MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN

KARAGANDY UNIVERSITY OF THE NAME OF ACADEMICIAN E.A. BUKETOV

«APPROVED BY»

The decision of the Administration of
NLC "Karaganda University
of the name of academician E.A. Buketov"
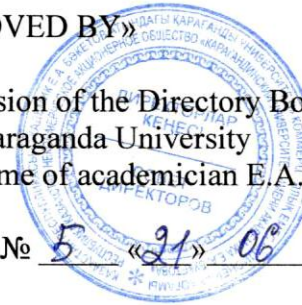
Protocol № 8 «24» 05 2024 y.

_____ prof. N.O. Dulatbekov

«APPROVED BY»

The decision of the Directory Board of
NLC "Karaganda University
of the name of academician E.A. Buketov"

Protocol № 5 «21» 06 2024 y.

EDUCATIONAL PROGRAM

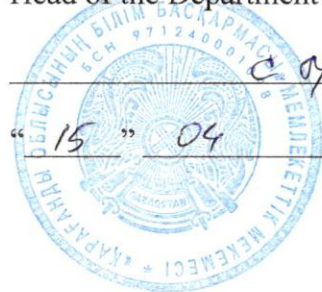**7M01503-Computer science**

Level: Master's Degree

Karaganda,
2024

APPROVAL SHEET

EDUCATIONAL PROGRAM 7M01503-COMPUTER SCIENCE

"AGREED"

Head of the Department of Education of the Karaganda region

_____ G.S.Zhunusova

" 15 " 04 _____ 2024y.

"AGREED"

Director of the branch "Nazarbayev Intellectual School of chemical and biological direction of Karaganda"

_____ R. Yakupov

_____ 04 _____ 2024y.

"AGREED"

Director of KSU Specialized Boarding School "Daryn" of the Department of Education of the Karaganda region

_____ L.A.Temerkhanova

" 15 " 04 _____ 2024 y.

The educational program in the direction of training "7M01503 Computer science" is developed on the basis of:

– The Law of the Republic of Kazakhstan "On Education" dated July 27, 2007 No. 319-III (with amendments and additions dated 04/15/2024 No. 72-VIII);

– Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 152 dated 04/20/2011 "On approval of the Rules for the organization of the educational process in credit technology" (with amendments and additions dated 04/29/2024 No. 203)

- The National Qualifications Framework dated 03/16/2016. The Republican Trilateral Commission on Social Partnership and Regulation of Social and Labor Relations;

– Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 569 dated 10/13/2018 "On approval of the Classifier of areas of training with higher and postgraduate education" " (with amendments and additions dated 07/21/2023 No. 327);

– State mandatory standards of higher and postgraduate education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2) (with amendments and additions dated 02/20/2023);

– Professional standard "Teacher" (Order of the Minister of Education of the Republic of Kazakhstan dated December 15, 2022 No. 500) (with amendments and additions from 02/23/2024 No. 64-VIII);

– Professional standard for teachers (teaching staff) of organizations of higher and (or) postgraduate education, approved by Order of the Minister of Science and Higher Education of the Republic of Kazakhstan No. 591 dated November 20, 2023. (as amended on 06.12.2023 No. 616);

– The Law of the Republic of Kazakhstan "On the status of a teacher" dated December 27, 2019 No. 293-VI ZRK (with amendments and additions dated 04/27/2024);

– Professional standard of the Information and Communication Technologies direction No. 171 dated July 17, 2017, as amended on December 05, 2022. Order No. 222 of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken".

