstan University named after M. Auezov», NPJSC «East Kazakhstan Technical University named after D. Serikbayev», LLP «International Higher Education Institution «KazakhRussian International University», etc.

Currently, a branch of the department operates on the basis of MSI «Secondary school № 49».

2.4 Information about teaching staff implementing the educational program

№	Indicators	Units	2024-2025	2025-2026	2026-2027
1	The share of teaching staff with a degree in EP	%	70	72	75
2	Including the share of teaching staff with a degree in the general disciplines cycle	%	12	13	15

2.5 Characteristics of the achievement of the EP

Teaching students on academic mobility. Together with employers, making additions to the curriculum for the new academic year. Participation of students and students in Start-Up projects, scientific research. Participation in regional, republican, and international Olympiads. Equipping classrooms with modern equipment. Increasing the number of scientific papers in Web of the Science and Scopus. Participation in the national ranking of higher educational institutions of the Republic of Kazakhstan. Increasing the number of branches of the department in order to improve the quality of education, work closely with schools and expand the base of professional practice. Creation and implementation of a plan for the preparation of textbooks, teaching aids, teaching aids and electronic learning tools for EP.

3. The main objectives of the EP development plan

Training of competitive specialists with high social and civic responsibility, capable of carrying out professional activities:

digitalization of education and organization of training in the field of computer science and robotics with the use of innovative technologies.

The main criterion for the completion of the educational process is the development of at least 240 credits, with the award of a Bachelor of Education degree in the educational program "6B01507 Computer Science and Robotics".

4. EP risk analysis

№	Name of risks	Measures to eliminate
1	Reduction of the contingent of students in the EP	Holding an open day, strengthening career guidance work in Semey and the surrounding areas of the region
2	Insufficient level of language knowledge for the introduction of trilingual education	Conducting specialized courses, training seminars
3	Decrease in the level of employment	Close cooperation with employers in the region, improvement of educational programs at the request of employers
4	Insufficient development of external and internal academic mobility of students and teaching staff	Close interaction with partner universities, explanatory work with students and teachers
5	The risk of a decrease in the settlement of Teaching staff by EP	Stimulating teaching staff to improve professional training, using the opportunities of a targeted PhD doctoral program

5. Action plan for the development of the EP

№	Criteria	Expected results	Units	2024-2025	2025-2026	2026-2027
Direction 1. Educational and methodological support						
1.1	Updating the educational program based on professional standards, taking into account the recommendations of employers	Conducting an examination Educational program "6B01507 Computer Science and Robotics" in order to improve the practice orientation and development of professional competencies of graduates	fact	+	+	+
1.2	Monitoring and updating catalogs of elective disciplines in accordance with the development of key and professional competencies, the demands of the labor market	Improving the quality of the content of educational programs by including elective courses aimed at developing the key and professional competencies of graduates in accordance with the demands of the labor market.	fact	+	+	+

1.3	Introduction of modern technologies into the educational process that contribute to the development of cognitive activity, communicative ability of students	Improving the quality of teaching academic disciplines, taking into account the novelty and diversity of forms of work that contribute to the development of cognitive activity.	fact	+	+	+
1.3.1	Introduction of mass open online courses (MOOCs) in the educational process according to the educational program 6B01507 "Computer Science and Robotics"	Introduction of disciplines into the educational process Improving the quality of teaching academic disciplines, taking into account the novelty and diversity of forms of work that contribute to the development of cognitive activity.	unit	1	1	1
1.4	Involvement of social partners and employers in the development, examination of the implementation of educational programs	Improving the quality of implemented educational programs taking into account market demands and recommendations of employers	unit.	2	2	2
1.5	Development and implementation of elective courses in English	Introduction of disciplines in English into the educational process	unit.	0	0	0
1.6	Conducting seminars and round tables on the application of innovative technologies in the educational process	Introduction of innovative technologies in the educational process	unit.	1	1	1
1.7	Publication of educational, methodical and scientific literature on the implemented EP	Improvement of educational and methodological support in the disciplines of the implemented educational programs	unit.	2	2	2
1.8	Conclusion of contracts with foreign and domestic partner universities in order to develop academic exchange of students of all levels and teaching staff	Creation of a database of foreign and domestic partner universities for the development of academic exchange of students of all levels and teaching staff	unit.	1	1	1
1.9	Inviting students from partner universities to study for a semester, short-term internships, internships, etc.	Development of international recognition of educational programs, implementation of academic mobility programs for students	p.	1	1	1
1.10	Participation of teaching staff and students in international programs academic exchange	Development of international cooperation with foreign universities implementing educational programs in the direction 6B015 - Teacher training in natural science subjects	p.	1	1	1
1.11	Development of outgoing academic mobility of teaching staff and students in the direction 6B015 – Teacher training in natural science subjects	Improvement of the educational program based on the use of the experience of implementing such programs in the leading universities of the Republic of Kazakhstan	p.	-	1	1
Direction 2. Teaching staff						