Content

Passport of the educational program «7M01503-Computer science»

1. Code and name of the educational program: «7M01503-Computer science»
2. Code and classification of the field of education, areas of training: 7M015 Training of teachers in natural science subjects
3. Group of educational programs – 7M01501 Training of teachers of Informatics (Kazakh, Russian, English)
4. Volume of credits: 120 ECTS
5. Form of training: full - time
6. Language of training – Russian/Kazakh, English
7. Degree awarded– Master of Pedagogical Sciences in the educational program "7M01503-Computer Science"
8. Type of EP (current, new, innovative) - current
9. ISCED level - 7
10. The level of the NRK - 7
11. The level of the ORC - 7
12. Distinctive features of the EP: -7
13. Number of the appendix to the license for the direction of personnel training: Appendix No. 16 to the state license No. KZ83LAA00018495 dated 07/28/2020
14. The name of the accreditation body and the validity period of the EP accreditation: - KazSEE, registration number: No. 23\15KA0008, 06.03.2023-05.03.2028
15. The goal EP

The purpose of the educational program "Computer Science" is to prepare masters who are able to apply information and communication technologies in the educational field of activity, monitor and manage the educational process, with the skills of research activities
16. Qualification characteristics of the graduate
a) **List of posts**:
- Teacher
- Middle school teacher
- College teacher
- Teacher. University teacher
- Teacher-researcher
- Teacher. Manager in education
b) **The sphere and objects of professional activity of the graduate**:
The sphere of professional activity of graduates of the educational program "7M01503-Computer Science" are educational organizations.

The objects of professional activity of the Master of Education under the educational program "7M01503-Computer Science" are: general education schools, gymnasiums, lyceums, colleges, regardless of their forms of ownership and departmental subordination, institutes of advanced training and retraining of teaching staff, departments of education.

c) **Types of professional activity**

Masters of Pedagogical Sciences "7M01503-Computer Science" can perform the following types of professional activities:

– educational (pedagogical, educational):

- diagnostic - study of the student's personality, learning outcomes, upbringing and development;

- organizational and technological (organization of the process of education and upbringing based on pedagogical technologies)–

- managerial and pedagogical (interaction "subject-subject", management in education);

- project (modeling of education in higher education);

- research (creative search in solving problems of education, study of pedagogical experience, reflection).

d) **Functions of the graduate's professional activity**

The main functions of the activity are:

- educational - broadcasts educational information, teaches to independently acquire knowledge, constructs training sessions taking into account the needs and requests of students, uses new learning technologies, including online technologies, ICT, etc.;

- educating - introduces students to the system of social values, observes pedagogical tact, rules of pedagogical ethics, shows respect for the personality of students, is guided by a democratic style in relations with students, builds the educational process taking into account the national priorities of Kazakhstan, develops linguistic competence and multiculturalism of the individual, etc.;

- methodical - provides methodological support of the educational process, is guided by the principles and methods of developing educational and program documentation and designing situational pedagogical tasks, determines methods and techniques of education and upbringing, develops general academic skills and skills of students, improves qualifications by implementing an individual professional development plan, etc.;

- research - applies scientific principles and research methods in the educational environment; carries out psychological and pedagogical monitoring of students' activities, uses the results of diagnostics of individual characteristics and abilities of students to identify their needs and difficulties in learning, as well as increase their personal growth, etc.

- socio-communicative - is guided by the knowledge of the psychology of communication when interacting with the professional community and stakeholders of education, uses methods of teamwork and professional cooperation within the framework of the policy of the organization of education, initiates innovative ideas that unite education stakeholders, etc.

17. Formulation of learning outcomes based on competencies

Type of competencies	Codes	Learning outcomes
Behavioural skills and personal competencies (Soft skills)	LO1	Applies in practice modern methods for analyzing innovative solutions of applied and scientific problems in the field of education, methods and models for commercializing innovative technologies in the field of IT and education, owns methods of organization and effective management of IT projects
	LO2	Owns the methods and methods of planning the activities of the organization of education in accordance with the requirements of curricula, normative documents, taking into account the individual and special educational needs of students, the methodology for conducting training sessions
Professional competencies (Hard skills, Digital skills)	LO3	Demonstrates actual knowledge of modern history and philosophy of science, applied science disciplines, contributing to the implementation of the main directions of modernization of public consciousness
	LO4	Owns knowledgeable in analyzing methodological problems arising from solving research and practical problems, including in interdisciplinary areas.
	LO5	Applies information and communication technologies for the design, development and use of digital educational re-sources and robotics in education, owns methods of analysis and visualization of big data
	LO6	Fluent in English and translation techniques at the level of understanding the functional features of oral and written professional-oriented texts.
	LO7	Owns modern programming languages for the development of cross-platform educational resources for solving sci-entific and educational tasks, taking into account the requirements of information security

18. Determination of modules of disciplines in accordance with the results of training

Learning outcomes code	Name of the module	Name of disciplines	Volume (ECTS)
LO1, LO2	Philosophical and historical aspects of social and humani-tarian knowledge	History and philosophy of science	4
LO1, LO3		Higher school pedagogy	4
LO2, LO3		Psychology of management	4
LO2, LO3		Pedagogical practice	4
LO4	Professional languages	Foreign language (professional)	4
LO4 LO2, LO4		Professional foreign terminology in the Informatics / Culture and Ethics of Academic writing	5
LO2, LO5	IT innovations	Commercialization results of scientific and technical activities Science-intensive innovative entrepreneurship	5
LO2, LO5		Innovation in the IT sphere and education IT Project Management	5
LO3, LO6	Professional	Design and development of digital educational resources	5
LO3, LO6		Technology project work with application of ICT	4
LO3, LO6, LO7		Computer technologies in science and education	4
LO2, LO3 LO2, LO5	Information Technology	Methods of teaching IT disciplines in higher education/ Organization and planning of scientific research	5
LO3, LO6 LO2, LO6		Educational online platforms / Visualization technologies in education	4
LO 4, LO7		Python in scientific research (in English)/ Building distributed systems in Java (in English)	4
LO 4, LO7 LO7		Cryptology (in English)/ Information security technology	5
LO 4, LO7 LO 6, LO7		Web application development (in English)/ Cloud technologies	4
LO7 LO6, LO7		Mobile application development/ Intelligent robot control	4
LO2, LO3, LO6		Research practice	14
LO2, LO5, LO6, LO7	Research work	Research work of a master's student, including internship and completion of a master's thesis (NIRM)	24
LO2, LO5, LO6, LO7	Final certification	Preparation and defense of a master's thesis	8

19. Matrix of achievability of learning outcomes

NN	Name of disciplines	Brief description of the discipline (30-50 words)	Number of credits	Generated learning outcomes (codes)						
				LO1	LO2	LO3	LO4	LO5	LO6	LO7
		Cycle of basic disciplines **University component**								
D1	History and philosophy of science	It is studied with the aim of forming knowledge about the significance of scientific knowledge in its tendency to development and sociocultural profile. Questions about the philosophy, methodology of science, science as a cognitive activity and tradition are considered.	4	+	+					
D2	Higher school pedagogy	Studied to form ideas about the modern paradigm of higher education and the theory of scientific activity in higher education. The issues of pedagogy, education of professionals-specialists, professional skills of teaching in educational organizations, pedagogical control and evaluation of knowledge in higher education are considered.	4	+		+				
D3	Psychology of management	It is studied with the aim of forming knowledge about the psychological laws of managerial activity, skills in analysis of socio-psychological principles, the characteristics of the psychology of management, the personal characteristics of the leader.	4		+	+				
D4	Foreign language (professional)	The course is taken for developing intercultural and communicative competence in the process of foreign language education at the level of basic sufficiency of Common European competence. The course is de-signed to study vocabulary and foreign language features; formation of the ability for intercultural communication, skills of argumentation in a foreign language and understanding of linguistic and cultural characteristics of their target language country.	4				+			
		Cycle of basic disciplines **Component of choice**								
D5	Professional foreign terminology in the	The purpose of studying the discipline is to obtain fundamental knowledge of professional foreign terminology in computer science, knowledge of the	5				+			