2.1	Professional development and training of scientific and pedagogical personnel for the implementation of educational programs once every 5 years	The share of teaching staff who have passed advanced training at the national level is at least 20%	p.	3	5	5
2.2	Advanced training, retraining, internships of teaching staff at the international level	Completion of at least 2 teachers of the advanced training program, retraining, internships of teaching staff at the international level	p.	2	2	2
2.3	Promotion of publications of the works of teaching staff in international publications indexed by the Web of Science and Scopus databases	Increase in the share of teaching staff who have published the results of scientific research in publications indexed by the Web of Science and Scopus databases – at least 30% of the total number of teaching staff	%	2	2	2
2.4	Involvement of practical specialists in teaching and scientific activities	Participation in the implementation of educational programs of practitioners (at least 20% of specialists)	%	20	20	20
Direction 3. Internationalization of educational programs						
3.1	Conclusion of agreements on international cooperation with foreign universities	Implementation of joint projects, preparation of scientific publications with foreign partners, creation of bases for scientific internships of students	unit	1	1	1
3.2	Attracting foreign students to study under the educational program 6B01507 "Computer Science and Robotics"	Increasing the number of foreign students	p.	-	-	-
3.3	Organization of joint scientific and practical events with international partners	Improving the efficiency of scientific and methodological activities of teaching staff, exchange of experience with foreign partners	unit	-	1	1
3.4	Invitation of foreign specialists to give lectures and consultations on master's projects and dissertations	Improvement of the content component of educational programs based on the introduction of the experience of foreign specialists in the implementation of educational programs	unit	-	1	1

3.5	Expansion of cooperation with Leading foreign scientific and educational organizations in order to attract the most qualified foreign specialists to the implementation of educational programs	Formation of key and professional competencies in accordance with the practice of leading universities	p.	-	-	-
Direction 4. Logistics and digitalization						
4.1	Step-by-step equipping of classrooms with technical training tools (projectors, panels, interactive and multimedia whiteboards, multifunction devices, webcam, projector screen, etc.)	Equipping classrooms assigned to the department with technical training tools (projectors, panels, interactive and multimedia whiteboards, multifunctional devices, webcam, projector screen, etc.)	unit	2	3	2
4.2	Carrying out the automation of the educational process (testing, session management, student contingent movement, dean's office, department, teaching staff workload, schedule, library, syllabuses)	Information management based on the automation of the educational process (testing, session management, student body movement, dean's office, department, teaching staff workload, schedule, library, syllabuses)	fact	+	+	+
4.3	Replenishment of the full-text database of the results of scientific research of teaching staff and students, teaching staff (articles, monographs, etc.)	An increase in the number of results of scientific works of scientists, research of teaching staff and students, teaching staff (articles, monographs, etc.)	unit	10	15	20
4.4	Expansion of the fund of scientific and educational literature, including on electronic media on ongoing educational programs	Ensuring the implementation of educational programs based on modern educational and information resources, including on electronic media	%	30	35	30
4.5	Monitoring the filling and improvement of the faculty website	Formation of the website of the faculty on various aspects of the implementation of educational programs	%	100	100	100

Head of the department _____ D. Kenbayev

Reviewed

at a meeting of the Academic Quality Commission

Protocol № 6 of 06.06.2024

Chairman of the CQA _____ Zheldybayeva Balgyn

Agreed

Dean of the school _____ D. Ospanova

06.06.2024