	Informatics	main characteristics and typologies for the scientific translation of specialized texts in computer science; the development of the skill of using the acquired knowledge when reading and translating English scientific and technical literature in computer science; the formation of competence for effective interaction in the professional foreign language environment.								
D6	Culture and Ethics of Academic writing	The purpose of studying the discipline is to obtain fundamental knowledge of the language means for the scientific form of the English language, knowledge of the style and language for academic writing; the development and the improvement of skills in creating and designing official documents and their own scientific texts; the formation of competencies of written and oral speech activity in the scientific field in accordance with the norms of the international academic community.			+		+			
D7	Commercialization results of scientific and technical activities	It is studied in order to form skills for the commercial application of intellectual activity results and the introduction of scientific developments and technologies into production, the preparation of scientific projects for funding, as well as for interaction in the knowledge-intensive high-tech sector.	5		+		+			
D8	Science-intensive innovative entrepreneurship	The purpose of the subject is the formation of professional knowledge and practical skills of independent research, the use of quantitative and qualitative methods for conducting applied research; models for assessing the market value of business enterprises requiring science; sources of financing of investment projects and the main methods for evaluating the effectiveness of investments; conducting feasibility studies of design solutions.			+		+			
D9	Innovation in the IT sphere and education	The course is aimed at forming theoretical ideas about the trends of innovative development in the field of IT, technologies in the field of IT infrastructure management of organizations of various profiles and scales, the formation of practical skills in the design, development and modernization of the company''s IT infrastructure. Formation of practical skills in planning and deployment of enterprise infrastructure, strategic planning and organization of the life cycle processes of IP and ICT enterprise management.	5		+		+			
D10	IT project management	The course is studied in order to form project planning and management competencies in the IT industry for software development; formation of			+		+			

		knowledge about approaches to IT project management, stages of the project life cycle; formation of practical skills for planning project activities, carrying out the decomposition of project tasks, estimating the costs of project tasks; formation of skills for managing processes/content project, schedule management, resources, cost, communications of the IT project.							
Cycle of profile disciplines **University component**									
D11	Design and development of digital educational resources	The purpose of the discipline is the formation of professional competence of the future teacher through the formation of a holistic view of the methodology of pedagogical design of digital educational resources in the modern educational environment; the formation of knowledge about the types of digital educational resources, methods of application in the educational process, tools and fundamentals of pedagogical design of digital educational resources; the formation of practical skills in designing and developing the content, interface of digital educational resources with taking into account didactic requirements.	5		+			+	
D12	Technology project work with application of ICT	Visualization technologies in education. The aim of the course is to provide students with knowledge and skills in the field of cost-effective modern teaching technologies common in Europe and the USA; training in the practical application of the latest achievements of science and advanced pedagogical experience, and thereby contributing to the reform of higher and postgraduate professional education.	4		+			+	
D13	Computer technologies in science and education	The purpose of the course is to create scientific prerequisites for the formation of an information culture among undergraduates in the context of the integration of natural science and humanitarian education; formation of knowledge about the theoretical and practical aspects of the use of digital technologies in scientific and educational activities; the formation of practical skills for the effective use of software products for processing information, conducting scientific experiments, processing and presenting research results.	4	+			+	+	+
Cycle of profile disciplines **Component of choice**									
D14	Methods of teaching IT disciplines in	It is studied in order to prepare a methodically competent teacher of computer science and digital literacy, to gain new knowledge related to	5	+	+				

	higher education	computer science education. The principles of selection of the content and methods of teaching computer science at school are considered. The course is designed to develop the skills of using specific methodological recommendations for teaching IT disciplines in higher education.							
D15	Organization and planning of scientific research	The purpose of the discipline is to familiarize with the basic concepts in the field of scientific research, the organization of scientific work, the planning of scientific research, preparation for the implementation of term papers and theses, the formation of skills to apply methods of scientific research, processing of results, registration and dissemination of research results.			+			+	
D16	Educational online platforms	The course is designed to familiarize with platforms for online education and study Internet resources with educational content, ways to create online courses; formation of knowledge about the iSpring Online platform, tools for creating online courses, services for hosting courses and creating an educational portal: LearningApp, Wordscloud, Kahoot!, Prezi.	5			+		+	
D17	Visualization technologies in education	Visualization technologies in education. The aim of the course is to provide students with knowledge and skills in the field of cost-effective modern teaching technologies common in Europe and the USA; training in the practical application of the latest achievements of science and advanced pedagogical experience, and thereby contributing to the reform of higher and postgraduate professional education.			+			+	
D18	Python in scientific research (in English)	The purpose of the course is to study the Python programming language, the library of standard modules and the principles of developing software systems; the formation of knowledge about the standard modules of the language, the formation of practical skills in the use of built-in objects, structures and Python libraries for analyzing, processing and visualizing data (NumPy, Pandas, Matplotlib, Tkinter, PyQT); creating applications for solving applied problems.	4			+			+
D19	Building distributed systems in Java (in English)	The objectives of mastering the discipline are to gain knowledge about the modern object-oriented programming language Java; mastering the basic programming techniques, methods for creating console and visual platform programs, methods for developing and debugging Java code in the IntelliJ IDEA (or Eclipse IDE) development environment; obtaining practical skills in developing application programs in the Java language.				+			+

D20	Cryptology (in English)	The aim of the course is to study the cryptographic algorithms used in symmetric and asymmetric cryptosystems; formation of knowledge about the construction of a cryptosystem, mathematical modeling of cryptology; formation of skills for the implementation of basic number-theoretic algorithms in cryptographic applications; formation of skills in the use of mathematical methods of information protection and modern methods of analysis of cryptographic algorithms to ensure security.	5				+			+
D21	Information security technology	The course is aimed at the formation of knowledge about the basic principles, methods and technologies for ensuring the protection of information in the process of its processing, transmission and storage using computer tools in information systems; formation of skills in the use of means and methods of information protection for the construction of secure information systems.								+
D22	Web application development (in English)	The course is aimed at the formation of knowledge about modern trends and tools for the development of Web applications, approaches to the design, development, debugging, optimization and deployment of Web applications with dynamic content (backend, frontend); the formation of practical skills for analyzing and formalizing requirements for a Web resource, designing structure and design, frontend Web development-applications, implement the integration of mobile applications with Web applications.	4				+			+
D23	Cloud technologies	The course is aimed at the formation of theoretical knowledge about cloud architectures and platforms: Google App Engine, Amazon Web Services; Microsoft Azure; the formation of an understanding of virtualization technologies and services; the formation of practical skills in analyzing IT infrastructure and business processes of an enterprise for migration to a cloud platform with an assessment of the risks of using cloud technologies, the organization of migration of software products from the standard environments in cloud applications.							+	+
D24	Software development for mobile devices	The course is aimed at the formation of knowledge about the main ways of creating interactive applications, about the life cycle of mobile application development; formation of practical skills in developing programs for mobile devices for Android using modern integrated tools; skills in creating user interfaces and controls in Android applications.	4							+

D25	Intelligent robot control	The purpose of the discipline is to form the readiness of future teachers to train students in the field of educational robotics. The course is aimed at getting acquainted with the capabilities of the EV3 constructor and the LEGO Mindstorms Education EV3 programming environment; formation of skills for designing robots of varying degrees of complexity							+	+

20. Coordination of the planned learning outcomes with the methods of teaching and evaluation within the module

Learning outcomes	Planned learning outcomes for the module	Teaching methods	Assessment methods
LO1	Applies in practice modern methods for analyzing innovative solutions of applied and scientific problems in the field of education, methods and models for commercializing innovative technologies in the field of IT and education, owns methods of organization and effective management of IT projects	Interactive lecture, discussion	Test, colloquium, control tasks
LO2	Owns the methods and methods of planning the activities of the organization of education in accordance with the requirements of curricula, normative documents, taking into account the individual and special educational needs of students, the methodology for conducting training sessions	Interactive lecture, discussion, panel discussion	Test, colloquium, control tasks
LO3	Demonstrates actual knowledge of modern history and philosophy of science, applied science disciplines, contributing to the implementation of the main directions of modernization of public consciousness	Interactive lecture, discussion, panel discussion	Test, colloquium, control tasks, methodical portfolio
LO4	Owns knowledgeable in analyzing methodological problems arising from solving research and practical problems, including in interdisciplinary areas.	Interactive lecture, panel discussion, group work	Test, colloquium, portfolio, essay
LO5	Applies information and communication technologies for the design, development and use of digital educational re-sources and robotics in education, owns methods of analysis and visualization of big data	Interactive lecture, discussion, panel discussion, group work	Test, colloquium, control tasks
LO6	Fluent in English and translation techniques at the level of understanding the functional features of oral and written professional-oriented texts.	Interactive lecture, demonstration examples method, practical teaching method; group work	Test, colloquium, control tasks, methodical portfolio of digital resources
LO7	Owns modern programming languages for the development of cross-platform educational resources for solving sci-entific and educational tasks, taking into account the requirements of information security	Interactive lecture, method of demonstration examples practical method of teaching; group work	Test, colloquium, software product, control tasks

21. Criteria for assessing the achievability of learning outcomes

Codes of LO	Criteria
LO1	Knows: the subject of modern philosophy and its role in the history of human culture; the main stages in the development of world philosophical thought, schools and teachings, outstanding philosophers of the past and present. Can: establish cause-and-effect relationships in the history and philosophy of science, creatively apply historical knowledge in practice, use the categorical apparatus of thinking and philosophical methods of cognition for intellectual development. Owns: skills of theoretical and applied analysis of social processes
LO2	Knows: methodology for solving applied research and practical problems. Can: identify features, analyze the methodological problems that arise in solving applied problems. Owns: the skills of analyzing methodological problems that arise in solving research and practical problems, including in interdisciplinary areas
LO3	Knows: the main provisions of normative and conceptual documents in the field of education, features of the educational process; requirements for the teaching profession. Can: apply methods and methods of planning the activities of an educational organization in accordance with the requirements of curricula, regulatory documents, taking into account the individual and special educational needs of students; apply various forms and methods for conducting training sessions; use innovative approaches in the educational process. Owns: the skills of designing and managing a holistic pedagogical process of educational organizations, methods of psychology in professional activities.
LO4	Knows: functional features of oral and written professionally oriented texts; requirements and principles of academic writing; specialized terms of informatics and pedagogy in English. Can: compose texts based on academic writing, apply foreign terminology in professional communication; participate in English in the discussion of topics related to the specialty; compose annotations of scientific articles and state the main content of texts according to the profile into the native language / from the native language. Owns: the technique of translating a professionally oriented text, methods of objective interpretation and critical evaluation from the perspective of intercultural dialogue.
LO5	Knows: the concept of innovation and the innovation process, the basics of the commercialization of innovative technologies in the field of IT and education, project management methodology, the structure and typical content of an IT project. Can: analyze and optimize the work plan and the cost of the project in the field of IT and education; draw up project documentation; apply information systems to solve practical problems of project management. Owns: methods for evaluating the effectiveness of innovative projects in the IT field and education, methods for analyzing project risks and determining measures to respond to them.
LO6	Knows: the basics of designing and developing digital educational resources, digital educational platforms, the features of using robotics in education, the basics of big data.

		Can: develop digital educational resources, use technologies and development environments to create robots, apply software packages for analyzing and visualizing big data. Owns: methods of design, development and application of digital educational resources and robotics in education, methods of analysis and visual presentation of big data.
	LO7	Knows: programming technologies, methods of developing educational resources, basics and requirements of information security. Can: use methods and tools for designing and developing cross-platform educational resources, methods of protecting information in professional activities. Owns: skills in developing cross-platform applications and resources using modern programming languages in accordance with information security requirements

22. The graduate model of the educational program

Graduate Attributes:
- High professionalism in the field of pedagogy, IT technologies
- Emotional intelligence
- Adaptability to global challenges
- Leadership
- Entrepreneurial thinking
- Global citizenship
- Understanding the principles and culture of academic integrity

Types of competencies	Description of competencies
Behavioural skills and personal competencies (Soft skills)	Improves and develops his intellectual and general cultural level, strives for the development and growth of personal qualities, creative abilities to achieve the chosen goals, revaluation of accumulated experience The ability, based on deep knowledge of history and philosophy, relevant areas of social sciences, to show a scientific worldview and a civic position in their professional activities
Professional competencies (Hard skills, Digital skills)	Willingness to apply technologies of organization, planning and management of the educational process of higher education, to analyze psychological conditions and especially management activities in order to improve the efficiency and quality of work in the education management system, to consolidate the acquired knowledge and skills in the process of pedagogical practice Willingness to solve real communicative tasks in certain situations of communication and professional activity through the studied language, to master professional terminology, to develop professionally significant skills and experience of foreign language communication in all types of real activity (reading, speaking, listening, writing) in the conditions of scientific and professional communication in the field of computer science The ability to implement scientific programs, projects and commercialize the results of scientific and educational activities for innovative research in the IT field and education. The ability to apply pedagogical technologies and teaching methods in the field of IT, information and communication technologies in professional activities.

	Ability to design and develop applied and educational software products and applications

Compilers:
Members of the working group:

Head of Department AMaI, PhD, Associate professor — A.B. Keldibekova

Professor of the Department AMaI — D.A. Kazimova

Associate professor of the Department AMaI — Ye. A. Spirina

Assistant professor of the Department AMaI — N. A. Gorbunova

Senior Lecturer of the Department AMaI — D.G. Aliyeva

Head of the Department of Education of the Karaganda region — G.S.Zhunusova

Master's student — A. Talgatova

The educational program was reviewed by the Faculty Council _19.04.2024_ Protocol № _7_

The educational program was considered at a meeting of the Academic Council from _29.04.2024_ Protocol № _5_

The educational program was reviewed and approved at a meeting of the University Board _24.05.2024_ Protocol № _8_

Member of the Board, Vice-Rector for Academic Affairs — **M.M. Umurkulova**

Director of the Department for Academic Work — **T.M Khassenova**

Dean of the Faculty of Mathematics and Information tehnology — **A.O. Tanin**

EDUCATIONAL PROGRAM DEVELOPMENT PLAN

7M01503-Computer science

The purpose of the Plan is to contribute to improving the quality of the conditions for the implementation of the educational program, taking into account the current requirements of the labor market and the achievements of modern science.

Target indicators

№	Indicators	Unit of measurement	2024-2025	2025-2026	2026-2027	2027-2028
1	**Human resources development**					
1.1	Increase in the number of teachers with academic degrees	Number of people	6	+1	+1	
1.2	Advanced training in the teaching profile	Number of people	2	+2	+2	+2
1.3	Involvement of practitioners in teaching	Number of people	-	-	-	+1
1.4	Other	Number of people				
2	**Promotion of the EP in the ratings**					
2.1	IQAA	Position	-	-	-	-
2.2	IAAR	Position	6	5	5	4
2.3	Atameken	Position	-	-	-	-
3.	**Development of educational and scientific-methodical literature, electronic resources**					
3.1	Textbooks	Number	-	-	-	-
3.2	Training manuals	Number	1	-	-	+1
3.3	Methodological recommendations/instructions	Number	-	-	+1	-
3.4	Electronic textbook	Number	-	+1	-	+1
3.5	Video/audio lectures	Number	-	-	-	-
3.6	Other	Number				
4.	**Development of educational and laboratory facilities**	Number				
4.1	Purchase of software products	Number	-	1	-	1

4.2	Purchase of equipment	Number	1	-	+1	-
4.3	Other	Number				
5.	**Updating the content of the EP**					
5.1	Updating the learning outcomes and the list of disciplines taking into account the requirements of the labor market, scientific achievements, professional standards	Year	+	-	-	+
5.2	Introduction to the EP of academic disciplines in foreign languages*	Year	+	+	+	+
5.3	Introduction of new teaching methods	Year			+	+
5.4	Opening of joint/two-degree program on the basis of the EP	Year				
5.5	Other	Year				

Head of the Department of Applied Mathematics and Computer Science   **A.B. Keldibekova**